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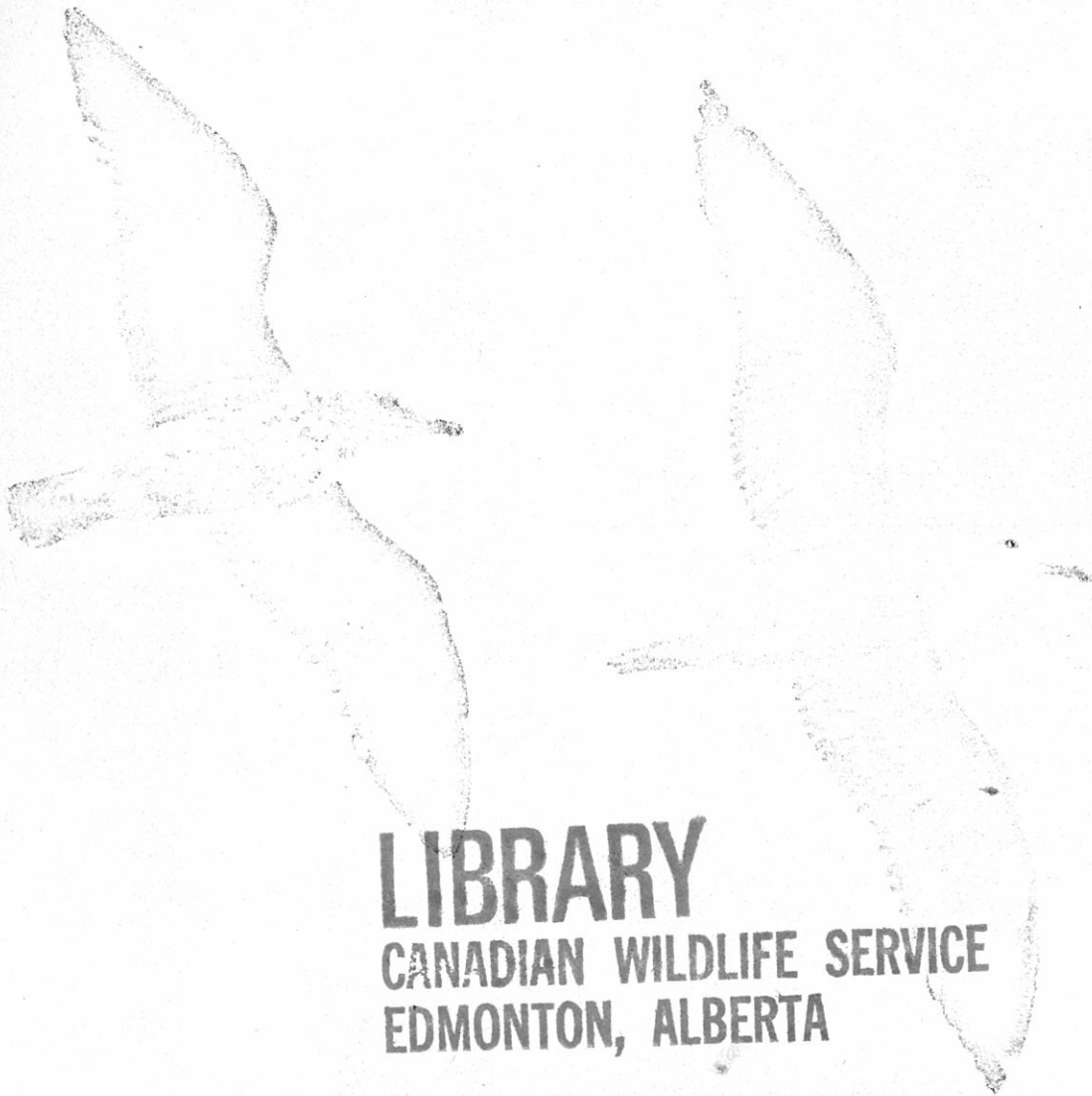
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Pacific Rim National Park

British Columbia



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Room 1110
10025 Jasper Avenue
Edmonton, Alberta
T5J 1S6
October 24, 1973

Mr. L.H. Robinson
Director, Western Region
Parks Canada
131 Customs Building
Calgary, Alberta
T2G 0X5

Dear Mr. Robinson:

I am pleased to transmit herewith the report "Birds of Pacific Rim National Park British Columbia" by D.F. Hatler, R.W. Campbell and A. Dorst. The work was carried out under CWS contracts WRO 72/73 # 110 and 72/73 # 168 as part of the Resource Inventory program at Pacific Rim. Mr. L. Retfalvi of CWS coordinated the study, assisted in drawing up terms of reference, and reviewed the manuscript.

The report is an extensive and very complete account of the status, seasonal occurrence and habitat preferences of the avifauna of Pacific Rim National Park. The authors have synthesized a great deal of existing data, both published and unpublished, to augment their own observations made over a period of five years. The report has three main sections: an annotated list of the species; quantitative observations of bird numbers along transects in a variety of habitat types; and a description of sea bird colonies.

We draw your attention in particular to recommendations related to the control of disturbance at sea bird colonies during the nesting season, and to the possible inclusion of Great Bear Rocks and Alley Rocks within the park boundary. Our staff would be pleased to discuss these and other recommendations with you at any time.

We feel that the report is an excellent addition to knowledge of the resource base of Pacific Rim National Park, and would appreciate your comments on it in due course.

Yours sincerely,

A.H. Macpherson
Regional Director
Canadian Wildlife Service



FRONTISPIECE - A Common Murre

(DFH)

cover-Western Gulls
(RWC)

BIRDS OF

PACIFIC RIM NATIONAL PARK

BRITISH COLUMBIA

RECEIVED FROM THE NATIONAL
MUSEUM OF CANADA

David F. Hatler
R. Wayne Campbell
Adrian Dorst

Canadian Wildlife Service

September, 1973

This report is dedicated to the thousands of park visitors who will probably not be aware of anything in flight except, possibly, a "Frisbee", an empty beer bottle or, at best, a black fly. If only they knew what they are missing -- or cared.

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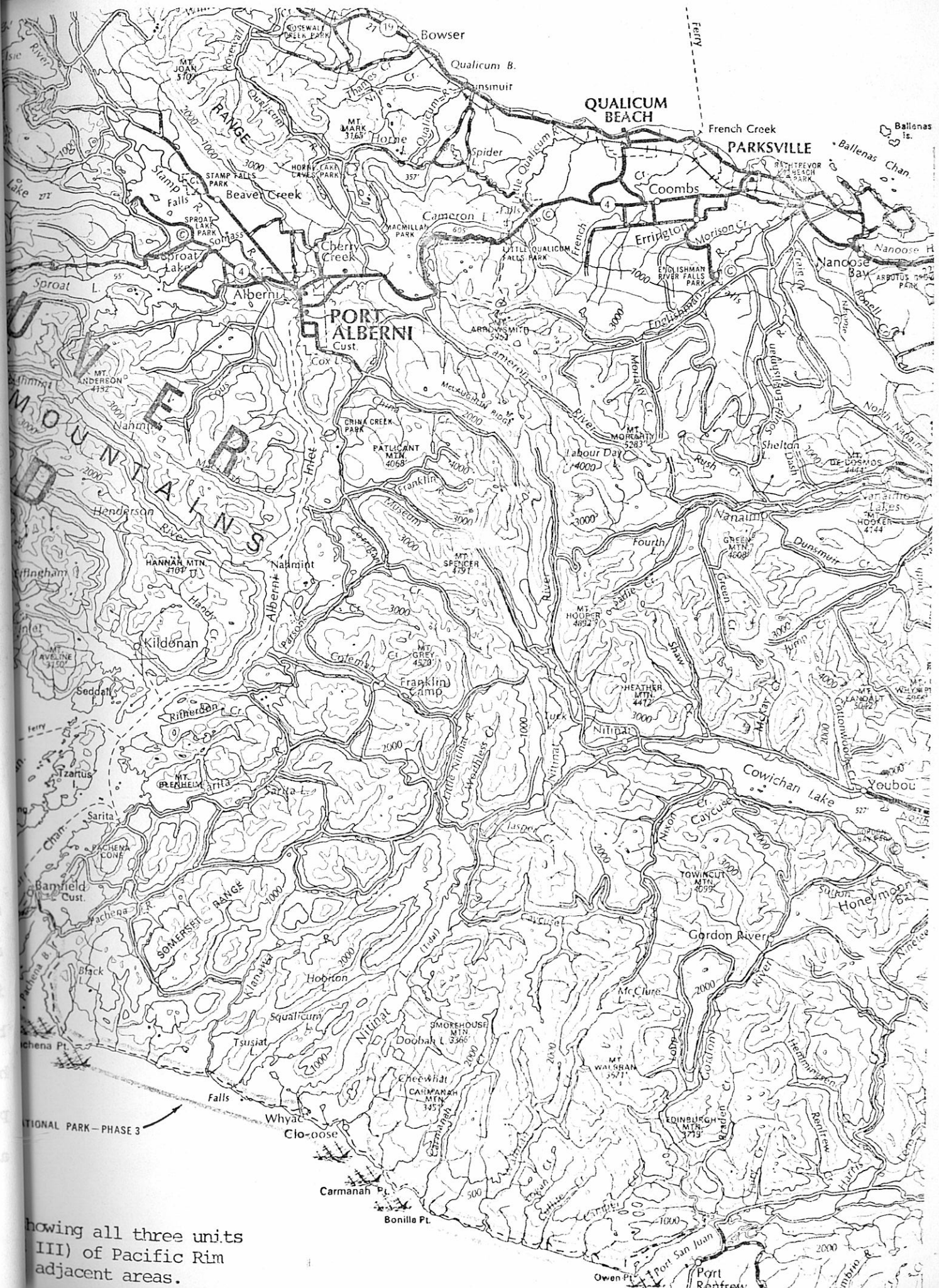
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INTRODUCTION AND ACKNOWLEDGEMENTS

Following are the results of an inventory survey of the birds of Pacific Rim National Park, British Columbia. This report is intended for the use of government personnel engaged in planning, interpretation and management of park resources, and has been compiled under Canadian Wildlife Service contracts WRO 72/73 #110 and WRO 72/73 #168, held by the senior author.

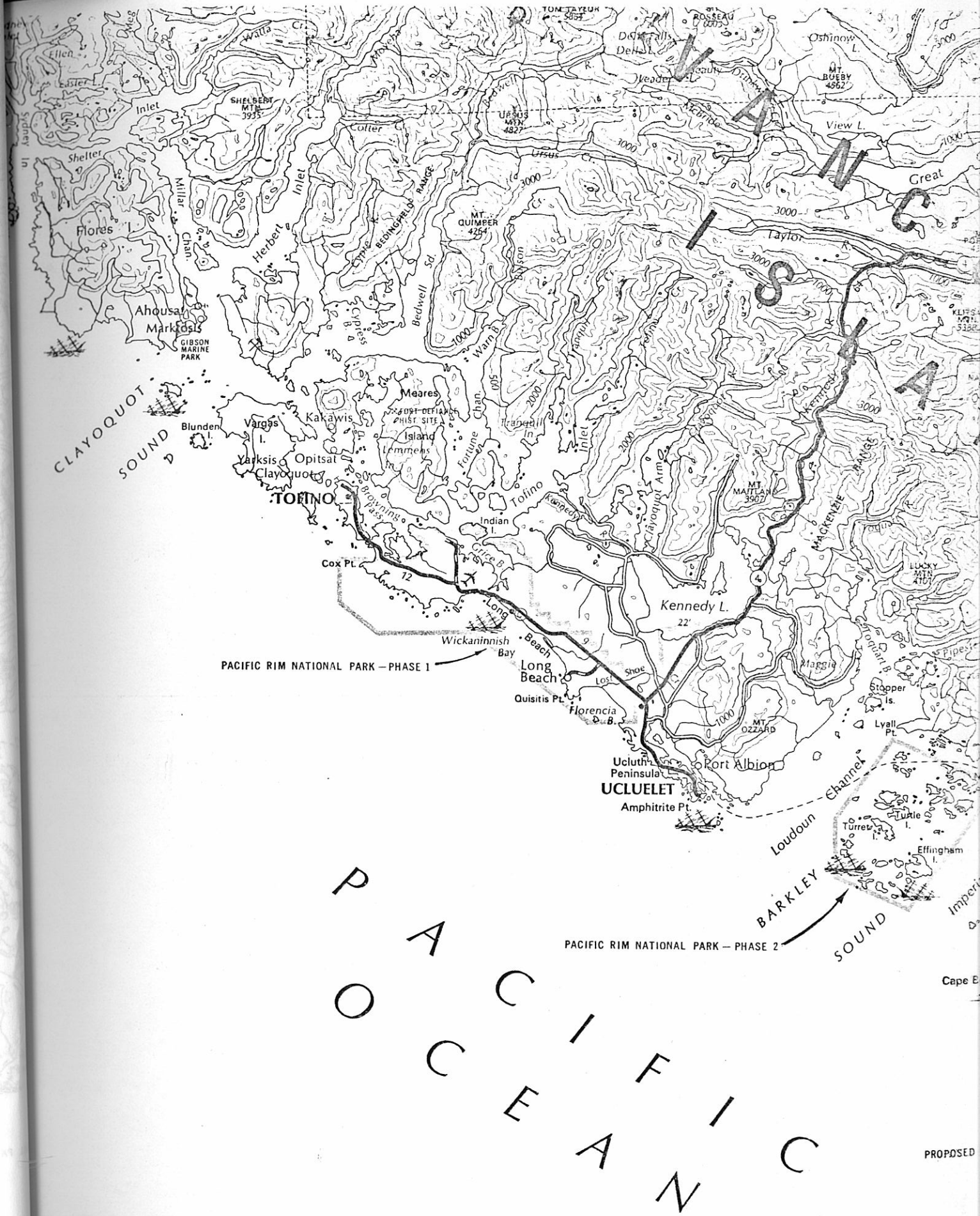
For a variety of reasons, Pacific Rim National Park is not an easy area in which to conduct a survey. It is geographically difficult because of the way it is strung out in discontinuous fashion along 75 miles of coastline, it is physically difficult because of the hostility of that coastline in all but the most ideal weather conditions (and the fact that ideal weather conditions do not pertain often), and it is ecologically difficult because it consists of only pieces of ecosystems, and some of these have been considerably tampered with. Nevertheless, it is a biologically rich and extremely fascinating area, and we are gratified to have had the opportunity to work there.

For the purposes of this report, Pacific Rim National Park consists of that area within boundaries shown on maps furnished by park personnel in spring 1972. It consists of three separate units: Phase I - The Long Beach area, including a portion of Kennedy Lake; Phase II - The Broken Group Islands in Barkley Sound; Phase III - The West Coast Trail (see Figure 1). Note that boundary adjustments consummated in 1973 are not recognized here; indeed, we have chosen to work largely from an ecological rather than real-estate oriented perspective. Records of particular species obtained from within park boundaries are given priority when they exist, but significant observations from closely



ATIONAL PARK - PHASE 3

howing all three units
III) of Pacific Rim
adjacent areas.



Scale: 6 Miles to 1 Inch

Figure 1. Vancouver (Phases I, National I

adjacent locations are used frequently. We refer less often to the park, specifically, than to the "park area", by which we mean the west coast of Vancouver Island from Clayoquot Sound in the north (including all of its various arms and inlets) through Port San Juan in the south. We also conceive the "park area" to comprise all of the watersheds which drain into the sea along the above defined section of coast, although we have necessarily done most of our observing in a relatively narrow belt along the shore.

Because the unique aspect of Pacific Rim National Park geography is its Pacific Ocean frontage, we have placed special emphasis on those birds which are characteristically part of the ocean scene, primarily the Gaviiformes, Podicipediformes, Pelecaniformes, Anseriformes, and Charadriiformes. Though most of the Procellariiformes do not often occur within sight of land, let alone within park boundaries, we have pulled together all known records of these mysterious pelagic birds in waters off the west coast of Vancouver Island and are including them here. We also recognize the uniqueness of the West Coast Forest ecosystem as part of the environmental heritage which Pacific Rim National Park seeks to preserve, and we have by no means neglected the park's land birds.

We have made no attempt to describe the physiographic, geological and/or botanical features of the park in anything more than general terms. These descriptions are, themselves, jobs for specialists in other disciplines. Certainly our identification of specific locations, together with such terms as "bog", hemlock forest", and "rocky islet", should serve to make our observations referable to more sophisticated descriptions as they become available.

Scientific and common names of fishes, in this report, follow the usage of Clemens and Wilby (1961), and names of mammals are those used in a

previous report by the senior author (Hatler, 1972). Most nomenclature relating to birds has been drawn directly from Godfrey (1966). However, there have been some recent taxonomic revisions (A.O.U., 1973), and these have necessitated the following departures from Godfrey's material:

Podiceps caspicus becomes P. nigricollis; Anas carolinensis becomes A. crecca; Mareca penelope, Mareca americana, and Spatula clypeata become Anas penelope, A. americana, and A. clypeata respectively; widgeon is to be spelled wigeon; Shoveler is to be called Northern Shoveler; Oidemia nigra becomes Melanitta nigra, and Common Scoter is now to be called Black Scoter; Squatarola squatarola becomes Pluvialis squatarola; Totanus melanoleucus and T. flavipes become Tringa melanoleucus and T. flavipes; Knot is to be called Red Knot; Erolia ptilocnemis, E. acuminata, E. melanotos, E. bairdii, E. minutilla, E. alpina, Ereunetes pusillus, Ereunetes mauri, and Crocethia alba become, respectively, Calidris ptilocnemis, C. acuminata, C. melanotos, C. bairdii, C. minutilla, C. alpina, C. pusilla, C. mauri, and C. alba; Zenaidura macroura becomes Zenaida macroura; Colaptes cafer is merged in Colaptes auratus, and Common Flicker becomes the new name for both red-shafted and yellow-shafted races; Hylocichla guttata and H. ustulata become Catharus guttatus and C. ustulatus; Dendroica auduboni is merged in Dendroica coronata, and the common name for the enlarged species is Yellow-rumped Warbler (Audubon's and Myrtle remain in use as subspecies names); Junco oreganus is merged in Junco hyemalis, and the English name for the enlarged species becomes Dark-eyed Junco.

A number of people have contributed information and assistance.

We acknowledge and express our gratitude to Charles J. Guiguet for unselfishly allowing us to extract important records from field notes he has compiled during many summers of sharp-eyed experience on the west coast. Dr. Ian McTaggart Cowan shared his notes on birds he observed on a visit to the Tofino area in May, 1931. Nicholas Roe has supplied us with a useful series of observation records obtained during 1971 and 1972 in Phase I, and Cleland Island "personnel", especially Michael G. Shepard and Kenneth Summers, have maintained observation lists (summers of 1969 and 1970) from which we have

drawn heavily. Original and unique information on several of the little known sea birds has been obtained by members of the Vancouver Natural History Society on pelagic birdwatching trips and their data, which were made available to us, proved of considerable value. We express our special thanks to all of these people.

Also deserving of special mention are Mary Etta Hatler and Eileen Campbell; both laboured for countless hours in organizing and compiling the 15,189 records upon which this report is based (and several hundred others which we screened but did not use), and both later assisted in proofreading and assembling the manuscript. Meanwhile, they and Suzanne Dorst maintained the authors' respective homes and provided continuous support, both moral and physical. We left them home to do the dirty work while we went out and had all of the fun; that they are still by our sides is a reflection of their qualities and not ours.

Below is an alphabetized list of all people, including those listed above, who have contributed information and/or assistance during the course of the study. In the text of this report, observers are referred to by their initials only, and these initials are indicated in the list. It should be mentioned that Cleland Island data are all attributed to Michael G. Shepard (MGS). He certainly made most of the observations and compiled all of the information we have cited, although other observers including Rudi Drent, Bob Baker and R. Wayne Campbell also participated. Those people for whom no initials are given were not directly cited in the text; nevertheless, their observations provided much of the body of data from which we were able to establish trends and draw conclusions, and we owe all a debt of gratitude. Three sets of initials which will be encountered most frequently are those of the authors' (DFH, RWC, AD):

LIST OF CONTRIBUTORS

Anderson, E. M		Guiguet, Charles J.	CJG	Robertson, Ian	IR
Armstead, Rex	RA	Hansen, Stan	SH	Robinson, Steve H.	SHR
Arnet, Doug	DA	Harcombe, Andrew	AH	Roe, Nick	NR
Baker, Bob	BB	Edie, Al	AEA	Salisbury, Dan	DSa
Barr, Ken	KB	Harestad, Alton	AEA	Sarles, Jack. G.	JGS
Belton, Desmond	DB	Harman, Barry C.	BCH	Sarlund, Leo & Barb	
Biggar, Jim	JB	Harman, Barry C.	BH	Satterfield, Ron	RS
Brooks, Bob	BBr	Hatler, David F.	DFH	Schick, W. J.	WJS
Buffam, Frank	FB	Hatler, Mareca	MRH	Shepard, Michael G.	MGS
Campbell, Barb/Barry	BBC	Hatler, Mary Etta	MEH	Simpson, G.	GS
Campbell, Eileen C.	EEC	Hawes, Dave & Myrna	DMH	Stirling, D.	DS
Campbell, R. Wayne	RWC	House, Maria (typist)		Summers, Ken R.	KRS
Cowan, Ian McTaggart	IMcTC	Johnson, Stephen R.	SRJ	Summers, Ken R.	KS
Cuthbert, Jim	JC	Loewan, Dave		Svoboda, Emily	ES
Dorst, Adrian	AD	Macdonald, Bruce A.	BMc	Svoboda, John Jr.	JSJ
Dorst, Susan	SD	MacKenzie, Roddy	RM	Tate, Mary Ann	MAT
Dougan, Harold & Ida		McNicol, Keith	KLM	Verbruggue, W. A.	
Drent, Rudolf H.	RHD	Mitchell, Steve		Ward, John G.	JWd
Elliott, Jim & Gillian	JGE	Neiderlich, Wolf	WN	Westerberg, Betty	BW
Foottit, Michael	MJF	Oguss, Emily	EO	Whittington, Peg	PW
Foskett, Dudley	DF	Parlee, Rich	RP	Wilkowski, Joe	JW
Gibson, Ken	KG	Paul, Marilyn (typist)			
Goodwill, J. E. V.	JEVG	Pearlstone, Paul	PP		
Gorman, Wynne	WG	Retfalvi, Laszlo	LR		

METHODS AND MATERIALS

Data compiled for this report have been obtained in a number of ways. As is the case for most areas, early west coast work involved observations and collection of specimens by the taxonomically-inclined, both amateur and professional. The activities of men such as Kermode, Morley, and Plowden-Wardlaw in the 1890's, Racey and Cowan in the 1930's, and Guiguet in the 1960's have established a base from which our job could be more easily accomplished. We have examined the records of all specimens from the west coast of Vancouver Island which are housed in the collections at the British Columbia Provincial Museum in Victoria and the University of British Columbia Vertebrate Museum in Vancouver.

The first series of observations from the Pacific Rim National Park area which were gathered over a prolonged period of time were those obtained by provincial naturalists at Wickaninnish Provincial Park. Campbell arrived in that capacity in 1967 and during that summer (19 June - 6 September) and the next (4 June - 2 September, 1968) he explored much of the area which is now Phase I of Pacific Rim, and catalogued the frequency of occurrence, habitat preferences, and breeding status of all summer birds with which he came in contact (see Campbell 1967, 1968). He also has made frequent shorter trips to the west coast, during all seasons, and has recorded observations from all three park units and from offshore waters.

Hatler began an ecological study of wild mink (Mustela vison) in the area in 1968 (Graduate Studies, University of British Columbia) and in the fall of that year started recording observations of birds coincidental with his other field work. His residence in the area was continuous through all seasons until fall 1972, and he was, therefore, able to accumulate considerable data on the phenology of arrival and departure of many of the migratory

species, and the extent of occurrence of resident species. Most work was carried out in southern Clayoquot Sound through summer 1970, but operations shifted to the Broken Group Islands of Barkley Sound thereafter.

In 1971, Hatler contracted to conduct an inventory survey of mammals in Pacific Rim National Park. He and an assistant (J. Biggar, a competent birdwatcher) carried out field work in Phases II and III during the summer, and Hatler worked in Phase I during the winter and spring (1971 - 1972). Coincidental with this mammal work over all three park units, significant observations of birds were recorded, and most of the park area's seabird colonies were visited at least once each (as they had been in previous years by either Campbell, Hatler or both).

Meanwhile, birdwatchers are among the most organized of naturalists, and many of these had acquired, and saved, observation lists compiled during visits (mid-1960's to present) to the west coast. Due to the kindness and interest of several such naturalists, we have had access to their notes and have been able to incorporate their data into our own records. In addition, local residents knowing of Hatler's interest in birds have occasionally brought in specimens of interest and have reported unusual sightings.

Finally, observers at a University of British Columbia field station on Cleland Island have accumulated observations relating to phenology of migration of many birds during the summers of 1969 and 1970, and have made these available to us. The Cleland installation has also enabled us to gain experience with and understanding of seabird colonies, and has provided us with useful information on the breeding biology of several of the species about which little had been known.

Thus, when we formally began the present study in July 1972, we already had a substantial body of information on the whats, wheres and whens

of Pacific Rim National Park's avifauna. However, as the above paragraphs indicate, all had been obtained incidental to other work. Field work actually conducted under the bird study contracts was split into essentially three categories:

1. **Transects**-Permanent lines were established along seven existing trails and three water routes, and these were surveyed at intervals from July 1972 to April 1973, to provide further information on phenology and extent of occurrence of individual species and, more importantly, to gather concrete data on the ecological relationships and relative abundance of these species in various park habitats. Also, two observation "lookouts" were visited regularly in summer 1972. A more detailed account of methods is given later in this report, introductory to the section on transect results.
2. **Exploration**-On a much more irregular basis, an attempt was made to cover as much of the park area as possible in search for unique bird habitats or unusual concentrations of birds (e.g., seabird colonies), and to provide further data on habitat preferences and extent of occurrence of individual species.
3. **Waterfowl Study**-In fall and early winter of 1972, an intensive and detailed study of waterfowl was conducted on the tideflats of southern Clayoquot Sound. The results of this work have been reported previously (Hatler, 1973).

Dorst joined the study team on 1 June 1972, and he conducted the intensive transect and exploratory work in Phase I during June and July and from October to early April, 1973 and studied in the Phase III area during August 1972. He also did much of the field work for the Clayoquot Sound waterfowl study. All Phase II transect and exploratory work and some Phase I exploration was carried out by Hatler during the 1972-73 study period.

A final aspect of this study has been library research, during which we have examined all significant writings on birds of Vancouver Island and adjacent areas in southwestern British Columbia. Special mention should be made here of the late Mr. Theed Pearse, who certainly ranks at the top among British Columbia's amateur ornithologists. He examined breeding petrels

on Seabird Rocks before we, the authors, had taken our first baby steps, and his published observations (though not often cited in this report) constitute a very important part of the ornithological history of Vancouver Island. Also, his scholarly book, "Birds of the Early Explorers in the Northern Pacific" (Pearse, 1968) is one which should be on the naturalists' bookshelf at Pacific Rim National Park.

RESULTS

CHECKLIST

Introduction and Explanation

A total of 238 species of birds are known or strongly suspected to occur in the west coast area represented by Pacific Rim National Park. Our checklist provides a summary of the occurrence of each: an asterisk prior to the species name indicates the species is known to breed locally; the relative abundance and nature of occurrence (status) are indicated by alphabetical symbols (see below), and the months during which we have observed the species in the park area are shown on a seasonal occurrence calendar. Finally, the page numbers of annotated list accounts of all species are given, so the checklist may serve as a species table of contents.

Status Terminology

Following are definitions and explanations of terms used in this report to denote the status of birds in the park area:

Seasonal Occurrence

It is very difficult to devise a set of terms which will be uniformly applicable to a series of species with differing environmental requirements and varying movement patterns. Seasons, in particular, must be defined flexibly with the major phenomena in a "typical" bird's annual cycle used as reference points. These phenomena are 1. Movement to a breeding area, 2. Breeding, 3. Movement from the breeding area, and 4. Overwintering. The need for flexibility comes as a result of the fact that different birds are on different schedules. Thus, it will be seen that our seasons, as we define them, seem to overlap. This situation will be clarified by example following the definitions:

RESIDENT - Individuals of the species breed, or at least are suspected to breed, in the area, and they remain throughout the year.

NON-BREEDING RESIDENT - The species is always present, but there is probably turnover of individuals during the year and there is no local breeding.

SPRING - Individuals enroute to the breeding grounds (mainly April through May).

FALL - Individuals enroute from the breeding grounds (mainly July through October).

MIGRANT - Both SPRING and FALL (above) applicable.

SUMMER - Individuals breeding, including spring arrivals and fall departures (mainly mid- April through August).

NON-BREEDING SUMMER - Individuals occur here primarily or only in summer, but do not breed locally.

WINTER - Individuals overwintering, including fall arrivals and spring departures (mainly September through May).

Example: Consider two hypothetical species, one of which appears in our area in late November and departs in March, and the other of which arrives in August and departs in May. By our definitions these are both WINTER species, regardless of the fact that one is present for only four months while the other is here for almost nine.

Many species properly have more than one seasonal status for this area. This is particularly true of wintering species, many of which are spread along the Pacific coast from southeastern Alaska to lower California. Such a species might be a rare winter bird which becomes increasingly conspicuous in our area as local numbers are augmented by passing migrants. In such a case, the species might be considered either as a migrant with rare stragglers present in winter, or as a winter species which is most abundant during migration. The designation chosen for each species, then, is largely subjective but it is based on our considerable

experience in the area. We have tried to stick with the single status which most closely typifies the occurrence of a given species from the standpoint of Pacific Rim National Park observers. Occasionally, however, we could not avoid the use of more than one status. The Mallard, for instance, occurs here in small numbers throughout the year, and it breeds here, thus it is important to recognize it as a resident. Yet, it occurs here in greatest abundance, and most regularly, as an overwintering species, and the designation "winter" must also be applied.

As a final caution about terminology pertaining to seasonal occurrence, it should be pointed out that the terms summer, fall, winter and spring have the above-defined meanings only when used in the context of a species' local status. These terms may occasionally appear in the text in use in the usual phenological sense, although we have tried to add the word "months" (e.g., summer months, fall months) at such times to reduce the possibility of confusion.

Abundance

The following terms are applied to the seasonal occurrence designations listed earlier to indicate the relative local abundance of the species being considered. These abundance ratings suppose that a prospective observer has gone to the species' preferred habitat at the appropriate season and are expressed as the likelihood of a sighting under these conditions.

ABUNDANT - Species can almost always be seen, and often in large numbers.

COMMON - Species usually seen, but usually only in small numbers.

UNCOMMON - Species often seen, but it cannot be depended upon to be present on every visit.

RARE - Species seen on just a few occasions each year.

VERY RARE - Species may not be seen every year.

ACCIDENTAL - At least one sighting has been documented, but the species is out of its usual range and is unlikely to be seen again.

HYPOTHETICAL - Species suspected to occur at least occasionally, on basis of known range of bird in adjacent areas, or on unsubstantiated local sightings.

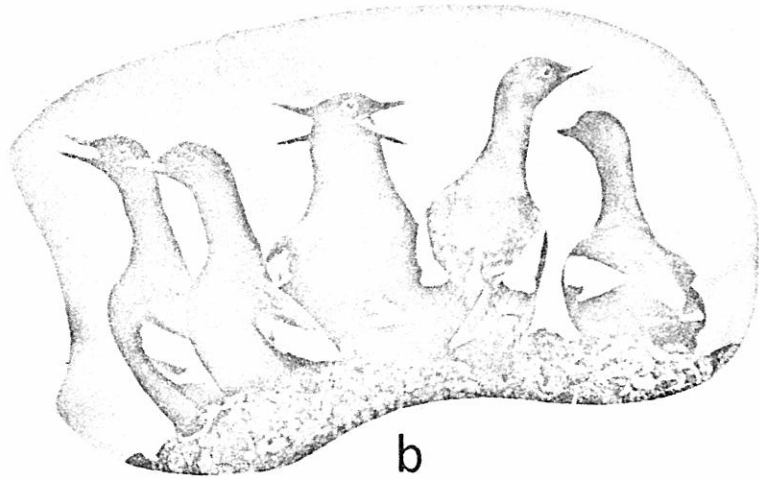
The word "local" (locally) is sometimes applied to one of the above terms (usually abundant or common) to indicate that the occurrence of a species is restricted to particular locations which are listed in the annotated list account. In such cases, the term to which "local" is applied is applicable only to the restricted areas, while another abundance rating (also given) is more appropriate for the park area as a whole.

The above status terms are abbreviated in the checklist as follows:

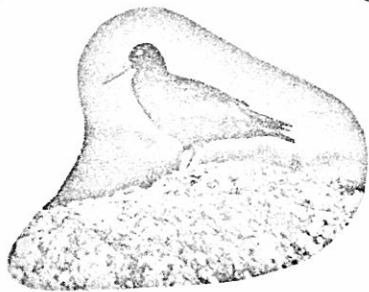
R - Resident	a - Abundant
NBR - Non-breeding resident	c - Common
S - Spring	u - Uncommon
F - Fall	r - Rare
M - Migrant	vr - Very rare
SU - Summer	acc - Accidental
NBSU - Non-breeding summer	hyp - Hypothetical



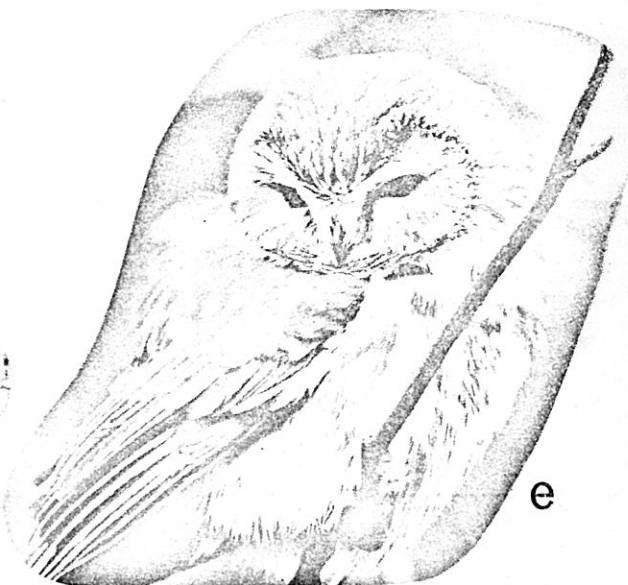
a



b



c



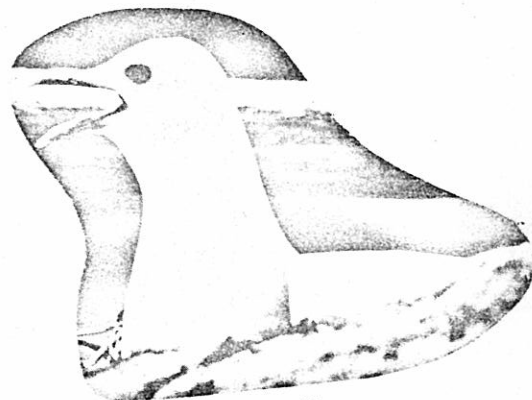
e



d



f



g

Some Pacific Rim National Park residents: a) Yellow-bellied Sapsucker, one of five species of woodpeckers found in park forests, b) Pigeon Guillemots, c) Black Oystercatcher, d) Killdeer, e) Saw-whet Owl, f) Screech Owl, one of several hit by cars along the park highway; this one recovered and was released, g) Mew Gull. (RWC-d and g; MEH-f; DFH-a,b,c and e).

ANNOTATED LIST OF SPECIES

Introduction

Following are details of our knowledge (seasonal occurrence, relative abundance, breeding status, general ecology and anecdotal tidbits) of the 238 birds on our checklist. We have tried to include all information which we consider necessary for a proper understanding of each species in its local context, and have indicated those instances in which more information is required. Most of our statements are documented by one or more observations. This, we feel, adds enough to the authenticity of the statements to be worth its inevitable detracting from readability.

An observation (sighting, record) is a notation of the occurrence of one or more birds of a given species in a particular place at a particular time. For a number of reasons (e.g., different observers, varying observation conditions, varying levels of abundance of different species), our observations vary in level of precision, and this is why we prefer to let the reader examine and assess some of these for himself. The quantity of birds may be given as a number (which may have been determined either by counts or estimates), or may be expressed subjectively, e.g., "many". The particular place may be a specific location (Green Point), or a more general one (Effingham Island), and the particular time (usually a given day, e.g., 23 June 1973) may also be more general (late June 1973). Thus, "many flocks overhead in Barkley Sound, 10 - 14 August 1972" is a single observation.

Note that we also identify the observer whenever we list an observation. In this way, the observer is given credit for -- and takes responsibility for the accuracy of -- his observation. We have by no means accepted all of the records we have received. Unusual sightings (birds not ordinarily seen here, or more common birds seen in the "wrong" season or at

unusual locations) have been very carefully examined, taking into consideration the experience of the observer, the ease with which the species concerned may be identified, and the degree to which the sighting departs from "normality". Regardless of the identity of the observer, very unusual records have been rejected unless they were accompanied by adequate documentation (specimen, photograph, or at least a detailed field description which we could assess independently of the observer's convictions). Documented descriptions are on file at the British Columbia Provincial Museum and may be examined by interested persons. We have assumed that readers of this report will have access to references such as Godfrey (1966) and the popular field guides (Peterson, 1961; Robbins et al., 1966), and have not described birds here.

Explanation of Format

With regard to format of the species accounts, preceding the English name there may be one asterisk (indicating suspected local breeding) or two asterisks (indicating that the species is known to breed in the park area). Following the nomenclature (English, French and Latin names) is a listing of the monthly distribution (J, F, M, A, J, J, A, S, O, N, D = January, February December) and total number of records (all years) which we have reviewed in drawing our conclusions about the species in question. A glance at this list will give the reader a rough idea of the seasonal occurrence and relative commonness of the species, but it should be borne in mind that there is a tendency among observers to report relatively uncommon, but conspicuous and easily identified species and to ignore very common and/or less identifiable species (e.g., some of the gulls). Thus, the status we eventually apply to a bird may depart somewhat from that expected on the basis of the distribution and number of records.

Likewise, the list of locations (always from north to south for consistency) which we furnish for most species is a rough indicator of how "common" (widely-distributed) a bird is in the Pacific Rim National Park area. However, the absence of a location on a given list does not necessarily mean that the species does not occur there, but only that it was not contacted there. Some species certainly would have been seen in locations at which they were missed if an observer had been present at the appropriate times. It should be borne in mind that most of the locations in Phase I have been visited several times in all seasons, while all islands in the Broken Group and several Barkley Sound islands outside the park have been visited at least once. Some of the islands, especially those in the vicinity of Turtle Island, have been studied frequently through all seasons except mid-winter. The West Coast Trail section of the park, having the least certain boundaries and the largest access problems of the three park units, has been visited least. Most of our observations there are from the month of August (1971 and 1972), although we also have obtained Phase III records in March 1968 and September 1971. A gazetteer of locations mentioned in the text is given in Appendix 1.

Complete observations are given in the locations lists, and those which have been selected are those which are most significant in terms of numbers of birds seen and dates of sightings. In most cases these give further support to earlier statements we have made about the seasonal occurrence and relative abundance of a given species.

In many cases, when the interpretation of a species' status could be enhanced thereby, we have compared its occurrence as indicated by our records, with its known occurrence in other areas along the southwestern British Columbia coast. The references used most often for this purpose are the 1971 bird reports from Vancouver (Campbell et al., 1972) and Victoria

(Tatum, 1972), and the admirable compilation resulting from a year's bird-watching (1968-1969) on northwestern Vancouver Island (Richardson, 1971). Rather than simply citing these authors when making these comparisons, we have usually listed their respective areas. This may seem unnecessarily repetitious to the reader who may be studying our species accounts consecutively, but it will be of value to the reader who wishes to refer to the account of a single species only.

The main space-saving device we have employed is abbreviation. The initials of observers have been listed previously. Throughout the remainder of this report, Pacific Rim National Park will be referred to as PRNP. Museum specimens will be referred to by their accession numbers in either BCPM (British Columbia Provincial Museum) or UBC (University of British Columbia Vertebrate Museum), and documentary photographs are referred to by their accession numbers in the PDF ("photoduplicate file"), now housed in the British Columbia Provincial Museum (see Campbell and Stirling, 1971).

**Common Loon (Le Huart à collier)
Gavia immer (Brünnich)

J14, F9, M15, A28, M55, J53, J44, A36, S19, O40, N35, D10 = 358 records

In agreement with the observations of Richardson (1971), and Tatum (1972), we have records of this species for all months of the year. It is seen most regularly in relatively shallow, protected water such as that in southern Clayoquot Sound, although we do have numerous observations from deeper, somewhat more pelagic waters: Florencia Bay, 26 Aug. 1968 (RWC); Cleland Island, five sightings in period 12 May - 20 July 1970 (MGS), one on 12 December 1971 (DFH); Quisitis Headland, Portland Point, numbers of sightings July and August 1971 (NR); whole of Phase I (Long Beach) shoreline (Radar Beaches, Portland Point, Schooner Cove, Box Island, Green Point, Quisitis Point, Florencia Bay, several sightings June - August 1972 (AD, DFH); Darling River area, 13 August 1972 (AD). On a trip, by small boat, from north to south (Cox Point to Wya Point) along Phase I waters on 2 July 1972 (DFH, AD), we saw just five Common Loons, including four together in a protected cove at the north end of Florencia Bay and a single bird on the eastward (lee) side of Box Island.

In Barkley Sound, this species was almost never seen in the open water of Loudoun Channel, but was frequently recorded in Ucluelet Harbour and in the span of water between the harbour mouth and the Beg Islets (see transect results). In the often almost placid waters among the eastern and central islands of the Broken Group the Common Loon can be recorded daily (DFH). Along the West Coast Trail, this species was present in Pachena Bay on 17 September 1971, 23-25 July 1972, 28 November 1972 (DFH), and was there (17 individuals on 7 August) throughout August 1972 (AD). It was not recorded along the whole of the trail from Michigan Creek to Port Renfrew during the period 10-22 August 1971 (DFH, JB), although it was seen regularly during the last week of August 1972 in the Port

San Juan vicinity (AD). The distribution of these observations support the earlier suggestion that Common Loons prefer the quieter, shallow-water habitats. Visitors to Phase I who wish to observe this species would likely be successful if they went to McLean Point, especially during the winter months (see Hatler, 1973), although equal success can usually be had outside the park from any of the government wharfs on the Tofino waterfront.

Common Loons are usually seen in small numbers. Of our 326 observations, 214 involved birds seen singly or in pairs. We have just 5 definite records in which 10 or more were seen together: East Vargas Island, 21 August 1969, 14 in all stages of moult, and 24 September 1970, 30+ (DFH); Toquart Bay (Barkley Sound), 2 June 1971, at least 61 (DFH, JB); Mouth, Lemmens Inlet, 6 June 1971, 36--mostly sub-adults (RWC, DFH, BMC); Toquart Bay, 18 June 1971, 37+ (DFH). Campbell et al. (1972) note that the spring and fall migrations of this species in British Columbia's lower mainland are most conspicuous in the first halves of April and September respectively. There is no evidence that this is the case for our area. The three June records of large flocks, given above, suggest that there was a movement at that time in 1971, and the September 1970 concentration may be indicative of an influx of birds then. On 13 September 1972, four distinct pairs and one single bird all moulting to winter plumage, appeared together near Turtle Island (DFH).

Among the wintering population there are numbers of birds which begin moulting to breeding plumage in the spring (earliest recorded appearance of a full plumage bird was 30 March 1970, DFH), while there are very few birds in adult plumage among the summer population. Thus, one would expect that the winter population would exceed that of summer, and this does seem to pertain to southern Vancouver Island (Tatum, 1972). We could actually make a case for the reverse being true in our area, in that 235 (65%) of our records occurred

during the months May - October. This probably reflects seasonal differences in observation conditions rather than population differences, although Richardson (1971) listed the Common Loon as an occasional resident from January through April, and a common non-breeding summer resident on northwestern Vancouver Island.

Common Loons are occasionally seen during winter months on local fresh water bodies (Kennedy Lake, 24 October and 29 November 1971, DFH), but of greater interest are observations from these localities during the summer months: 23 July 1970, one on Kennedy Lake (RWC); 19 July 1971, four in full plumage on Maggie Lake, (DFH); 30 June 1972, two singles in Clayoquot Arm, Kennedy Lake (DFH); 18 July 1972, six in Kennedy Lake (AD). Some of these birds may have been breeding, although there is no direct evidence of this. We do have a record of an adult with one large flightless young seen on 27 July 1970 at Sugsaw Lake near Bamfield (RWC), and we have an unconfirmed report of nesting near salt water at Jaques Island, Barkley Sound (JW). This observer saw a pair of loons there "one summer" whose behavior toward him suggested that they had a nest or young nearby, although he saw neither.

On 2 June 1972, DFH had the opportunity to observe a single loon, in breeding plumage, as it hunted in the bay north of Turtle Island. Twelve consecutive dives were timed, in seconds, as follows: 76-70-73-63-61-56-47-68-?-56-66-72. Rest times between dives were usually less than 20 seconds; this bird caught at least one sculpin (Cottidae) and two pricklebacks or gunnels (Sticheidae or Pholidae) on these dives. On another occasion a loon was watched as it tried, unsuccessfully, to eat a flounder (Pleuronectidae, about 25 cm) it had caught, and on 26 June 1972 a loon nearly suffocated on a staghorn sculpin (Leptocottus armatus). The latter incident has been related previously (Hatler, 1972'; see Appendix 2).

Summarily, the Common Loon, a bird exciting both to see and to hear, is a common resident in PRNP, occurring in all three park units. We suspect that there may be some breeding within park boundaries during some years, but this must be rare.

Yellow-billed Loon (Le Huart à bec jaune)
Gavia adamsii (Gray)

J, F, M, A, M, J1, J2, A, S, O, N1, D1 = 5 records

The most positive sighting is that made offshore (54 12'N, 131 05'W) on 3 June 1970 (JEVG). This sighting involved an apparent adult in summer plumage, which included a "very conspicuous" yellow bill. The other observations, all of birds in winter and/or immature plumage, were made by AD as follows: 6 July 1972, one in Grice Bay; 15 July 1972, one offshore from Box Island; 16 November 1972, two in Browning Passage just northwest of the park's northern boundary; 6 December 1972, one in Browning Passage. Satisfactory field descriptions were obtained for the November sightings, and these are on file at the B.C. Provincial Museum.

Godfrey (1966) has winter records of the Yellow-billed Loon from both eastern (Comox) and northwestern (Hardy Bay) Vancouver Island locations, and Tatum (1972) lists four apparently satisfactorily documented sightings for southern Vancouver Island between 17 January and 3 April 1971. Clearly the Yellow-billed Loon is a very rare winter bird in the PRNP area, and our observations suggest that occasionally some individuals (probably immature birds) may linger here into the summer months.

Arctic Loon (Le Huart arctique)
Gavia arctica (L.)

J1, F4, M6, A11, M56, J66, J34, A21, S17, O18, N9, D3 = 255 records

In contrast to the Common Loon, the Arctic Loon commonly occurs in large flocks and may often be seen at some distance from shore. Campbell (1968) listed it as the most common loon during summer at Wickaninnish Provincial Park. Tatum (1972) indicates that large numbers occur on southern Vancouver Island waters in winter, until May, but that there were few records from then until October. Spring migration in the Vancouver area apparently occurs mainly in April, while fall migrants show up in September (Campbell et al., 1972). Richardson (1971) did not record the species between mid-November and mid-May.

Our PRNP area records show occurrences for all months except January, but the average flock size for 30 occurrences from October through March (all years) was just 4.3 (range 1-25) and only two flocks exceeded 10 during this time. Sightings from April through September were much more frequent, on the other hand, and flocks of 25 or more were recorded on at least 31 occasions. The main spring migration in our area seems to begin in late April and continues to a peak in May or early June. The following records are illustrative: 10 June 1968, flock of 30 over Chesterman Beach (RWC); 4 May 1969, 142+ at mouth of Lemmens Inlet (DFH); 15 May 1969, c150 heading north along west Vargas Island (MGS); 27 April 1970, two flocks of 150+ birds each at mouth of Clayoquot Sound (DFH); 6 May 1970, c150 at mouth of Lemmens Inlet (DFH); 20 May 1970, 500+ moving up coast by Cleland Island (MGS); 14 June 1970, 100+, Cleland Island (MGS); 25 April 1972, 50+ scattered over Loudoun Channel, Barkley Sound (DFH); 19 May 1972, 45+ near mouth of Ucluelet Harbour (DFH); 11 June 1972, 175+ in Father Charles Channel (east Vargas Island) (DFH); 26 June 1972, about 100 near Cleland Island (DFH). During the period 9-26 May 1931, numbers of migrating birds

were seen in the Tofino area (IMCTC), and Martin and Myres (1969) record migrating flocks in the Ucluelet area during mid-May, 1949.

Sightings of Arctic Loons in park waters are made regularly in July and August, but in smaller numbers than in the immediately previous months. Of 51 records for this time period, only 6 involved flocks in excess of 10 birds: 25 July 1971, Austin Island, 12 (DFH); 17 August 1971, Shell Oil Cabin, West Coast Trail, 20+ offshore (DFH, JB); 2 July 1972, near Florencia Island, 18 birds (DFH, AD); 2 August 1972, NW Vargas Island, 60+ (DFH); 10 August and 11 August 1972, Pachena Bay, 19 and 14 respectively (AD). The August birds, and perhaps some of the July birds, probably represent early fall migrants, possibly non-breeders and some which nested unsuccessfully. The fall movement is not as conspicuous as is that in spring, and may be largely an offshore phenomenon. Some movement through Barkley Sound was evident in September 1971, and this included a flock of 60+ flying south over Effingham Island on 25 September (JB).

We have two anecdotes involving this species, one of which indicates the aggressiveness of which these birds are capable (from DFH notes):

One of my biggest surprises while birdwatching in this area was provided by an Arctic Loon. On 29 December 1971 I discovered one resting on an east Vargas Island beach some 100m from the water. When it saw me it flapped across the mud beach as though "running" on water, but I caught up with it. Without hesitating, it charged, biting at me violently, and then escaped to the water as I labored to regain my composure. In the water it behaved quite normally, although it had a moderate sized patch of oil on its breast.

Another loon of this species, also with oil on its breast feathers, had been killed by a Bald Eagle just 100 yards from the site of the above incident on 4 June 1969 (Hatler, MS).

The Arctic Loon is an abundant migrant and is uncommon winter in PRNP. It has been seen from all three park units.

*Red-throated Loon (Le Huart à gorge rousse)
Gavia stellata (Pontoppidan)

J5, F8, M1, A1, M2, J8, J8, A14, S2, O4, N7, D3 = 63 records

Though not seen frequently, this loon was recorded during all months of the year in the PRNP area. Groups of more than two birds were seen on only 8 occasions: 22 July 1968, four near Florencia Island (J&SB); 13 August 1971, three near Quisitis Headland (NR); 27 June (three), 9 July (three), 31 July 1972 (7 in breeding plumage), all in Florencia Bay (AD); 4 August 1972, three in Pachena Bay (AD); 20 and 21 August 1972, five and six respectively in Port San Juan (AD).

The Red-throated Loon is clearly most abundant in our area during the summer months, where it apparently feeds at least part of the time in near-shore waters. The fact that 15 of 22 sightings during the months May through September occurred in the stretch of water between Sea Lion Rocks and Florencia Bay (only two of these north of Quisitis Point) is interesting in that this area lies directly to seaward from Kennedy Lake and several smaller lakes, where at least some breeding takes place. On 23 July 1970, an adult with two young was seen on one such lake along the Port Alberni Highway (40 miles W. of Port Alberni) (RWC,RHD). Adults in breeding plumage had been seen at that lake during each of the years (summers) 1966-1969, and breeding had been suspected.

On 17 August 1971 a single bird flew over the Tsusiat Falls to seaward, calling continually, then circled back up toward Tsusiat Lake and did not return, and on 17 August the characteristic calls of this species were heard from somewhere up the Cheewhat River (DFH). Mr. Jim Hamilton, resident in the Cheewhat area for a number of years, says that these loons nest on both Cheewhat and Sprize Lakes, but he could provide no precise details. During the night

of 15-16 April 1970, Red-throated Loons were heard calling frequently over and near Hand Island, and it was speculated that a courting pair was responsible (DFH). There are also several small lakes in this area near the head of Barkley Sound which might provide suitable nesting habitat for these birds.

We have no records involving a group larger than two for the period October through April, but sightings of individuals and pairs are fairly common for this period, especially in southern Clayoquot Sound. These loons were listed as having been present in Tofino Inlet near the park's north boundary on each of 8 weeks during the 25 week period, 8 October through 31 March, as follows: November - 1 (1st week in November); December - 1; January - 3,4; February - 1,2,3; March - 1.

Richardson (1971) recorded this species only during August and October on northwest Vancouver Island. It is listed as common in winter in both the Victoria (Tatum, 1972) and Vancouver (Campbell et al., 1972) areas, and is also "casual" in summer at Vancouver. Here, in PRNP, the Red-throated Loon is an uncommon resident, and it has been seen in all three park units.

Red-necked Grebe (Le Grèbe jougris)

Podiceps grisegena (Boddaert)

J14, F9, M18, A29, M24, J6, J4, A23, S23, O34, N29, D11 = 224 records

Although we have records for all months of the year, this is largely a wintering species in PRNP, occurring in numbers from September through about mid-May, and only rarely from then until mid-August. Some records supporting the above statement follow: 19 April 1969, 90-100 in Tofino Inlet; 10 October 1969, 100+ near main street wharf, Tofino (DFH); 2 May 1970, 75 in Tofino Inlet (RWC); 18 September 1970, 30-35 near Clayoquot Spit (DFH); 9 May 1972, 42 near

mouth of Ucluelet Harbour. We have just 10 records for the months of June and July, including seven of single birds, 2 pairs and one trio (mean 1.4 birds per flock). Of 21 August sightings, 11 were of singles, five were pairs, two were trios and there was one foursome. The other two occurrences were of 30 birds-- 22 August 1969, and 12 birds-- 16 August 1970 (both DFH) for a mean of 3.5 birds per sightings. By September and October, when there were a total of 48 sightings, 20 were of groups numbering five or larger and the mean per sighting had risen to 8.4. Clearly the degree to which a species is gregarious is likely to influence the "mean number per sighting" as much, or more, than the total number of birds present in the area, but assuming that this social behavior does not change appreciably from month to month on feeding areas this far away from the breeding grounds, these data do give some suggestion that the number of birds present increases after August.

Moulting to breeding plumage begins in March or early April. On 18 March 1970 an individual seen near Vargas Island was approaching breeding plumage; 8-10 birds seen in Tofino Inlet on 12 April 1971 were "getting red necks", and on 15 April 1969, a flock of 30 birds in Tofino Inlet had all completed their moults (all DFH).

In this area, during the winter months, these birds may best be seen in Tofino Inlet. During the 25 week, 8 October - 31 March (1972-73) period, Red-necked Grebes were noted as present on 24 of those weeks (it failed to be recorded only during the last week of December). Other park area sighting locations for this species are:

Botany Bay (Port Renfrew area), 19 April 1972 (RWC); Port San Juan, 29 and 23 August, 1972 (AD); Pachena Bay, 7, 10 and 11 August, 1972 (AD); Bamfield, 24 March 1968 (RWC); Turtle Island Group, Barkley Sound, several occasions, September 1971 (JB); Toquart Bay, 15 October 1972 (DFH); mouth Ucluelet Harbour, several times April-May 1972 (DFH);

Florencia Bay, 8 June and 31 July 1972 (AD); Quisitis Point, 14 August 1971 (NR); Sea Lion Rocks, 6 July 1972 (AD); west Vargas Island, 9 September 1972 (DFH); Cleland Island, 8 August 1969 (MGS); Kennedy Lake, 25 March 1972 (DFH).

In PRNP the Red-necked Grebe is a common winter bird, with occasional rare non-breeding stragglers present during the summer months. It may be seen in all three park units, but seems less common in the Broken Group area than in the other two.

Horned Grebe (Le Grèbe cornu)
Podiceps auritis (L.)

J16, F9, M20, A27, M12, J12, J2, A2, S7, O43, N25, D15 = 190 records

This species is similar in status to the previous species, occurring in the park area only rarely during the summer months. We have records for all months of the year in the park area, but all but one of our 16 June - August records were of single birds. On 20 August 1972, four were seen at Port San Juan (AD) and these were probably early fall migrants. Our only other August sighting was also in the West Coast Trail unit of the park, a single bird seen at the mouth of Logan Creek on 19 August 1971 (DFH, JB). During these two years, the next sightings after those mentioned were 17 September 1971 (Clarke Island, JB) and 11 September 1972 (Father Charles Channel near Vargas Island, DFH), and first sightings in other years were, 1969 - 28 September, four at Vargas Island (DFH); 1970 - 18 September, one at Vargas Island (DFH).

By mid-October most fall migrants have arrived, and numbers can be seen daily in most protected water areas: 10 October 1969, 20-25 seen between Tofino and Vargas Island (DFH); 12 October 1970, 8-10 at Clayoquot Spit (DFH); 19 October 1971, five at McLean Point (DFH), 24 October 1972, 50+ near Indian Island, and 25 or more scattered at mouths of creeks and in small bays

along the West Coast Trail from Carmanah Point northward (DFH, AD, from aircraft); 25-28 October 1972, 10-12 seen daily in Turtle Island area (DFH). In the Tofino Inlet waterfowl study (Matler, 1973), this species was first recorded on 9 October, and was the most commonly seen grebe thereafter. It was present on all 25 weeks of the sample period 8 October - 31 March (AD).

As was the case for the Red-necked Grebe, the moult to breeding plumage begins in March. In 1969, two birds seen on 11 March were still in winter plumage while two seen on the following day had begun the moult. On 7 April a single bird was nearing breeding plumage, while five birds seen on 21 April 1970 and four of five seen on 24 April 1972 were in full breeding regalia. Most of the spring migration from our area has occurred by mid-May. Our best sequence of observations illustrating the spring movement were made in the Turtle Island Group in 1972 (DFH). From 7-11 April, 20+ birds were scattered (usually singly or in pairs) among the islands of this group. Small numbers were also seen from 29 April through 2 May, and on 9 May 16 birds were seen in the bay west of Turtle Island. On 17 May no birds were seen, however a single bird appeared at Turtle Island on 19 May and it (we assume it was the same bird) was seen frequently from then until 19 June, after which it disappeared. It had not moulted at the last sighting and was apparently a non-breeding bird.

Its occurrence in waters along the West Coast Trail and among the Broken Group and in the protected waters of southern Clayoquot Sound have already been documented (above). We also have records for Florencia Bay--10 on 25 September 1971, (BCH); one each on 6, 26, 27, 30 June, and nine on 24 July 1972 (AD), Incinerator Point (one dead, oiled bird, 17 March 1972, BBC), Chesterman Beach (four on 17 October 1972, SHR), and Kennedy Lake (two, 11 January 1970, and one, 19 December 1971, DFH).

The Horned Grebe is a common winter species, with occasional (rare) non-breeders present during summer months, in PRNP.

Eared Grebe (Le Grèbe à cou noir)
Podiceps nigricollis (Hablizl)

J, F, M, A, M1, J, J, A, S, O1, N, D = 2 records

This is a species which we have looked for very carefully. Hours have been spent studying individuals in flocks of Horned Grebes, but up to this time we have no satisfactorily documented records.

Richardson (1971) did not record an Eared Grebe during his year of observations on northwestern Vancouver Island, and the species is listed as "rare winter" for the B.C. Lower Mainland area (Campbell et al., 1972), although Tatum (1972) considers it a common winter visitor on southern Vancouver Island.

We have had reports of the species, but have been unable to confirm them, and at this state of our knowledge regarding the Eared Grebe in PRNP, we must list it as hypothetical.

Western Grebe (Le Grèbe de l'Ouest)
Aechmophorus occidentalis (Lawrence)

J11, F7, M7, A21, M18, J16, J12, A8, S5, O24, N30, D10 = 169 records

Like the Red-necked and Horned Grebes, the Western Grebe breeds in interior areas and is seen most commonly on our coast, and in the greatest numbers, from October through May. As a rule it seems to prefer deeper waters than the other two species, and it may often be seen, in winter, in the deep water inlets of northern Clayoquot Sound. On 4 March 1969 there were 100+ of these birds some three miles up Lemmens Inlet, and John Svoboda Jr., who was tending shrimp/prawn traps in the area at the time, observed that he usually sees numbers of Western Grebes in nearly all areas where he has successful shrimp trapping. Whether Western Grebes regularly feed on shrimp or whether there

is some aspect of local habitats suitable, in common, to both the birds and these invertebrates is unknown.

The Western Grebe seems more gregarious than the other species, and may gather into very large flocks. Bent (1919) reported wintering flocks in southern areas numbering "several thousands", Tatum (1972) reports many flocks of 50-200 birds and mentions one May concentration of an estimated 1300 or more, and Campbell et al. (1972) recorded flocks of 800 and 1000. Among our records, only seven were of flocks numbering 50 or more, and the largest concentration reported was 150 birds (estimate) at Baeria Rocks, 7 August 1972 (DFH). It seems evident that PRNP is not as important an area to Western Grebes as are the other British Columbia coastal areas mentioned previously; there are probably never more than 500 birds in the area at any one time, as compared to the over 12,000 tallied in the Vancouver area on the 1971 Christmas bird count (Campbell et al., 1972).

Most summer records are of small flocks (fewer than 10 birds), but sightings made at Baeria Rocks are of special interest: 17 August 1969, 50 seen (WJS); 4 June 1970, 140+, and 15 June 1970, 50-70 (CJG); 22 June 1972, 44, and 7 August 1972, 150 (DFH). According to Tatum (1972) a small flock of non-breeders summers regularly in Satellite Channel near Victoria, and our evidence suggests that there is a similar tradition for the Baeria Rocks area, and perhaps also for Sechart Channel near Hand Island (9 June 1971, 20+; 29 June 1971, 6; 1 July 1971, 9, DFH).

Individuals of this species have been seen hunting after dark on three separate occasions: 13 and 14 November 1970, near mouth of Megin River, at least one individual was seen, by flashlight, at close range after it was heard diving and surfacing repeatedly; 8 February 1972, Tofino Inlet, one seen diving

regularly; 5 December 1970, three seen diving and chasing fish under government wharf, Tofino waterfront (all DFH). During the first two episodes, during which the observer was engaged in nocturnal observations of mink (Mustela vison) and raccoons (Procyon lotor), there were no significant external sources of light, as they occurred some distance from human habitations and the sky was completely overcast. The grebes in the third observation were seen in, and were perhaps making special use of, the "street lights" on the wharf. Even if they were using artificial light; however, this observation confirms their propensity for activity after dark (observed from 22:10 to 22:25 P.S.T.).

In addition to locations already mentioned, Western Grebes have been seen along most of the park area shoreline, as follows:

Vargas Island, 15, 7 April 1969 (DFH); Millar Channel near Ahoushat, 75, 13 November 1969 (DFH); Tofino Inlet to Grice Bay area, tallied as present during 22 of 25 weeks between 8 October - 31 March 1972-73 (AD); Quisitis Point, two, 31 July 1971 (NR); Green Point, 16, 19 July 1972 (AD); Florencia Bay, five, 26 June 1972 (AD); Mayne Bay, 60, 21 April 1971; Dodd Island, one, 6 June 1971; Hankin Island area, three, 25 April 1972, Ucluelet Harbour, 28, 29 April 1972; Pachena Bay, two, 22 June 1972 (all DFH); Darling River, seven, 14 August 1972 (AD).

The Western Grebe is mainly an uncommon winter bird in PRNP, but seems to be represented here in summer, by non-breeding individuals, more often than do the grebe species treated previously.

**Pied-billed Grebe (Le Grèbe à bec bigarré)
Podilymbus podiceps (L.)

J5, F2, M, A, M2, J2, J2, A, S2, O3, N4, D4 = 26 records

Although this is the only grebe which nests in our area, it is seen less commonly than all of the others. The first record for the area is that of a

specimen collected in 1899 near Ucluelet (Sutton BCPM 4975). Seven of eight summer records (May through September) are from the fresh water habitats where the bird breeds, and all but two of the 18 winter records (October through February) were obtained from protected inlet waters: 14 June 1969, one seen and heard calling on Lost Lake (Kennedy Lake area); 19 September 1970, one adult with one large young on Kennedy River; 3 May 1971, one heard calling on Swan Lake--one seen there on 14 May 1971 (all DFH); 8 June 1972, one on Swan Lake, and, one adult with five young seen there on 5 and 14 July 1972 (AD). The single salt water observation for the summer months was of two birds seen near the head of Ucluelet Inlet on 9 September 1972 (AD). Winter records: 24 October and 30 November 1971, single birds seen on Kennedy Lake (DFH); 29 November 1972, a single bird in Maltby Slough (DFH). It was listed as present on 15 of the 25 weeks between 8 October 1972 and 31 March 1973 (Tofino Inlet area), nearly always seen singly (AD).

We have no records for the Broken Group or for the West Coast Trail sections of the park, but would expect it to occur on the lakes along the latter. The status of the Pied-billed Grebe in PRNP as a whole is that of an uncommon resident.

Laysan Albatross (L'Albatros à laysan)
Diomedea immutabilis Rothschild

This species is the only dark-bodied albatross in the North Pacific with white head and underparts. It ranges along the Pacific Coast of North America from the Aleutian Islands and Gulf of Alaska south to northern Baja, California (A.O.U., 1957). Until recently, records of this large ocean wanderer had been several hundred miles offshore (Sanger 1965; 1970), too far for

the bird to be considered an addition to the avifauna of British Columbia (and Canada). W.E. Godfrey (personal communication) considers the offshore limit for Canadian records to be 40 miles. Campbell and Shepard (1973), however, list several records for the littoral coast of the Province, only one of which is within PRNP boundaries: 17 August 1970, one about 25 miles off Ucluelet ($48^{\circ} 26'N$, $125^{\circ} 40'W$).

In winter this species moves closer to land following the coldwater belt, but it will not be seen often. The Laysan Albatross is a very rare winter visitor in PRNP area waters.

Black-footed Albatross (L'Albatross à pattes noires)

Diomedea nigripes Audubon

J, F, M2, A1, M2, J1, J2, A15, S4, O, N, D = 27 records

This is the common "goony bird", as seamen refer to it, in offshore waters along PRNP. It is the exception when these long, narrow-winged birds can be spotted from shore, however, they can be "chummed in" (with greased popcorn or bread), for close looks as close as five miles offshore. Occasionally dead birds are washed ashore at which time they can be identified by the distinctive features of the bill. It is short, the upper mandible being hooked and covered with a number of horny plates, instead of having a single sheath on each mandible as in most birds. Dead specimens should also be examined for leg bands. One banded bird found 15 miles west of Kyuquot in September, 1969 was banded as a nestling near Sand Island, Midway, POC, on 7 March 1967. Apparently immature birds wander the oceans from five to seven years before they become sexually mature and return to their birth-place to breed.

Black-footed Albatrosses have been recorded in offshore waters along Vancouver Island in every month (Martin, 1942; Sanger, 1972; Campbell and Shepard, 1972). Martin and Myres (1969), however, noticed that birds tended to congregate in

small groups as the summer advanced until by mid-August "aggregations of up to 20 birds" were commonly met at sea.

At present there is still relatively little information on the occurrence, movement and numbers of this species offshore; for the present we consider the Black-footed Albatross an uncommon (perhaps common) non-breeding resident of offshore waters along PRNP.

Northern Fulmar (Le Fulmar boréal)
Fulmar glacialis (Linneaus)

Little is known about the distribution and occurrence of this stiff-winged flier off the British Columbia coast. There are records from each month in the year except January and November. This simply reflects, however, the lack of field work offshore during the winter months. Although information is sketchy, it appears that Fulmars winter at sea off the British Columbia coast (R.W. Campbell, unpublished data) and can be found in small numbers closer to shore from about March through August, with numbers building up in the early fall (Jewett et al., 1953; Martin and Myres, 1969; Campbell and Shepard, 1972).

Fulmars are primarily cold water birds (Brown, 1970) and off the B.C. coast appear to have definite areas of local abundance. Martin and Myres (1969) list these as Triangle Grounds, Swiftsure Banks and waters off Quatsino Sound, Long Beach and Ucluelet. They are often attracted to commercial fishing fleets where they feed on available offal.

It appears that the Fulmar can be considered a rare (perhaps uncommon in some seasons) non-breeding resident of waters offshore from PRNP.

Pink-footed Shearwater (Le Puffin à pattes roses)
Puffinus creatopus Coues

J, F, M, A1, M1, J, J1, A5, S7, O1, N, D = 16 records

This light-bellied shearwater has been recorded off Vancouver Island from late April (Martin, 1942) through early October (R.W. Campbell, personal communication). The species appears regularly in small numbers off southern Vancouver Island by mid-June (Martin and Myres, 1969) and becomes more numerous as the summer progresses (e.g., flocks of up to 20 seen during August, 1949 on La Perouse Bank (Martin and Myres, 1969), 30 off Juan de Fuca Strait on 18 August 1970 (M.G. Shepard, personal communication), and 125 off Tofino on 13 September 1969 (R.W. Campbell, personal communication). Occasionally this seabird follows Sooty Shearwaters well into Barkley Sound, especially in Imperial Eagle and Loudoun Channels. Single birds have been seen here on 18 and 22 August 1967 (CJG) and 25 August 1969 (RWC).

In offshore waters along PRNP the Pink-footed Shearwater is a regular (but uncommon) non-breeding summer visitor.

Pale-footed Shearwater (Le Puffin à pattes pales)
Puffinus carneipes Gould

J, F, M, A, M1, J1, J6, A4, S5, O, N, D = 17 records

This all dark shearwater is a difficult bird to identify, as the distinguishing features (yellowish-bill and flesh coloured legs and feet) can be seen only under ideal viewing conditions. Records are few, but this Australian nester has been observed as singles or pairs in pelagic waters off Vancouver Island from 8 May 1971 (JB) to 25 September 1971 (Campbell and Shepard, 1972). In the future, large flocks of shearwaters (usually mostly Sooty Shearwaters in our area) should be carefully examined for "pale-foots" as the movements of this species in the Pacific

are not clear. Slater (1970) however, states that birds banded at Lord Howe Australia "have been recovered mainly in the water about Japan and Korea during the northern summer".

The Pale-footed Shearwater is a rare, non-breeding summer bird in waters off PRNP.

New Zealand Shearwater
Puffinus bulleri Salvin

J, F, M, A, M, J, J, Al, S8, O1, N, D = 10 records

Until fall pelagic birding trips were organized from Tofino by the Vancouver Natural History Society in 1969, very little was known of the occurrence and migration period of this dark-capped, light-bellied shearwater off the British Columbia coast. Campbell (1971b) summarizes observations made during the fall seasons of 1969 and 1970 and Campbell and Shepard (1972) list sightings for the fall of 1971. Presently, the New Zealand Shearwater has been recorded off the coast of Vancouver Island from 7 August 1926 (Nichols, 1927) through 7 October 1970 (JEVG). The largest flocks seen, about 25 birds, was on 26 September 1970 (RWC).

The New Zealand Shearwater, then, is regular (but uncommon) in fall off PRNP shores.

Sooty Shearwater (Le Puffin fuligineux)
Puffinus griseus (Gmelin)

J, F, M8, A4, M16, J21, J82, A48, S14, O4, N, D = 197 records

The Sooty Shearwater is the most abundant of our oceanic birds and each summer hundreds of thousands of these tireless fliers pass by PRNP. Unlike other shearwaters, "sooties" often come within binocular range of shorelines. Storms often force some birds inland along watercourses in Barkley Sound and

heavy fogs may temporarily "ground" flocks. At this time, if you approach slowly, the all dark birds can be watched swimming about in loose flocks picking up food items from the surface of the water.

This shearwater nests in New Zealand and Australia during our winter months (Bent, 1922; Slater, 1970), and migrates northward to the shores of the North Pacific in April and May, sometimes staying here until October. The circuitous route back to the breeding grounds is via Japan although the Pacific route is still not well understood. It has been recorded in waters off PRNP from 21 March (Martin, 1942) through 2 October 1971 (R.W. Campbell, personal communication). Numbers increase as summer approaches with maximum estimates of flocks being reported in July. Numbers decrease steadily in August, September and October. Maximum estimates of flock sizes for each month is as follows: March (few off Ucluelet, Martin, 1942), April (several thousand off Ucluelet, Martin and Myres, 1969), May (2000 off Tofino, Campbell and Shepard, 1972), June (1800 off Cleland Island, M.G. Shepard, personal communication), July (6000 past Cleland Island, M.G. Shepard, personal communication), August (2500 off Long Beach, Campbell, 1967), September (2500 off Tofino, Campbell and Shepard, 1972) and October (200 off Cox Point, RWC). It should be remembered that Sooty Shearwaters follow, and congregate, at sources of food, therefore where thousands are seen one day, there may be none on the next.

Our near-shore and inside passage records of this species in the PRNP follow (nearly all resulted from fog or gales forcing the birds from deeper offshore waters):

Sea-lion Rocks, 25 on 3 July 1967 (RWC) and 20 on 29 July 1972 (DFH); Quisitis Headland area, 15, 5 July 1972 (DFH); Great Bear Rocks, 50+, 9 September 1971 (IR); Loudoun Channel near Chow Islets, some, 8 July 1972 (DFH); Alley Rock area, 125 on 21 June 1970 (RWC) and 100+ on 6 July 1972 (DFH); Benson Island, 21, 21 July 1971 (JB); Cree Island, 150, 22 August 1970 (CJG); Folger Island, 30 on 29 August 1969 (CJG) and 50 on 24 July 1970 (RWC); Imperial Eagle Channel, 10 on 17 August 1967 (CJG) and 200 on 24 July 1970 (RWC); Pachena Bay, 10 August 1972 (AD); Michigan Creek, c600, 13 August 1971 (DFH, JB); Darling River, 50, 13 August 1972 (AD); Tsusiat Falls area, 100's, 16 August 1971 (DFH, JB).

The Sooty Shearwater is an abundant, non-breeding summer bird in waters offshore from PRNP; it is uncommon in all littoral waters.

Slender-billed Shearwater (Le Puffin à bec mince)
Puffinus tenuirostris (Temminck)

J, F, M, A, M1, J1, J3, A3, S, O, N, D = 8 records

Martin and Myres (1969) consider this species to be "rare or irregular off the British Columbia coast during the summer months". This statement is based on birds collected and observed by Guiguet (1953) off Goose Island in June and July. There are few other convincing records for the coast because of the difficulty in distinguishing this species from the Sooty Shearwater (The Slender-billed usually has dark wing-linings while the Sooty's are usually light). Godfrey (1966) states that there is much overlap in shades between the two species, therefore records should be carefully scrutinized before being accepted.

Single birds have been recorded off the west coast of Vancouver Island from 10 May 1970 (Campbell, 1970) to 9 August 1969 (CJG), the latter record (from Cree Island) being the only convincing record for PRNP area.

The status of this shearwater needs clarification, hence we consider it very rare (non-breeding) in summer in the PRNP area.

Manx Shearwater (Le Puffin Manx)
Puffinus puffinus (Brunnich)

J, F, M, A, M, J, J2, A1, S, O, N, D = 3 records

This southern California breeder has only rarely been recorded off the British Columbia coast. Godfrey (1966) lists two Vancouver Island records, made at Albert Head (24 October 1891) and Cape Scott (November, 1891). Martin and Myres (1969) report seeing one off Cape Scott on 15 July 1940 and Guiguet (1953) saw one

near Goose Island Bank (14 August 1948). The most recent record is supplied by Campbell (1967); one off Cleland Island on 24 July 1967.

The Manx Shearwater is a very rare fall bird in PRNP area waters.

Scaled Petrel

Pterodroma inexpectata (Forster)

This New Zealand visitor has been recorded by Campbell and Shepard (1973) about 15 miles off Flores Island, Vancouver Island on 24 February 1971, and this is the only known British Columbia sighting. These authors report that another bird was seen about 175 miles west of the Olympic Peninsula (Washington) on the previous day, and a specimen was found dead on a ship 315 miles off the Queen Charlotte Islands on 17 March 1972 (UBC 13685). Clearly, much remains to be learned about this species off shores of northwestern North America, and it seems best to list it as accidental for the PRNP area at this time.

**Fork-tailed Petrel (Le Pétrel à queue fourchue)
Oceanodroma furcata (Gmelin)

J, F, M, A, M2, J, J1, A6, S5, O, N, D = 14 records

Although this small bluish-gray petrel nests in small numbers on Cleland Island and Seabird Rocks in Pachena Bay, it is only rarely seen near shore in the PRNP area. All of our near-shore records for PRNP are:

Portland Point, 18 August 1967 (RWC); Clarke Island, one, 10 September 1971 (DFH); Fatty Basin, Useless Inlet, one dead, 28 March 1968 (DFH); Imperial Eagle Channel, 17 August 1967 (CJG); 21 August 1968 one (CJG); 10 September 1971, at least two (DFH); Barkley Sound, 23 August 1967 (CJG) and, 26 August 1964 (CJG).

The species is common offshore, however, especially near rich food areas. Martin and Myres (1969) have seen flocks of over 500 on La Perouse Bank on 21 August

1969; 40 were counted off Tofino on a pelagic birding trip on 31 July 1971 (RWC) and 1200 were estimated off Juan de Fuca Strait on 9 August 1970 (M.G. Shepard, personal communication).

Little is yet known about the nesting chronology of this species on the central west coast of Vancouver Island. Drent and Guiguet (1961) and later Guiguet (1971) have published accounts of breeding on Seabird Rocks and DFH found a nearly fledged nestling there on 24 July 1972. Breeding accounts for Cleland Island have been reported by Campbell and Stirling (1967). Fork-tailed Petrels are scattered about these nesting islands, usually under drift logs, and total nesting numbers are low compared to some colonies reported by Drent and Guiguet (1961) for the Queen Charlotte Islands.

Although common offshore (locally) during the summer months the Fork-tailed Petrel is rare in summer in littoral areas along the PRNP area.

**Leach's Petrel (Lé Petrel cul-blanc)
Oceanodroma leucorhoa (Vieillot)

Although this petrel breeds in large numbers on Cleland Island and Seabird Rocks in Pachena Bay, it is seldom seen close to shore. Unlike the Fork-tailed Petrel, which prefers cold coastal waters, Leach's is most often encountered far at sea where it feeds in the warmer waters. There have been no nearshore observations of this species in PRNP, although some may occur in the future on foggy days or perhaps in the early evening when adults are changing incubation responsibilities.

The only island within PRNP boundaries which supports breeding Leach's Petrels is Seabird Rocks in Pachena Bay (Drent and Guiguet, 1961). The size of this colony is estimated to be over 500 pairs (DFH). Information on nesting chronology is scanty at best. Guiguet (1971) reports a few nesting dates, including records of both eggs and young present in August of 1943 and 1945 (notes of T. Pearse) and a

brooding adult and fresh egg collected on 12 June 1970.

On 24 July 1972, DFH examined twelve burrows at widely separated locations on the island, with the following results:

1. Adult on an egg which was inadvertently broken; this egg was very nearly ready to hatch.
- 2, 4-11. Adults, probably on eggs, felt in burrow.
3. One cold egg.
12. Adult on an egg.

At Cleland Island, where the breeding population has been estimated to approach 5000 pairs, Campbell and Stirling (1967) checked twelve burrows on 24 July 1967, and found young in five and adults on eggs in seven. Of eleven burrows examined on 4 August, nine contained adults on eggs, and two each contained an adult and a young bird. Young birds still occupied burrows as late as 28 August. Of three occupied nest chambers checked on 30 July 1973 (DFH), two contained adults on eggs and there was a tiny, newly hatched young in the other.

Leach's Petrels probably return to these nesting islands in April--certainly they may be heard in numbers on most nights in early May (RWC, DFH). Egg-laying probably commences in about mid-May. The incubation period is said to be 41 to 50 days (Godfrey, 1966), and the first chicks hatch in July. However, as our data above show, many eggs have not yet hatched by late July or early August. Exact details on nesting chronology, hatching success, extent of renesting and other aspects of reproduction can be obtained only by very careful study. The fragility of the nesting habitat and the problem of obtaining data without causing undue disturbance of the birds constitute major stumbling blocks to such study. We do not recommend such a study on Seabird Rocks, where the colony is not large. The Leach's Petrel there can not be made available to public view and entertainment except to its detriment, and no data we can obtain will alter that fact. By simply preserving the habitat as part of the national heritage, in keeping with national park philosophy, we will be doing all we need to. The birds know how to live there, and don't need our advice.

Mention should be made of the finding of the wings and one foot of a Leach's

Petrel in brush on the south end of Florencia Island, 2 July 1972 (AD, DFH). An intensive search revealed no burrows, however, and no petrels were heard in the area during the night of 2-3 July; there does not appear to be a nesting colony there.

The Leach's Petrel is a locally common breeding bird in PRNP, but in summer, it will almost never be seen within park boundaries away from the breeding grounds.

Magnificent Frigatebird
Fregata magnificens (Mathews)

There have been unconfirmed reports of very large black birds with long narrow wings and deeply forked tails off the west coast of Vancouver Island within the past decade. These reports have come from commercial fishermen, especially those working the tuna grounds which occasionally swing in within a few miles of our coast during August of some years. It seems likely that vagrant birds might follow the warm California current northward into pelagic waters off British Columbia, and they could be seen here at irregular intervals. Future observers of this species should make detailed, on the spot field notes or, better yet, should try to obtain photographs.

In the PRNP area the Magnificent Frigatebird remains hypothetical.

Double-crested Cormorant (Le Cormoran à aigrettes)
Phalacrocorax auritus (Lesson)

J9, F7, M4, A6, M4, J1, J1, A5, S7, O16, N14, D11 = 85 records

This species breeds at several locations in the protected waters along southeastern Vancouver Island and Howe Sound (Drent and Guiguet, 1961), but there are no breeding records for our area. Indeed, summer records are few: 23 May 1969, one, and 9 May 1971, two, both at east Vargas Island (DFH); 2 May 1970, twelve at Tofino (RWC); 11 June 1971, one (DFH) and 2 July 1971, one (JB), both Thiepval

Channel; 21 August 1969, two collected in Bamfield Inlet (CJG); 29 August 1970, two near Haines Island (CJG); 7 August 1972, one at Baeria Rocks (DFH); 24 and 25 August 1972, one each near Camper Bay and near Hobbs Creek, respectively (AD). Richardson (1971) saw this species only from September through December, and in March, on northwest Vancouver Island.

Movement into the area apparently begins in September, but just one of our seven records for this month involve more than 2 birds: 1 September 1969, six on Helby Island (CJG). From October through April, Double-crested Cormorants may be seen in small numbers roosting in Tofino Inlet and other protected water areas with the two other local cormorant species: 24 November 1968, large flock of (about 120) cormorants, about 10 per cent Double-crested; 27 October 1969; four of 40 cormorants on rock near Wickaninnish Island are D-c; 30 October 1971, three D-c with about 30 Pelagic Cormorants on reef near Opitsat; 31 January 1972, four D-c on reef in Tofino Inlet with 15 Brandt's and 25 Pelagic; 29 November 1972, one of 30 cormorants are D.-c., reef near Opitsat (all DFH); 2 November 1972, eight Double-crested with 200 Brandt's and Pelagic (AD). As these records indicate, when this species occurs with the other species, it usually constitutes ten per cent, or less, of the birds present. It should be emphasized that most cormorant flocks do not contain this species.

The records already listed are sufficient to show that it may be seen in all three park units. In PRNP the Double-crested Cormorant is uncommon winter and is a rare non-breeder during the summer months.

**Brandt's Cormorant (Le Cormoran de Brandt)
Phalacrocorax penicillatus (Brandt)

J9, F5, M9, A12, M19, J41, J82, A30, S16, O16, N16, D13 = 268 records

This Pacific Coast species is the most abundant, locally, of our cormorants, being recorded in all areas of PRNP throughout the year. Large numbers of immatures roost on rocks, especially in Barkley Sound each summer and a very noticeable northward fall movement can be witnessed in July and August each year just offshore. The largest numbers we have recorded follow: 13 September 1969, about 1500 in Tofino Inlet (RWC); 20 July 1970, 1000+ on Great Bear Rocks (RWC, DFH); 15 December 1971, about 500 on Alley Rock (DFH), 14 June 1972, 800 roosting on Sea-lion Rocks (DFH), 4 July 1972, estimated 750 on Starlight Reef (DFH); 15 July 1972, counted 1600 flying northwest past North Beach (AD), 3 August 1965 to 29 August 1969, many small flocks moving northward past Barkley Sound (CJG).

The Brandt's Cormorant was discovered breeding in British Columbia, on Sea-lion Rocks, in 1965 (Stirling and Buffam, 1966). This pioneering group of breeders occupied this island in 1967 and 1968 (Campbell and Stirling, 1968) and gradually spread to establish small colonies, in some cases only temporarily on other local islets (White Island in 1969, Great Bear Rocks in 1970 and Starlight Reef in 1972). All breeding records for British Columbia (and Canada) are from these four rocky islands. The total Canadian nesting population (maximum number of nests recorded each summer) has ranged from 66 pairs to 150 pairs, distributed geographically as follows:

	WHITE ISLAND	SEA-LION ROCKS	GREAT BEAR ROCKS	STARLIGHT REEF	=	MAXIMUM NESTS
1965	0	110	0	0	=	110
1967	0	81	0	0	=	81
1968	0	68	0	0	=	68
1969	27	41	0	0	=	68
1970	0	43	107	0	=	150
1971	0	8	106	0	=	114
1972	0	50	0	80	=	130
1973	0	5	0	61	=	66

A more detailed account of breeding can be found in Table 1.

Unlike the Pelagic Cormorant, this species prefers to build its nests near the top of gentle sloping sides of islets rather than on cliff ledges. All colonies have been located on the lee side of islets with the exception of that on White Island in 1969. Here nests were built on the exposed west central side of the island. Nests are rather compact collections of assorted marine life, including Phyllospadix, torreyi, Zostera marina, coralline algae and small bits of driftwood, and are usually covered with guano which collects on the sides of the nest as the season progresses.

From north to south, our known colonies are:

1. White Island

This islet will be described in the Pelagic Cormorant account, since it is used for nesting primarily by that species. That Brandt's Cormorants might breed on White Island was first suspected in 1968 when numbers of adults and immature birds were found roosting there. The following year, on 4 August,

Table 1. Brandt's Cormorant nest survey results,
Pacific Rim National Park area,
1965-1973

Location and Date	No. Nests	No. Eggs	No.		Remarks ¹ (Observers)
			Young	Adults	
WHITE ISLAND					
30 July 1968	0	0	0	0	300 adults and immatures roosting on island (RWC).
4 August 1969	27	25	0	0	Colony on central west (sea) side of top of island. Empty-16, 1E-3, 2E-2, 3E-6 (RWC, ECC). No evidence of nesting but heavy whitewash indicating roosting cormorants (RWC, DFH, CJG). No evidence of nesting; 60 immatures present (DFH, JB). No evidence of breeding (DFH, AD).
28 June 1970	0	0	0	0	
2 July 1972	0	0	0	0	
2 August 1973	0	0	0	0	
SEA-LION ROCKS					
26 July 1965	110	174	121	0	First breeding established for British Columbia (Stirling and Buffam, 1966). Pelagic Cormorants now nesting on Island. Empty-20, 1E-8, 2E-12, 3E-29, 4E-12 (Campbell and Stirling, 1968). Pelagic Cormorant colony has doubled in size. Empty-8, 1E-5, 2E-12, 3E-29, 4E-13, 5E-1 (RWC). Pelagic Cormorant colony equal to 1968 counts. Empty-4, 5E-1, 1Y-3, 2Y-8, 3Y-13, 4Y-8, 5Y-3, 6Y-1 (RWC, DFH, LR). Six freshly predated eggs found among colony (RWC, DFH, CJG). Empty-40, 3E-2, 4E-1 (WAV). Adults present but no eggs (DFH, JB). No adults present on island but 50+ took off from water (DFH). Nests counted from boat (DFH). Empty-10, 1E-19, 2E-17, 3E-4 (DFH). Empty-5, 1E-1, 2E-6, 3E-11, 4E-3, 1E1Y-1, 1Y-1, 2E1Y-1, 2Y-1. All young just hatched (DFH). No nest count due to possible disturbance to large young. Count from boat (\pm 10%). Adults seen carrying nesting materials about 21 June (JH). Some birds on nests. Only four birds seen on nests from boat (JH). Empty-2, 1E-1, 2E-1, 3E-1 (DFH, AD).
3 July 1967	81	167	0	0	
30 June 1968	68	173	0	0	
27 July 1969	41	5	111	0	
27 June 1970	43	0	0	0	
4 August 1970	3	10	0	0	
10 August 1971	8	0	0	0	
19 May 1972	0	0	0	0	
29 June 1972	47	0	0	0	
2 July 1972	50	65	0	0	
29 July 1972	30	61	5	0	
7 September 1972	-	-	29	0	
6 July 1973	-	-	-	-	
26 July 1973	4	-	-	-	
2 August 1973	5	6	-	-	
GREAT BEAR ROCKS					
20 July 1969	0	0	0	0	Several hundred immatures and a few adults roosting on islet (RWC).

Table 1. (continued)

Location and Date	No. Nests	No. Eggs	No. Young	Remarks ¹ (Observers)
Great Bear Rocks (cont'd)				
24 July 1970	61	188	0	First nesting: Empty-7, 2E-1, 3E-27, 4E-25, 5E-1 (RWC, DMH).
25 August 1970	107	41	130	Empty-49, 1E-1, 2E-6, 3E-4, 4E-3, 6E-2, 2E2Y-1, 1Y-3, 2Y-8, 3Y-17, 4Y-11, 6Y-2 (RWC, ECC, MGS, DB).
20 July 1971	98	77	0	Nest-building completed and Egg-laying well started.
9 August 1971	106	170	1	Empty-63, 1E-10, 2E-12, 3E-9, 4E-4 (DFH, JB). Egg-laying completed, hatching commenced. Empty-37, 1E-11, 2E-24, 3E-25, 4E-9, 1Y-1 (DFH, JB).
9 September 1971	87	19	93	Most nests contained young, 2 to 3 weeks old.
6 July 1972	0	0	0	Empty-29, 1E-3, 2E-3, 3E-2, 1E1Y-2, 1E2Y-1, 2E2Y-2, 1Y-11, 2Y-25, 3Y-8, 4Y-1 (JR, EO).
26 July 1972	0	0	0	No evidence of nesting (DFH).
29 July 1973	0	0	0	No evidence of nesting (DFH). No evidence of nesting (DFH, RWC).
STARLIGHT REEF				
24 July 1970	0	0	0	About 80 non-breeding birds on island and two adults. No evidence of breeding (RWC, DMH).
13 June 1972	0	0	0	About 100 birds on island; four seen carrying nesting materials (DFH).
4 July 1972	41	3	-	Just beginning egg-laying. Empty-38, 1E-3 (DFH).
7 September 1972	80	0	106	Most young in one big tight "herd" and mobile. Two nests of young less than four days old (DFH, AD).
29 July 1973	61	118	0	Some nests still incomplete, most clutches not complete. Empty-15, 1E-3, 2E-21, 3E-16, 4E-5, 5E-1 (DFH, RWC).

¹ Empty=number of nests still being constructed and for those which are complete but empty; 1E, 2E...6E=number of nests containing 1 egg, 2 eggs...6 eggs; E/Y=Egg/young clutches (usually those in the process of hatching) and 1Y, 2Y...5Y=1 young, 2 young...5 young. (number of nests containing only young).

27 nests were found near the top of the islet, on the central west (sea) side. This position is atypical as all other colonies are located on the protected (lee) side of islets. This may help to explain why Brandt's nested only in 1969 on White Island. The results of our nest checks on White Island, and other islands, are listed in Table 1.

2. Sea-lion Rocks

The first Canadian breeding colony of Brandt's Cormorants was discovered on the largest islet in this complex on 26 July 1965 (Stirling and Buffam, 1966). Since then, fourteen visits have been made to the colony (at least one count each year to 1973), the results of which are listed in Table 1.

The colony was situated near the top of the northeast corner of the largest islet, on gentle sloping sides. Pelagic Cormorants occupied the more precipitous cliffs (ledges) immediately below this area. The size of the colony has been decreasing steadily since 1965 at which time 110 nests were counted. It is possible that Pelagic Cormorants were also nesting here at this time and may have been overlooked. Eight years later, only a handful of nests were found on Sea-lion Rocks. In the past the larger islets have been disturbed by well-meaning but uninformed park visitors, occasionally "bombed" by fixed-winged aircraft, and fishermen have been watched shooting sea-lions. This may, in part, be responsible for the decline in numbers. It is unlikely that daily boat trips around the islet for park visitors has much disturbance effect on nesting birds, since no one is permitted to land on the islets.

3. Great Bear Rock

This colony, discovered on 24 July 1970 (RWC, DMH) supported fairly large numbers of nesting Brandt's Cormorants for only two years. As Table 1 shows, no birds were breeding here in 1972 or 1973. The colony was situated

on the northeast corner of the largest islet, photographs of which (PDF 11) are on file in the B.C. Provincial Museum. Nest materials were typical, but the slope on which nests were placed was somewhat steeper and higher than other nesting colonies.

Large nestlings were banded on 25 and 28 August 1970 (series 587-77394 to 587-77400 and 587-77601 to 587-77700) and 9 September 1971 (series 587-77821 to 587-77882). In all, 169 birds were banded.

4. Starlight Reef

This bare, rocky islet was first used for nesting in 1972 (DFH) where on the final visit on 7 September 106 young were counted for the 80 nests (mean=1.3 per nest). The following year, on 29 July (DFH, RWC) 61 nests containing 118 eggs were tallied. Again the colony was located on the lee side of the main islet, on the flat top of a small pinnacle.

Table 1 lists the sizes of colonies reported above, with some information on stages of nesting period. A short discussion of nesting chronology follows.

Nest-building probably takes place mainly in late June. Adults have been seen carrying nesting materials as early as 13 June and complete clutches have been recorded on 30 June. Some nest-building and egg-laying, however, takes place in July. This may be by birds that have been disturbed on other colonies, or by local re-nesters. First young have been reported on 26 July, the latest near-fledged young being recorded on 7 September. Some young probably frequent the islets in late September and early October.

To date only three percent of the 169 birds banded on Great Bear Rocks in 1970 and 1971 have been recovered. Information is as follows:

BAND NO.	DATE BANDED	LOCATION OF RECOVERY	DATE OF RECOVERY
587-77801	25 August 1970	Commencement Bay, Washington	9 January 1971
587-77400	25 August 1970	North Cove, Washington	17 January 1971

BAND NO.	DATE BANDED	LOCATION OR RECOVERY	DATE OF RECOVERY
587-77864	9 September 1971	Long Beach, B.C.	9 November 1971
587-77851	9 September 1971	Lake Earl, California	26 December 1971
587-77871	9 September 1971	Grayland Beach, Washington	April 1972

In PRNP, the Brandt's Cormorant is a common resident.

**Pelagic Cormorant (Le Cormoran pélagique)
Phalacrocorax pelagicus Pallas

J10, F11, M17, A21, M36, J67, J73, A22, S26, O23, N14, D6 = 326 records
(exclusive of
nesting records)

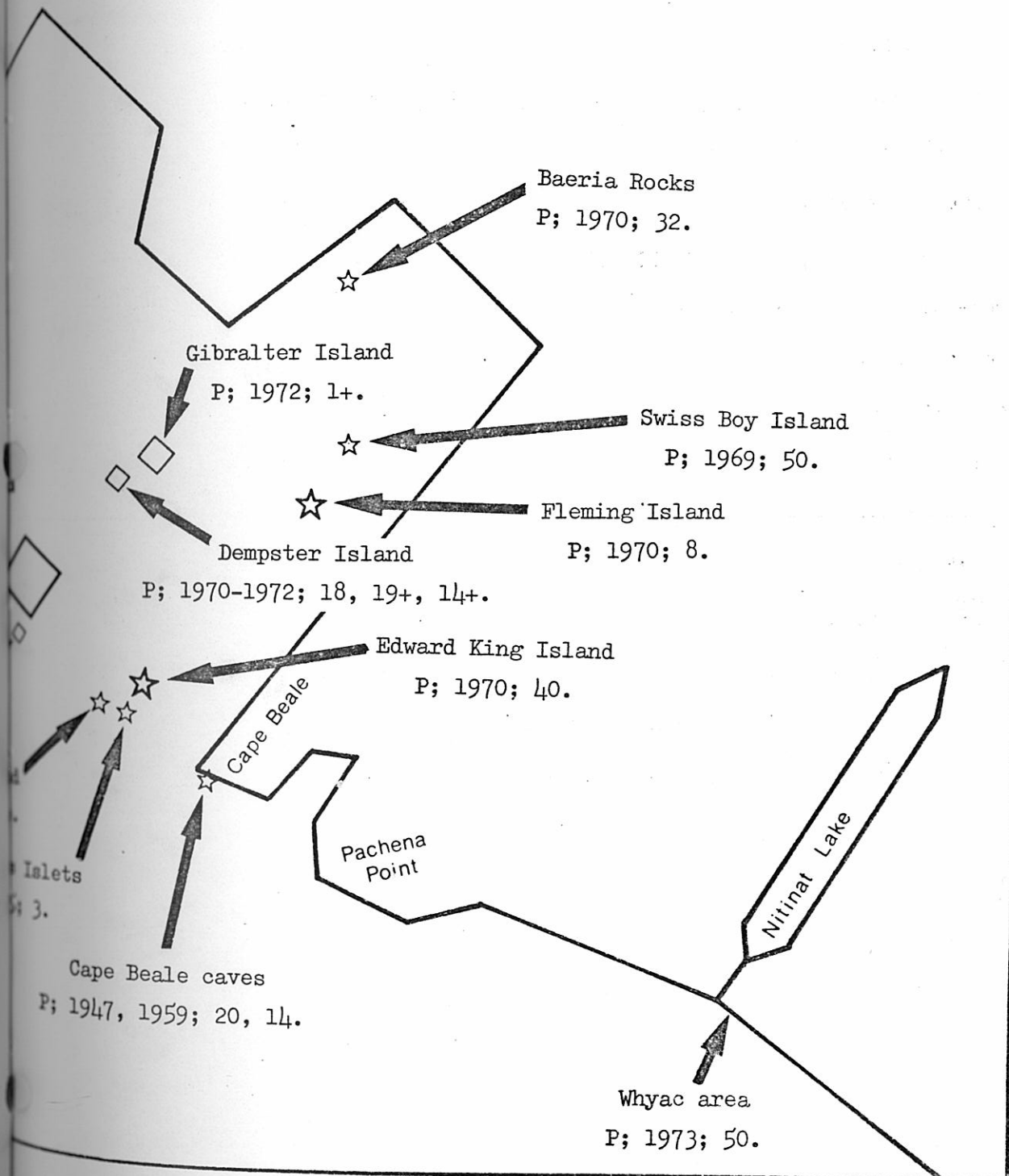
This is the most widely distributed, locally, of our cormorants, with sightings being made regularly throughout the year over all park shores from Port Renfrew north to Tofino. Despite its name, it seems less pelagic than its larger relative, the Brandt's Cormorant, a fact also suggested in the notes of Martin and Myres (1969). Concentrations of cormorants on offshore rocks such as Starlight Reef, Great Bear Rock, and Cleland Island are often predominantly Brandt's, while those in the protected waters of Clayoquot Sound and among the Broken Group Islands are usually largely Pelagics. This does not imply that Pelagic Cormorants require quiet water for, as will be shown, the nesting situation of this species is typically more rugged than is that of the Brandt's. Again, the Pelagic Cormorants are simply more widely distributed than the Brandt's, occurring in both protected and open habitats but usually in relatively small numbers. The largest numbers we have recorded follow:

13 September 1969, about 200 in Tofino Inlet (RWC); 11 June 1972, 125+ with 2 Brandt's, Strawberry Island (Tofino Inlet) (DFH); 6 June 1972, 60+ near mouth Ucluelet Harbour (DFH); 27 June 1970, about 80 on Sea-lion Rocks (DFH, RWC); 20 June 1972, 67 on "Cormorant Rock" (breeding cliff near Wickaninnish Inn, AD).

When viewing conditions are reasonable, the two species are easily

distinguished. It should be noted that the conspicuous white flank patches of the Pelagic Cormorant are present only during the breeding season. The earliest record of breeding plumage birds is on 7 February 1970 (two birds at Vargas Island) while several individuals at Baeria Rocks were still in this plumage on 9 August 1971 (DFH). It is not known how long individuals keep the white flank patches. When not in breeding plumage, the Pelagic Cormorant may still be identified by its smaller size (about two-thirds) when in company with Brandt's, by its relatively thin bill, and often, when seen in profile as it often is, by the presence of a crest on its head. In good light, a situation which rarely pertains during many months on this coast, the absence of a buffy cheek patch and/or the presence of red around the gular regions are diagnostic. Further, birds seen roosting or nesting on narrow cliff ledges such as that on south Indian Island (see Hatler, 1973), Monk's Bluff in Tofino, Felice Island near Tofino, Cormorant Rock, and southwest Effingham Island are certainly this species.

We haven't much anecdotal information about this species other than some notes on food habits: A specimen shot illegally by a hunter (21 January 1971, Vargas Island) had 10 small fish in its stomach, including eight gunnels (Pholidae) and/or pricklebacks (Sticheidae), one sculpin (Cottidae), and an unidentified, partly digested fish thought to be an immature ling cod (Ophiodon elongatus) (DFH); 19 April 1971, an adult in breeding plumage tried to take off at the observer's approach (near Hand Island), and apparently feeling over-substantial, paused to regurgitate several small (90-100mm) unidentified sculpins (DFH); 26 January 1972, Ucluelet Inlet, one caught and ate a bright red gunnel, probably Apodichthys flavidus, about 150mm long (DFH); 28 June 1970, an adult cormorant among the nesting colony on White Island regurgitated 87 Pacific Sandlance (Ammodytes hexapterus), the average length of which was 76mm (RWC).



Baeria Rocks
P; 1970; 32.

Gibraltar Island
P; 1972; 1+.

Swiss Boy Island
P; 1969; 50.

Fleming Island
P; 1970; 8.

Dempster Island
P; 1970-1972; 18, 19+, 14+.

Edward King Island
P; 1970; 40.

Cape Beale

Pachena Point

Nitinat Lake

Whyac area
P; 1973; 50.

Ialets
P; 3.

Cape Beale caves
P; 1947, 1959; 20, 14.

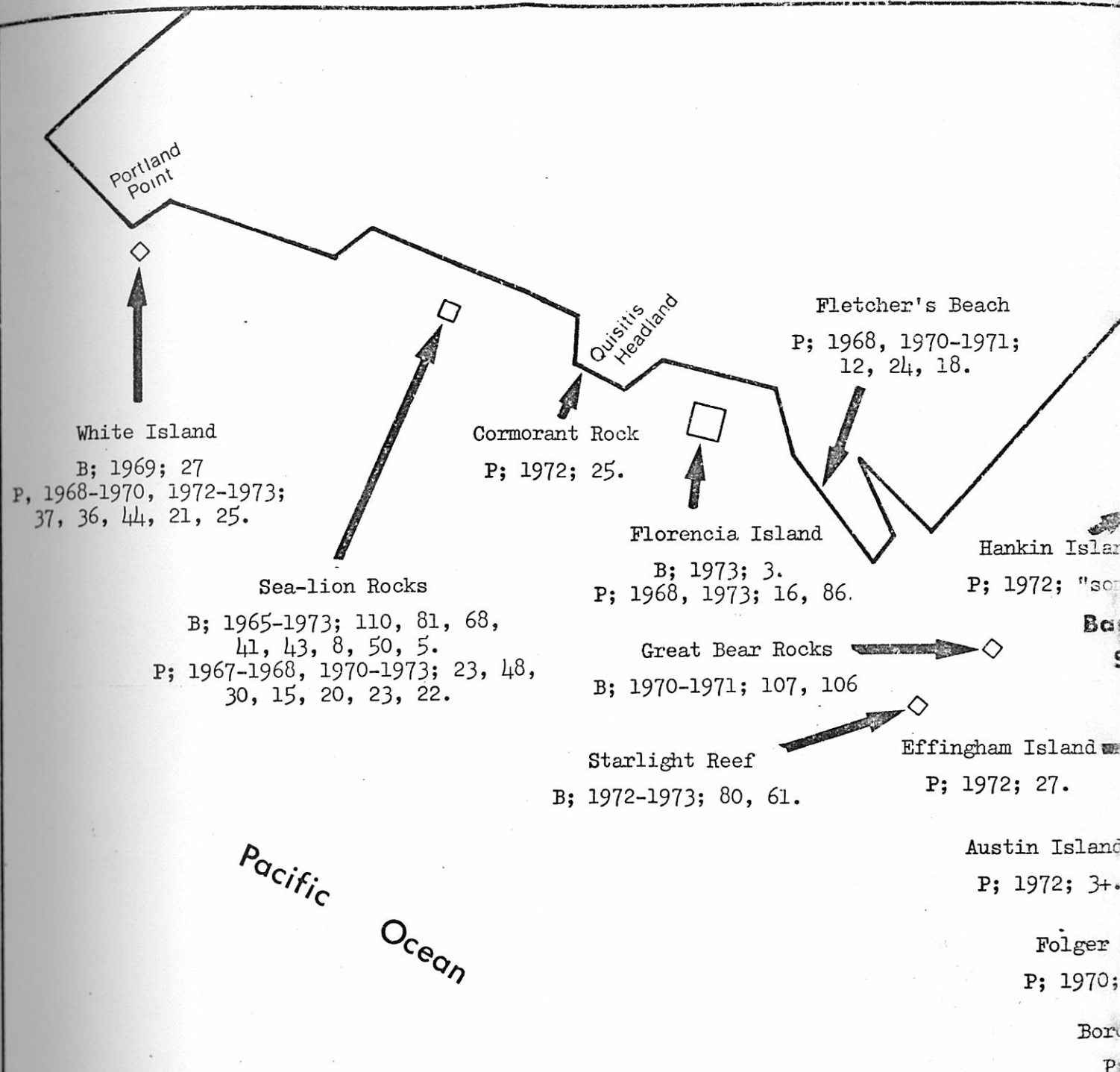


Figure 2. Distribution of cormorant nesting colonies in the Pacific Rim National Park area. Open boxes are sites examined in this study and open stars are those reported by Guiguet (1971). P=Pelagic Cormorant and B=Brandt's Cormorant. The number of nests in each year of study are given.

There are a number of known Pelagic Cormorant nesting locations in the PRNP area, and the history of these, as recorded in the literature and in our notes, is given here. Summarily, the rugged cliffs, sea-caves and deep surge channels with their slippery footing and rushing waters--all anathema to the coast hiker--are home to the Pelagic Cormorant.

The nest of this species is typically a mud and guano bowl, reinforced with aquatic vegetation (Fucus, Zostera, Phyllospadix) and lined with coarse materials such as sticks, primary feathers (gull or cormorant), and coralline algae. Some nests on a cliff at Effingham Island also contained land vegetation including grasses and the fern Polypodium scouleri. Both of these plants were accessible only a few meters above the nest sites which used them. The eggs of both this species and the Brandt's Cormorants are pale blue and are much longer than wide, but the Pelagic's eggs average somewhat smaller than the Brandt's (Bent, 1922). From north to south, our known colonies:

1. White Island

This small, rocky, unvegetated islet just southeast of Portland Point (see Figure 2) is un-named on local charts, but because it usually shows white in summer from layers of cormorant guano, it was dubbed "White Island" by Campbell (1968) and will be referred to by this name throughout this report. Nesting Pelagic Cormorants were first discovered there on 30 July 1968 (RWC), and have been censused subsequently during the nesting seasons of 1969 (RWC,ECC), 1970 (RWC, DFH), and 1972 (DFH, AD). As the diagram in Figure 11 shows, topographical features separate the colony into three small sub-colonies P1, P2, and P3. Nests in P1 have been located on available narrow ledges of the cliff face comprising the south wall of a deep surge channel. The nesting situation in P2 is similar, but in this case it is the north wall of the surge channel that is occupied. The nests in P3 are located on ledges just above

high water line and under a rock overhang on the lee side of the islet. The results of our nests checks on White Island are listed in Table 2.

The nesting effort on White Island during the first three years of observation was rather stable in terms of numbers of nests and of potential fledglings (eggs plus young) per nest (2.8, 3.1 and 3.2 for 1968, 1969, and 1970 respectively). Note that the 1970 visit was over one month earlier than those of 1968 and 1969, and the birds probably had not yet suffered much normal nest mortality. The low nest count on 2 July 1972, with just 2.5 eggs per nest, may have resulted partly from the late spring during that year (unpublished data), but was more likely due to disruption and/or egg removal caused by human egg collectors which were seen on the island on 24 June 1972 (AD). This event will be discussed in the section on seabird colonies. Note also that the P2 area, which was the main colony in 1969, was scarcely used in 1970 and 1972 and P1 became the main nesting area during these years. The reason for this change is not known.

2. Sea-lion Rocks

Pelagic Cormorants were first recorded as nesting on Sea-lion Rocks on 3 July 1967 (Campbell and Stirling, 1968). Since then we have obtained at least one count during each of the years 1970-1972, as shown in Table 2. Results of these counts are given below:

In 1972, a final visit to the area was made on 7 September (DFH), at which time there were at least 13 large, nearly fledged young present. The main nesting area below the Brandt's Cormorant colony could not be checked, however, for fear of stampeding the entire year's production of young Brandt's into the sea, thus this figure is minimal. Generally, Sea-lion Rocks supports 20 or more nesting pairs of Pelagic Cormorants, but the 1968 count indicates that this figure may more than double in good years. The nest sites at Sea-lion

Table 2. Pelagic Cormorant nest survey results,
Pacific Rim National Park area
1968-1973.

Location and Date	No. Nests	No. Eggs	No. Young	Remarks ¹ (Observers)
WHITE ISLAND				
30 July 1968	37	80	24	(RWC) Number of nests in 3 sub-areas: P1=8, P2=23, P3=5; Empty-4, 3E-2, 4E-3, E+Y-5, Y-22 (RWC)
4 August 1969	36	27	86	Number of nests in 3 sub-areas: P1=38, P2=2, P3=4; Empty-4, 1E-1, 2E-4, 3E-13, 4E-18, 5E-4 (RWC, DFH).
28 June 1970	44	140	0	Number of nests in 3 sub-areas: P1=21, P2=0, P3=0; Empty-3, 1E-2, 2E-1, 3E-11, 4E-4 (DFH, AD).
2 July 1972	21	53	0	Number of nests in 3 sub-areas: P1=25, P2=0, P3=0; 2E-2, 3E-7, 4E-4, E+Y-5, Y-7 (DFH, AD)
2 August 1973	25	49	34	
SEA LION ROCKS				
3 July 1967	23	67	0	1E-2, 2E-6, 3E-8, 4E-6, 5E-1, (RWC, DS).
30 June 1968	48	116	0	Empty-10, 1E-4, 2E-7, 3E-11, 4E-15, 5E-1 (RWC)
27 June 1970	30	0	0	All nests empty (RWC, DFH, CJG).
10 August 1971	15	31	10	1E-2, 2E-4, 3E-3, 4E-2, E+Y-3, Y-1. Young newly hatched to about half-grown (DFH, JB).
2 July 1972	20	41	0	Empty-3, 1E-4, 2E-3, 3E-9, 4E-1 (DFH, AD).
29 July 1972	23	33	13	Empty-5, 1E-1, 2E-3, 3E-2, 4E-3, E+Y-6, Y-3. All but 2 young less than 5 days old (DFH, MEH).
2 August 1973	22	37	17	Eggs just now hatching; Empty-5, 2E-2, 3E-3, 4E-2, E+Y-8, Y-2 (DFH, AD, JC).
CORMORANT ROCK				
30 June 1972	c25			Nest counts only from shore (AD). See text.
1 August 1973	0			No sign of nesting this year (AD).
FLORENCIA ISLAND				
2 August 1968	16	38	0	Empty-5, 3E-6, 4E-5 (RWC).
GIBRALTER ISLAND				
17 June 1972	1+?	?	0	See text (DFH).
DEMPSTER ISLAND (a)				
8 August 1971	10+	?	20	Empty-2?, Y-8. All young half-grown or larger (DFH, JB).

Table 2. (continued)

Location and Date	No. Nests	No. Eggs	No. Young	Remarks ¹ (Observers)
Dempster Island (a) (cont'd)				
17 June 1972	14+	10+	0	Empty-3, 1E-1, 3E-3 (only 7 nests accessible) (DFH, MEH).
23 July 1973	?			23 adult birds seen at cave (JC).
DEMPSTER ISLAND (b)				
8 August 1971	9+	23+		Empty-1, 1E-1, 2E-3, 3E-1, 4E-2, 5E-1. Other nests likely present but inaccessible (DFH, JB).
23 July 1973	?			15 Adult birds seen at cave (JC).
EFFINGHAM ISLAND				
6 July 1972	27	40	2	Empty-7, 1E-3, 2E-1, 3E-3, 4E-6, E+Y-1 (only 21 accessible (DFH)).
23 July 1973	?			Colony not found. May be gone (JC).
AUSTIN ISLAND				
17 September 1971	?	?	12	All young fledglings; no nests seen (JB). See text.
6 July 1972	3+	?	?	See text (DFH).
23 July 1973	?			No cormorants observed entering or leaving cave (JC).
CAPE BEALE				Three or more colonies have been seen in this area (Guiguet, 1971). See text.
NITINAT AREA				
June 1973		c50		Eggs, but no young, seen (JC, BBC, WG).

¹ Empty-n=number of nests still being constructed and/or those which are complete but empty; 1E, 2E....5E= number of nests containing 1 egg, 2 eggs....5 eggs; E+Y=number of nests containing both eggs and young (usually those in the process of hatching, but occasionally nests containing large young and dead eggs); Y=number of nests containing only young (all sizes).

Rocks are situated at two locations on the northeast end of the largest islet. Most of the birds (14 of 15 nests in 1971 and 14 of 20 in 1972, DFH) nest at the edge of the cliff and on ledges on the walls of a surge channel below the Brandt's Cormorant colony. Other nests are usually located on ledges along the bluff on the extreme northeast corner of the islet (see Figure 12.)

3. Cormorant Rock

This is a new colony established during the summer of 1972. It is located just north of Quisitis Point (see Figure 2) and consists of a large, single rock rising out of the water 30 - 40 feet in a sheer cliff face on the north-facing side, and with a more rounded slope facing south. The cormorants, nesting on ledges on the cliff face, were discovered by two observers independently (NR, AD), both of whom assert that the birds were not present there in 1971. Spotting scope counts from shore yielded 19 nests on 20 June and 25 on 30 June (AD). On 2 July an attempt was made to examine these, but only four were accessible; one was empty and three contained three eggs each. Most of the nests were high on the cliff, but under the protection of a rock overhang, and they could not even be seen from above. For reasons unknown this site was not used by nesting cormorants in 1973.

4. Florencia Island

On 2 August 1968, there were 16 nests on the cliffs comprising the northwesternmost point of this island (RWC). Florencia Island has been visited, since then, on 28 June 1970 (RWC, DFH) and 2 July 1972 (DFH, AD), but there has been no sign of nesting cormorants in either year.

5. Hankin Island

There was apparently a colony of unknown size in a narrow surge channel on the south side of this island in summer 1972 (AH, JC). No details are available.

6. Gibraltar Island

A single nest was seen at the mouth of a low cave near the southwest tip of Gibraltar Island on 17 June 1972 (DFH). It is not known whether more were present, but the apparently small size of the cave would make it unlikely that there would be many.

7. Dempster Island

Guiguet (1971) has reported the presence of nesting Pelagic Cormorants in sea caves on the southwest (he said east) end of this island. He estimated that there were 18 nests in these caves, but was unable to examine them because of heavy seas. On 8 August 1971, on a relatively calm day, and near low tide, we (DFH, JB) examined these cave nests. There are two nesting caves: the largest, to the south ("a" in Table 2), has an entrance about 5m wide and 3-4m high using the high water mark as a reference point. The cave ceiling becomes considerably higher inside for most of the cave's length, but slopes down to within 2m of the floor, a beach of rounded boulders at the head of the cave. A narrow passage leads from the drift debris on this beach out into the vegetated part of the island. Total cave length is estimated as about 50-60m, and the walls are pink with encrusting bryozoans. To paddle quietly into the darkness of this cave, amid the peculiar Halloween-ish moans of the adult cormorants, and with occasional birds swishing by within inches overhead, is one of the most spectacular ornithological experiences which Pacific Rim National Park has to offer. A flashlight census on the occasion of our first visit revealed a minimum of ten nests; there were some in crevices on and near the cave ceiling, as evidenced by exit of birds from them, but no counts could be obtained. The 10 visible nests were on ledges of the right-hand (south) wall near the head of the cave and these contained large young, half grown or somewhat larger (Table 2).

This cave was visited again on 17 June 1972 (DFH, MEH) on a very low

tide, at which time we could wade on the cave floor near the head. There were at least 14 nests present, of which only seven were accessible. It appeared that nesting activity was not far advanced at this time. A minimum of 9 fledglings were seen in the cave on 15 September 1972 (DFH).

The left-hand cave ("b" in Table 2), just adjacent to that discussed above, is much smaller and narrower, with only about 1m of clearance 30-40m back. On the 1971 visit we found a minimum of 9 nests (Table 2) on ledges at the right side of the entrance, and two birds flew out of a crack in the ceiling. This cave, which came to be called the "Blowhole Cave" had a most incredible atmosphere. Even on a calm day, with each tidal surge, water funnels into the ever tightening channel and produces a "whoosh" which generates a nearly ear-splitting vacuum and a perpetual mist. It was thought that young birds raised in that cave must find the outside world a curiously mild place on their first emergence. Probably, however, the moisture and pressure changes are not as bothersome to these deep-diving birds as they were to us. There was no evidence of birds using the blowhole cave on 17 June 1972, but it is possible that they did so later in the year, as on 15 September an adult was seen to fly from it (DFH).

8. Effingham Island

On 20 June 1972, cormorants were reported flying in and out of a "cave" on southwest Effingham Island (AH). This site, which was visited on 6 July (DFH), is more a rock overhang than a cave, and the cormorants are nesting on ledges near and crevices in the ceiling of this. There were a minimum of 27 nests on the July visit and just 21 of these were accessible. The only young birds seen were two tiny pink chicks in one nest, and they had clearly just hatched that day.

9. Austin Island

On 17 September 1971, 12 fledglings were seen in and near the mouth of a cave on the south side of Austin Island, just off the bow of the Shipwrecked Vanlene (JB). On 6 July 1972, three nests were seen near the entrance of this cave and more were believed present, but heavy seas made entrance impossible (DFH).

10. Cape Beale

Guiguet (1971) flushed a pair in breeding plumage from a cave near Keeha Bay and assumed nesting there, and had reports (see Drent and Guiguet, 1961) of 20 nests in a cave near the lighthouse in July 1947 and 14 nests at the lighthouse itself in July 1959.

11. West Coast Trail

From 10-22 August 1971, all of the West Coast Trail (DFH, JB) and throughout August 1972 the trail from Pachena Bay to Tsusiat in the north and Port Renfrew to Camper Bay in the south (AD) were covered on foot. Small groups of Pelagic Cormorants were recorded at several locations but no definite nests were seen. On 17 August 1971 a rock offshore from Carmanah Point was studied through binoculars for some time, and "nesting?" was recorded for the 25+ birds seen there. No evidence of nests there was seen from the air a month later (DFH, Sea Mammal Census flight, 17 September 1971), but this was probably too late in the season to be conclusive. Despite our lack of evidence, we are almost certain that nesting colonies exist on some, perhaps many, of the inaccessible rocky headlands in this park unit. Recently, in June 1973, a colony with 50 or more nests was discovered, by boat, in a surge canal on a headland just south of Whyac (JC, BBC, WG). Doubtlessly more will be found in years to come.

We are aware of no other documented Pelagic Cormorant colonies

in PRNP, but there are others in adjacent waters. There is a small colony nesting on the walls of a large surge channel near Fletcher's Beach (just south of Wya Point, see Figure 2). It is of particular interest in that the type of habitat used is duplicated many times along the rugged shores of PRNP. Clearly, Pelagic Cormorants are not occupying all of the potentially suitable nesting areas within the park. The Fletcher's Beach colony was discovered on 14 August 1968 (RWC) at which time there were 12 nests present. There were 24 nests on 9 July 1970 (DB), and at least 14 on 18 July 1971 (DFH, JB). Birds in breeding plumage were seen flying from the nest area on 3 July 1972, but no nest count was attempted (DFH, AD). Our examinations of this colony are not indicated in Table 2 .

Guiguet (1971) has listed several other nesting sites of this species, mostly among the Deer Group Islands of Barkley Sound near Bamfield, but also on Baeria Rocks in Imperial Eagle Channel, near the head of Barkley Sound.

Figure 2 provides a visual summary of the locations and approximate sizes of colonies reported in the preceding pages. From the data under "remarks" in Table 2 , one can deduce the following about the breeding schedule of this species in our area. Nesting usually begins in mid to late June and through about the first week in July, nests contain only eggs. The earliest young seen were two, tiny pink chicks at Effingham Island on 6 July 1972. Despite a relatively short incubation period of 26 days (Bent, 1922), there may be more eggs than young as late as the end of July; this is probably due mostly to relaying following nest losses throughout the nesting period (see Robertson, 1971). Cormorants are apparently persistent, though inefficient, parents. A visit to a cormorant colony in late July and August is likely to result in observation of chicks of all sizes to half grown and incubating eggs. Most fledging appears to occur in late August and early September, but undoubtedly some birds leave earlier.

In PRNP, the Pelagic Cormorant is a common resident.

*Great Blue Heron (Le Grand Héron)
Ardea herodias L.

J9, F6, M9, A9, M8, J17, J19, A27, S16, O13, N8, D12 = 150 records

This long-necked wader is a common sight in the shallows of quiet waters over the whole park area. Our earliest recorded sighting is of an individual in the Chesterman Beach area on 8 May 1931 (IMcTC). Most sightings are from the Tofino Inlet area, where several birds may sometimes be seen hunting together: 9 July 1966, six at mouth of Lemmen's Inlet (FB); 2 July 1969, 12 on Beck Island mudflats (DFH); 29 July 1969, 13 near Stone Island (DFH); 13 October 1972, 35 in Arakun Islands area at mouth of Lemmen's Inlet (DFH). These birds are also occasionally seen in protected bays and coves on the open coast: Portland Point area, three sightings of single birds in July and August 1967 (RWC), and one of two birds on 6 August 1971 (NR); Great Bear Rocks, 25 August 1970 (RWC); Pachena Point area, one on 24 March 1968 (RWC) and another on 14 August 1972 (AD); just north of Carmanah Lightstation, one on 24 October 1972 (AD, DFH).

The species is also common, but not abundant, in the Broken Group Islands: Turtle Island Group, one or two individuals may be seen daily throughout the year (JW, DFH); Hand Island, one on 9 August 1969 (DFH); Effingham Island, one heard on 20 June 1971 (DFH) and one seen in flight over Imperial Eagle Channel nearby on 19 September 1971 (JB); Gibraltar Island (one) and Nettle Island (one) on 15 September 1972 (DFH). The birds are often seen near or in fresh water streams and sloughs as well: 27 July 1970, one in creek near Sugsaw Lake (RWC); 29 October 1970, one feeding on spawned-out salmon in the Atleo River (DFH); 17 August 1971, seven seen along Cheewhat River from aircraft

(DFH), 21 September 1971, two in Pachena River (DFH, JB); 6 August 1972, one in Michigan Creek (AD).

Although we have heard rumours of a nesting rookery of herons on Turtle Island, we have not discovered it. Further, there do not seem to be enough birds in the central Broken Group to arouse suspicions that any major nesting concentrations occur nearby. Individuals may nest at various locations in the park, however. Judging from the regular occurrence of birds hunting in the Arakun Flats and other locations of southern Clayoquot Sound (see Hatler, 1973), we would suspect a rookery somewhere in this vicinity, and birds have often been seen flying east high over Port Albion near Ucluelet (DFH), perhaps to a rookery somewhere in the MacMillan-Bloedel lands in that area.

We have several anecdotal observations involving this species:

1. Night hunting-On 16 November 1970, in Sulfur Passage, Millar Channel north of Tofino, a heron was watched by flashlight for several minutes as it hunted in the low tide shallows (DFH). The night was completely dark, with a cloud cover although the moon shone through a break in the clouds for a brief period near the end of the observation; the heron, when first seen, was in water over its tarsi and was in typical hunting stance, neck outstretched and head slightly cocked. It struck and caught something seconds after first being seen, but caught only one more item in the 21 minutes during which it was watched, although it took the "frozen, alert" stance, without striking, on eight or nine other occasions. There was considerable bioluminescence in the water during the night of this observation, and it is possible that the bird was seeing prey mainly through clues provided by this agency. However, birds have also been seen night-hunting in areas and at times when phosphorescent organisms were not so prevalent: 12 December 1970, one hunting from a reef near wharf on Tofino waterfront (some faint light provided from windows of

nearby houses) and one seen hunting in complete darkness on Arnet Island, Tofino Inlet (DFH); 16 December 1971, one hunting in dark near Stone Island, Tofino Inlet (DFH).

Low tide is undoubtedly the best hunting time for this species, and during the winter months when the above cited observations were made, the daily lower low tide occurs primarily at night. The ability to hunt at night when prey organisms are exposed may be a necessity for a non-diving species at this time of year when frequent storms may make beach hunting unprofitable at higher water levels.

2. Relationships with other beach wildlife: On 12 December 1968, a heron was seen hunting for several minutes bare centimeters from a small raccoon (DFH). The raccoon actually went between the bird's legs once, a maneuver which elicited a surprised squawk from the bird. On 20 June 1970, an Osprey attacked and chased a heron which flew near its nest (DFH). There is evidence that both herons and mink are aware of each other's propensity for fish. Commercial fisherman J. Anderson (pers. comm.) told of seeing a mink sneak from behind a wharf piling and attempt, unsuccessfully, to steal "an eel" (gunnel?) from a heron. The mink actually gained a hold on the fish, but lost a short tug-of-war to the bird. The heron continued its fishing, but stayed in deeper water and kept a watchful eye out for the mink, which returned periodically. On two occasions in July 1972, DFH saw a heron suddenly take flight from 50m or more and land beside mink which had just caught fish in dives off the mudflats in Lemmens Inlet. Though the mink, in both cases, acted defensively and carried the fish away, the heron did not actually appear to try to steal them, but instead commenced hunting at the spots from which the successful mink had emerged.

3. Social behavior: Although it is fairly common to see a number of herons

spread out over a common hunting area such as a small bay, some individual birds in some places display considerable territoriality on their fishing grounds. One commercial fisherman reported seeing a most violent battle one day on the Tofino Waterfront, although it is more common that an intruding bird gives way when approached by a territory owner. On 15 September 1972, an immature heron was seen fishing for small seaperch from the boom logs attached to a floating cabin at Turtle Island (from the notes of DFH):

This bird suddenly looked up, stiffened, and "gulped" visibly. A mature heron which usually fished there was flying overhead, and it landed on a nearby tree. For several minutes both birds remained immobile, and I eventually lost interest and continued with some work I had been doing before the young bird arrived. At the sound of much squawking and croaking I looked up to see the mature bird in hot pursuit of the young one which, after a crazy, hasty flight around the cabin, escaped by landing less than 10m from me. The older, wiser (?) bird dared not come that close to a human, but he landed on a log some 50m distant and acted very perturbed. The young upstart continued fishing, and in the next half hour he "used me" three more times when attacked, once landing so close the the wind from his wing tips actually brushed me lightly as he braked to a stop.

4. Fishing in deep water: The incident related above is one of several in which herons have been seen fishing from floating objects, usually logs, in water which would have been too deep for them otherwise. On 26 August 1969, a heron was seen standing, in hunting stance, on a bed of floating bull kelp near Vargas Island (DFH).

5. Soaring: On 9 June 1971, eight birds were seen "flying in formation and soaring near a Bald Eagle", over Turret Island (JB).

The Great Blue Heron is a common resident in PRNP, easily observable in appropriate habitats and capable of becoming one of the favorites among park visitors.

Green Heron (Le Héron vert)
Butorides virescens (L.)

J, F, M, A, M, J, J, A, S, O, N, D = 1 record

The single local record of this species was a sighting in Tofino Inlet, 18 September 1971, by several Vancouver Natural History Society members. The record is considered valid by Campbell (1972), who lists all known British Columbia sightings of the species including several from southern Vancouver Island, and points out that the bird has become rather firmly established as a resident in southern coastal British Columbia in the last twenty years. At the present time, however, it should be considered accidental in PRNP.

Whistling Swan (Le Cygne siffleur)
Olor columbianus (Ord)

J, F, M?, A, M?, J, J, A, S, O, N, D = 1-3 records

On 19 April 1969, a flock of 31 of these birds flew over Vargas Island, and were positively identified by their calls (DFH). On 10 May 1971 a single bird with head and neck stained a reddish brown was seen at the head of Ucluelet Inlet, and was believed to be this species (RP), and on 4 March 1972 two were said to have been seen in Grice Bay (NR). Neither of the two latter records can be considered conclusive, as satisfactory descriptions were not provided. The Grice Bay record, in particular, is doubtful as this is an area and a time of year in which Trumpeter Swans (O. buccinator) are often seen.

This species was listed as "rare winter" in the Vancouver area (Campbell et al., 1972) and "uncommon migrant and winter visitor" in Victoria (Tatum, 1972) for 1971, with implications that this is true for most years. It is a rare migrant in PRNP.

Trumpeter Swan (Le Cygne trompette)
Olor buccinator (Richardson)

J8, F2, M4, A1, M2, J, J, A, S, O3, N17, D9 = 46 records

Once regarded as in danger of extinction, this species is alive and well in the Pacific Northwest, and was officially removed from the endangered list in December 1968 (see Hansen et al., 1971). These magnificent birds winter in estuaries and freshwater lakes over much of coastal British Columbia, including several locations within PRNP. Smith and Blood (1972) estimated that a minimum of 1,076 swans wintered on Vancouver Island during the 1970-71 winter, and these authors provide good evidence that most of these birds were Trumpeters. Positive identifications, usually by sound, have been made in our area as follows: 12 December 1968, Tranquil Creek estuary (Clayoquot Sound), 14 including 3 juveniles; 11 January 1970, upper Kennedy Lake, four adults and three juveniles; 24 January 1970, four adults and three juveniles at Bedwell River estuary; 16 November 1971, Swan Lake, five birds; 13 March 1972, 23 flying north over Ucluelet; 1 March 1971, one dead juvenile found on a beach on Wickaninnish Island (all DFH).

The rarity of Whistling Swan records on our coast, based on our positive identifications, the comments of Smith and Blood (1972), and records from Campbell et al. (1972) and Tatum (1972) enable us to assume with some confidence that most swans seen on survey flights were Trumpeters, although we cannot completely rule out the possibility that some were the smaller species. Table 3 lists a number of swan counts obtained from within PRNP boundaries. As these data show, our main swan areas are in Phase III, where the Cheewhat system, especially, is one of the most important areas on the island. This Table lists all the areas in the park for which there seems to be a swan overwintering tradition. Our only records of birds on park lands or waters other than those of Table 3 is of a single bird seen at Schooner Cove on 1 May 1972 (BBr).

Table 3. Counts of wintering swans, probably all Trumpeters, within Pacific Rim National Park, 1969-70 through 1972-73.

Location	1969-70		1970-71		1971-72		1972-73	
	No.	Date(Source) ¹	No.	Date(Source)	No.	Date(Source)	No.	Date(Source)
Grice Bay ²	3	18 Feb(a,a2)					4	2 Dec(a,b1)
	12	19 Feb(a,a2)					7	28 Dec(a,b1)
Sandhill Crk.	7	A.W. (g,d4)	9	W. (g,a3)			13	5 Jan(a,a2) ³
	8	A.W. (g,b2)	11	A.W. (g,b2)	5	16 Nov(g,c)	12	21 Jan(a,c)
Swan Lake					5	18 Nov(g,c)	2	22 Nov(g,b1)
Kichla Lake	11	12 Feb(a,a2)	7	18 Feb(a,a2)			2	28 Nov(a,c)
					5	28 Nov(a,c)	5	28 Nov(a,c)
Keeha Meadows	3	12 Feb(a,a2)			18	15 Dec(a,c)	2	28 Nov(a,c)
					11	29 Oct(g,a3)	13	5 Jan(a,a2)
Hobiton Lake					7	15 Dec(a,c)	12	28 Nov(a,c)
Cheewhat ⁴	7	12 Feb(a,a2)	48	18 Feb(a,a2)	19	15 Dec(a,c)	9	5 Jan(a,a2)
							14	28 Nov(a,c)
							45	5 Jan(a,a2)
1968-69								
Grice Bay	6	17 Feb(a,a1)						
Swan Lake	5	A.W. (g,b2)						

¹ Date(Source). A.W. under date indicates that the number of swans listed stayed all winter; W. indicates that the number listed were seen in that winter, but no dates were provided. Under "source"(of information) the first letter (a or g) indicates aerial or ground counts, and the second identifies the observer:

a=data from files of B.C. Fish and Wildlife Branch, Nanaimo-a1=survey by

D. Blood, a2=surveys by I. Smith, a3=other.

b=data provided by other observers-b1=Adrian Dorst, b2=Gordon Whalley, b3=Roger Sparks.

c=surveys by DFH

²Grice Bay includes Indian Island and the lower Indian River.

³Surveys on Vancouver Island were flown 3-5 January during this year; the date listed in this table is

5 January, though some of the observations may have occurred on the other two days.

⁴Cheewhat includes both the Cheewhat River and Cheewhat Lake.

We would expect them to occasionally occur at some other park locations such as Mallard Lake, Tsusiat Lake, Doobah Lake and Sprize Lake.

There are also several areas outside, but near, the park which are regularly used by swans. These include Megin Lake, the estuaries of Tranquil Creek and the Cypre, Moyeha, and Bedwell Rivers (all northern Clayquot Sound), several locations in the Kennedy Lake area, several small lakes, including Black Lake, and the Sarita Bay estuary near Bamfield, and Fairy Lake near Port Renfrew. The total number of birds from Clayoquot Sound to Port San Juan varies from year to year, probably depending upon the success of the nesting season and the severity of the winter. A severe winter probably moves southward some birds which would otherwise have wintered farther north, and certainly causes them to move to milder areas near the coast (especially estuaries) when interior waterways freeze over. Provincial biologist Ian Smith (pers. comm.) tallied 203 swans over this area on 18-19 February 1971 (of which a maximum of 78 were in PRNP), and 126 (80 in the park) on 3-5 January 1972. Our only total park count was earlier in the winter and this is likely why it was much lower. On 28 November 1972, we counted just 28 birds in Phase III and 7 in Phase I, for a total of 35. Certainly the total park population rarely, if ever, attains 100 birds and is usually fewer.

Smith and Blood (1972) say that Vancouver Island swans begin arriving in late October or early November and build up to peak numbers in December and January. They are said to depart (Smith, person. comm.) usually in about mid-March. Our data agree with these observations: Our earliest fall sighting is on 23 October 1972 (3 seen near head of Kennedy Lake, DFH). On the following day (24 October 1972) a survey flight over the entire park area, including all of the known and potential swan wintering areas failed to turn up a single bird, although one was seen on Black Lake (DFH,AD). Our only April sighting (18 April

1972, GS) and one of our two May sightings were of a bird on a small lake 20 miles from the junction toward Port Alberni. The last observer, Mr. Jim Winters of Ucluelet, saw it regularly throughout the winter, but was sure that it was very ill when he last saw it (1 May 1972). He thinks it probably died. A group of eight birds seen daily in Bedwell Sound throughout the first six weeks of 1970, was last seen on 21 February (KB). The 23 birds seen in northward flight over Ucluelet on 13 March 1972 were probably on migration.

The Trumpeter Swan is an uncommon, though regular, winter bird in Pacific Rim National Park.

Canada Goose (La Bernache canadienne)
Branta canadensis (L.)

J12, F3, M8, A44, M21, J, J1, A6, S6, O12, N9, D9 = 121 records

In PRNP, this bird occurs in numbers only on the tidal flats of southern Clayoquot Sound. Its fall and winter occurrence there was the subject of another report (Hatler, 1973) which resulted from more than 200 observations which will not be considered here. Summarily, though many pass by offshore in August and September, they usually begin arriving in early October and numbers build up rather gradually to a peak in early November. There is then a gradual diminution until, by the end of the year, most of the birds have moved on southward. Small numbers, usually less than 50, may remain overwinter. The total number in the area reached a maximum of just under 2000 birds in November 1972, however there is one count of slightly over 7500 geese (November 1959) and evidence that as many as 10,000 have occurred there in other past years. The proportion of these birds which actually were within park boundaries averaged less than 15 per cent in the 1972-73 study, and this is largely because the good feeding areas are all outside.

As the distribution of sightings listed above shows, the peak of

spring observations is in April and May. The first recorded sightings in 1969 were of two flocks seen on 15 April (DFH). Many wedges of 350 or more were seen between 28 April and 2 May of that year, and the last record was of 40 birds in a flock on 5 May (DFH). In 1970, a group of seven birds was seen on 14 and 25 March on Vargas Island. These were large, dark birds believed to be of the subspecies B.c. fulva, and they had probably overwintered in the area. Migrating flocks were heard and seen from 27 March through 25 April in that year, with the peak occurring during the last two weeks. There was one record of a flock seen in late March of 1971, but all other records occurred between 9 April and 12 May, with dozens of flocks passing over Long Beach on 14 and 15 April. Again in 1972, the peak of the migration occurred during the last two weeks of April and the first few days of May. On 2 May at least 18 flocks comprising an estimated 6500 birds passed over the Turtle Island area (DFH). Many of the birds seen during the last days of migration seem to be small, high-voiced birds, probably B.c. minima (earliest record 24 April 1970; other sightings 2, 4, and 5 May 1969, 8 May 1971, 1, 2, and 7 May 1972, all DFH).

Northbound birds do not stop over in our area to the extent that fall migrants do, although some do make rest stops particularly on the Tofino Inlet mudflats. On 12 May 1971 a flock of about 200 was seen resting on the water near the head of Ucluelet Inlet (DFH), and on 8 May 1972 two small flocks (33 and 31 large, dark birds) were seen taking off from Long Beach near Incinerator Point where they had apparently been grounded by heavy fog. We have two mid-summer records: on 3 July 1967 "some" were seen offshore from Sea-lion Rocks (RWC) and on 2 August 1972 a large, banded goose was seen walking along the Tofino waterfront and reported to DFH independently by several Tofino residents.

An observation of some interest is the response of flocks of geese to

a Loran signal station situated just south of the park campsite area. On 21 April 1972, park naturalist Dudley Foskett pointed the phenomenon out to DFH: a flock of 175-200 geese approaching the installation tower in typical v-formation became disoriented with respect to each other and broke formation, then gradually drew back into their vee again after they had passed over the site. Foskett had seen the same thing occur with other flocks on previous days. It would be interesting to know what, if anything, the birds were perceiving at that point, how they were doing so, and why it affected them the way it did.

The Canada Goose is a locally common migrant (abundant overhead in spring) in PRNP.

Brant (La Bernache cravant)
Branta bernicla (L.)

J3, F2, M2, A16, M31, J16, J10, A6, S, O, N, D1 = 87 records

Our Pacific coast subspecies, known as the Black Brant (B.b. nigricans) moves conspicuously along our coast north toward its Alaskan breeding grounds, exploiting beds of its favored food Zostera marina along the way. January and February sightings involve small groups of vagrant birds (29 January 1969, three at Stubbs Island, DFH; 12 January 1972, 10 in Father Charles Channel, JSJ; 29 January 1973, 34 on Clayoquot Spit, AD; present (numbers unknown) during weeks of 11 and 25 February 1973, AD). In years past there was apparently a substantial movement through this area in March, but that this is no longer true is common knowledge among local, disgruntled hunters. The Migratory Bird Treaty Act between Canada, the United States and Mexico, sets 10 March as the latest permissible date on which migratory birds may be hunted. Our two

March records are of sightings of 15 birds, 5 March 1973 (SH) and about 20 birds, week of 3 March 1973 (AD), both at Clayoquot Spit.

Clayoquot Spit is the traditional Brant staging and feeding ground in our area, and during the peak of migration in April some fairly large concentrations may be seen there: 19 April 1969, about 350 (DFH); 26 April 1970, 3500-4000, 90 per cent of which left on that day (DFH). Despite the large beds of eelgrass to be found on Tofino Inlet mudflats, Brant do not seem to use these often. They are birds of the outer coast and may often be seen pelagically by fishermen (pers. comm.; Martin and Myres, 1969). Small numbers were tallied regularly during May and June 1969 and from May through July of 1970 in the waters near Cleland Island (MGS), and we have several records of observations along open shores within the park. These include sightings in July and August which, with the June sightings, probably involve non-breeding birds which are not serious about their northward movement: 1965-four seen from Portland Point on 8 August (FB); 1967-three flying along beach at Schooner Cove on 15 July and one on the beach near Green Point on 17 August (RWC); 1969-11 off Portland Point, 17 May (DFH); 1970-about 150 over Long Beach on 22 April (DFH), and 2 near Incinerator Point on 28 June (DFH, RWC); 1972-14 at Portland Point on 6 June, 1 killed by a dog near Incinerator Point on 15 June, and two at Florencia Bay on 17 July (all AD).

There are also records for pelagic waters in Barkley Sound: 7 April 1972, 15 near Chrow Islets; 9 April 1972, 10 near Hankin Island; 29 April, two flocks (30,100+) flying offshore from George Fraser Islands, and four birds in Loudoun Channel between Chrow Islets and Hankin Island; 11 May, flock of 28 over Loudoun Channel (all DFH). Doubtlessly these birds pass along Phase III shores and may occasionally be seen from shore there, however, an anonymous report in the B.C. Fish and Wildlife Branch files told of a census flight from Victoria to Bamfield on 21 April 1958, in which no Brant were seen between Port Renfrew and Bamfield. Further, this observer indicated that the rocky nature of this

stretch of shoreline was such that he would not expect to see birds there. Our only record from this area is of a damaged bird found near Bamfield on 6 August 1965 (CJG).

The entire population of this species gathers among the famous eelgrass beds in Izembek Lagoon, Alaska during September and October, then initiate an "avalanche migration" apparently directly, offshore, to wintering grounds in coastal California (Jones, 1970). This author has told us (pers. comm.) that there are still no records of any significant landfalls of this species between these areas, and the absence of any fall records in our area helps to confirm his observations.

The Brant is a locally common, spring bird in the PRNP area, with occasional wandering individuals appearing both during winter and summer months.

Emperor Goose (L'Oie empereur)
Phalacrocorax canadensis (Sewastianov)

As Godfrey (1966) points out, this species occasionally appears on the coast of British Columbia, but usually winters in the Aleutian Islands. This author lists records from the Queen Charlotte Islands and some from Vancouver Island, including one from Cape Scott (no dates given). A single bird wintered for seven consecutive years at White Rock on the B.C. lower mainland (Campbell et al., 1972), correspondence in Fish and Wildlife Branch files referred to an apparent sighting of two in a flock of Brant near Campbell River on the east coast of Vancouver Island (3 April 1968), and Wilbur and Yocom (1971) list several sightings over the years along the coasts of Washington, Oregon, and California. We therefore list the species as hypothetical for our area.

White-fronted Goose (L'Oie à front blanc)
Anser albifrons (Scopoli)

J, F, M, A2, M6, J, J, A3, S1, O6, N1, D = 20 records

This species, known locally as "California Goose" and "California Yellowlegs" has been known to land in quite large numbers in local bogs, especially that at the Tofino-Ucluelet Airport, where it is said to feed on cranberries (Oxycoccus sp.) (KG). While we have no records of this occurring in recent years, we have seen one bird in the berry bog (12 October 1970, Long Beach Airport, MEH), and we speculate that in some years bad storms might catch larger flocks migrating offshore, and force them into local waters and uplands. Meanwhile, our sparse records for this species involve relatively few birds, especially in comparison with the number which must pass our area annually.

White-fronts are early migrators in the fall, and greatest numbers probably pass over in August and September: 21 August 1969, 15 over Cleland Island (DFH, MGS); 27 August 1969, 40 over Cleland Island (MGS); 25 August 1970, 13 near Ucluelet (RWC); 29 September 1970, an unknown number heard over Tofino (DFH). The species does not overwinter here and our October and November sightings, six of which involve single birds and the other a trio, no doubt represent stragglers in the southward movement. A bird seen at McLean Point on 25 October 1972 was of unusual plumage, having an almost completely black belly (AD). The observer speculated that this bird might be of the subspecies A. a. gambelli (see Godfrey, 1966), a little-known bird which has been recorded in the central and eastern Arctic.

The only other White-fronted Geese which have been seen on the ground here in autumn are a single individual at Indian Island, 27 October 1972, an immature bird among the estuarine meadows of Grice Bay behind the Lovekin mansion on 28 October 1972 (both AD), and a much weakened juvenile picked up

by school-children on the Tofino waterfront on 5 October 1970 (DFH). This last mentioned bird was fed and kept in a box by the stove for several days and it completely recovered. The family involved often makes a winter trip to Mexico, and when they did so in 1970, this lucky bird accompanied them. It is probably the only member of its species which has traveled from Canada to the wintering grounds by bus.

On 20 April 1970 a flock of about 150 was heard and seen moving north over Tofino, and a flock of unknown size was heard; another flock of 150 or more was seen 4 days later (both DFH). Our other spring sightings were all made in May, and include one record of a bird on the ground, that in Grice Bay on 7 May 1971 (NR). Richardson (1971) saw this species once in April and twice in May during his year near Cape Scott, but had no fall sightings.

In PRNP, the White-fronted Goose is an uncommon migrant.

Snow Goose (L'Oie blanche)
Chen caerulescens (L.)

J, F, M, A2, M, J, J, A, S, O3, N1, D = 6 records

As was the case with White-fronted Geese, there are local residents who can recall times when Snow Geese were seen in numbers in the PRNP area in the fall. It is likely, again as was the case for White-fronts, that the Snows have never occurred here regularly, but have occasionally moved in during years in which weather forced them to temporarily interrupt their migration. These birds are conspicuous and easily identified, and it is quite likely that they would have been reported much more often if they had occurred here with any regularity in recent years.

We have just two spring records: 28 April 1969, four or five seen in a flock of Canada Geese over Tofino (WN); 24 April 1970, flock of unknown

size seen over Tofino (ES). Our fall records are also sparse: 4 November 1969, flock of 60 flying south over Hot Springs Cove in bad storm (DFH, JSJ); 9-23 October 1971, one bird seen daily in inseparable company with a large, dark Canada Goose (B.c. occidentalis?) and a smaller Canada Goose (B.c. taverneri?) (DFH); 17 October 1971, flock of about 25 seen near the mouth of South Bay (DA); 12 October 1972, one blue phase goose seen with 490 Canada Geese in South Bay (AD).

Richardson (1971) did not see this species on northwestern Vancouver Island, and Tatum (1972) had only a single record for the Victoria area in 1971. The relative absence of records from Vancouver Island comes about in spite of the fact that the species winters in large numbers just across the Strait of Georgia in the Vancouver area (Campbell, et al., 1972). In PRNP, the Snow Goose is a rare migrant.

**Mallard (Le Canard malard)
Anas platyrhynchos L.

J11, F7, M13, A18, M7, J8, J14, A8, S3, O5, N9, D13 = 116 records

This is another species whose fall occurrence in our area was discussed at some length in the Tofino Inlet waterfowl study (Hatler, 1973). It ranked third in abundance of the four common dabbling species which use the inlet mudflats in winter, but was the most widespread, being regularly found in at least small numbers in all census areas covered. It is also our only resident dabbler, sightings having been made during every month of the year. It is most common in the shallow water inlets of southern Clayoquot Sound, where it may be seen daily from October through April. Almost every river estuary supports at least a few Mallards during these winter months, and in late fall small numbers of

these birds ascend the rivers where they may be seen feeding upon dead salmon and/or their spawn.

The species also occurs regularly on local lakes and ponds, where some breeding occurs: 10 June 1968, female with seven downy young seen on a small pond on west Vargas Island (DFH); 19 June 1972, female with at least three young, one-third grown, and another female acting solicitous but no young seen, Swan Lake (DFH); 5 July 1972, four adults and nine young seen at Swan Lake, and 14 July 1972, two adults and ten young seen there (both AD). Young ducks, probably mostly this species, are reportedly present yearly on Swan Lake (GW), and we have hearsay evidence, undoubtedly accurate, that nesting also occurs on Mallard Lake.

In addition to our inlet sightings, we have other park records as follows: 4 July 1966, one near Wickaninnish Lodge (FB); 31 August 1968, one female near Incinerator Point (RWC); 3 July 1972, a female started to land on Florencia Island but saw observers and turned away (DFH, AD); 10 and 19 July 1972, one at Sandhill Creek (AD); 1 November 1971, 25 and 24 October 1972, 40, at Mallard Lake, (DFH); 15 April 1970, two in lagoon at Gibraltar Island (DFH); 19 April 1971, five on Hand Island (DFH); 8 August 1972, seven flying over Loudoun Channel near Chow Islets (DFH); 24 March 1968, 34 at Darling River (RWC); 24 October 1972, five on Cheewhat River and "a few" near Bonilla Point, seen from air (DFH, AD).

The Mallard is an uncommon resident, and common winter species in the PRNP area.

Gadwall (Le Canard chipeau)
Anas strepera L.

J, F, M, A, M1, J, J, A, S1, O1, N1, D1 = 5 records

This handsome species was not seen in the Cape Scott area by Richardson

(1971), is apparently not seen often on southern Vancouver Island (Tatum, 1972), and as the distribution of our records shows, it is certainly not common in the PRNP area, although it is listed as a "frequent resident" for the B.C. Lower Mainland (Campbell et al., 1972). Our records are: three near mouth of Kennedy River on 2 September 1969 (RWC); twelve birds in a brackish lagoon on western Vargas Island on 13 September 1968 (DFH); one pair at mouth of Toquart River on 28 May 1971 (DFH, JB), three in South Bay on 12 October 1972 (AD), and individuals in the South Bay area on 26 November and 3 December 1972 (AD). The Gadwall is a rare migrant in PRNP.

Pintail (Le Canard pilet)
Anas acuta L.

J5, F3, M6, A3, M4, J6, J, A44, S14, O5, N5, D4 = 99 records

This species was second in abundance among southern Clayoquot Sound dabblers in October-November 1972 (Hatler, 1973). Numbers dwindle somewhat after that time as most birds move on to wintering areas farther south, but a few do remain and can be seen feeding on eelgrass-covered mudflats with wigeons through March. The spring migration is not conspicuous in our area; the largest flock we have recorded for the period April through June was 14 seen near the head of Ucluelet Inlet on 28 April 1972. Most of the sightings during this time involve single birds or pairs.

There are no records for July, but in August southbound migrant flocks are seen regularly:

1961-four flocks (8, 12, 17 and 9) at Stubbs Island, 13 August (CJG); 1964-10, 15 and 22 August, 18, 500 and 6 birds respectively seen near Bamfield (CJG); 1965-5, 8, 12 August, small numbers, and 22 August, large movement

past Bamfield (CJG), 24 August, 125 at Indian River (FB); 1967-20 August large flock and 24 August 6 flocks, Barkley Sound (CJG), 25 August, three flew south over Green Point (RWC); 1968-19 August, 18 flocks of 50 to 1000 birds per flock in "v" patterns over Barkley Sound, 21 August, 30 flocks of 50-100 birds per flock over Barkley Sound (both CJG), 13 August, 97+ by Cleland Island (RWC), 24 and 25 August, large flocks up to 35 birds flying south, low over the surf at Long Beach (RWC); 1969-6 August, 6 flocks of 10-15 birds per flock past Cape Beale, 16-19, "migration in full swing" over southwestern Barkley Sound (both CJG), 6, 13, 18, 19-21 August, sightings of small flocks flying southeast past Cleland Island (MGS), 3 August, 17 on Vargas Island (DFH); 1970-8-11 August, large movement past Bamfield (CJG), 1, 6, 12, 15, 20 August, flocks seen flying past Cleland Island (MGS); 1971-14 August, one by Portland Point (NR).

Martin and Myres (1969) report sightings of migrant flocks as far as 100 miles offshore in August. Though the migration by this area clearly peaks in August, most of the birds which spend part of the winter on our mudflats do not arrive until the latter parts of September or October.

As implied earlier, the Pintail is largely a bird of the mudflats here, but sightings have been made elsewhere in the park as follows: 17 September 1971, three in Pachena River estuary (DFH); 18 June 1972, one (AD) and 7 October 1972, one (DFH) at Swan Lake; 29 June 1972, one on beach near Green Point (AD); 20 August, four at Port San Juan (AD); 24 October 1972, at least three seen from air at Bonilla Point (DFH, AD).

In PRNP, the Pintail is a common fall and uncommon winter bird.

Green-winged Teal (La Sarcelle à ailes vertes)
Anas crecca L.

J7, F2, M1, A10, M11, J2, J, A20, S17, O7, N9, D2 = 88 records

This little duck is similar to the Pintail in its appearance and use of shallow inlet waters in the fall, but it is somewhat more common than that

species in the spring. Of the four common dabbling species occupying the mudflats of southern Clayoquot Sound in fall 1972, the Green-winged Teal was least abundant but, like the Mallard, it was widely distributed over the entire area (Hatler, 1973). Most teal have left our area by January, and sightings in February and March are rare. The spring movement through our area begins in April and continues through May: 18 April 1969, three pairs on beach of Vargas Island waiting out a storm (DFH); 22 April 1969, large flock seen in Tofino Inlet (DFH); 4 May 1970, 35 at east Vargas Island (DFH); 8 May 1971, 25 near Tofino (DFH). Our two June sightings are both of single birds, and there are no sightings in July.

As was the case with Pintails, the fall movement begins in August and, in fact, flocks of teal may be seen with the migrating Pintails (8-9 August 1970, Bamfield area, CJG). On 20 August 1969, a single bird was seen at Cleland Island (DFH, MGS) and two large flocks were seen near Vargas Island (DFH). First recorded fall sightings in subsequent years were 1970-14 August, east Vargas Island, one bird (DFH); 1971-5 August, five near Opitsat (Meares Island)(DFH); 1972-11 August, eight in Lemmen's Inlet (DFH).

The bird has been recorded in all three park units: 29 September 1971, 12 in Sandhill Creek (JB); 15 April 1970, one pair in lagoon on Gibraltar Island (DFH); 19 April 1971, 20 in slough on Hand Island (DFH); 16 September 1971, five on Effingham Island (JB); 2 May 1972, one pair at Turtle Island (DFH); 9 May 1972, three flew over Loudoun Channel near Hankin Island (DFH); 17 September 1971, 12 on Pachena River estuary (DFH, JB); 20 September 1971, four on pond in Keeha Meadows near Bamfield (DFH); 24 October 1972, 11 seen from the air along the Cheewat River (DFH, AD); 22 August 1972, four in San Juan River (AD).

One of our sightings (29 November 1972, one male near South Bay, AD)

was of the Eurasian Green-winged Teal (formerly the separate species, Common Teal).

The Green-winged Teal is a common migrant in PRNP, with many fall birds lingering into the early winter months.

Blue-winged Teal (La Sarcelle à ailes bleues)
Anas discors L.

J, F, M, A, M, J4, J1, A, S, O, N, D = 5 records

On 17 June 1970, a male was seen at Cleland Island (MGS), in early June 1972 a pair was seen at Grice Bay behind the Lovekin Mansion (BBC), and on 19 June (DFH), 21 June and 5 July (both AD) a single male was seen at Swan Lake. Richardson (1971) saw two birds during the second week of September and again in the third week of October 1968 in Browning Inlet (north-west Vancouver Island). As pointed out by Godfrey (1966), this species is not often seen near salt or brackish water; it should be listed in Pacific Rim National Park as a very rare migrant.

Cinnamon Teal (La Sarcelle cannelle)
Anas cyanoptera Vieillot

J, F, M, A, M1, J, J, A1, S, O, N, D = 2 records

On 20 May 1972 a pair of Cinnamon Teal, seen in company with two pairs of Marbled Murrelets in a bay off west Willis Island, flew across Thiepval Channel to Turret Island (DFH), and on 23 August 1972 six birds of this species were seen near Owens Point on the West Coast Trail (AD). Like the previous species, this is a bird of fresh water marshes and its occurrence even as a migrant in Pacific Rim National Park can only be considered very rare.

European Wigeon (Le Canard siffleur d'Europe)
Anas penelope (L.)

J, F, M, A, M, J, J, A, S, O6, N3, D = 9 records

Within the past decade this beautiful duck has become increasingly more common near Vancouver (Campbell et al., 1971) and its status has risen to rare in winter over much of southwestern British Columbia. This may account for the recent west coast records. All of our sightings (males) are from the southern Clayoquot Sound areas covered by the waterfowl survey in fall-early winter 1972 (Hatler, 1973). It is likely that this species occurs there with the large flocks of American Wigeons every year. The earliest sighting was on 3 October in South Bay, one bird (AD), and the latest was of four birds seen among a flock of about 1300 American Wigeons on the Mikes-Laddie flats, 17 November (AD). In Pacific Rim National Park, the European Wigeon is a rare winter bird.

American Wigeon (Le Canard siffleur d'Amérique)
Anas americana (Gmelin)

J7, F5, M6, A4, M5, J, J, A1, S4, O10, N9, D6 = 57 records

This was the most abundant dabbling duck during the inlet waterfowl survey (Hatler, 1973), with flocks of over 1000 birds seen commonly. The bird may be seen regularly and in numbers feeding upon eelgrass on the broad flats of southern Clayoquot Sound from September through April. Richardson (1971) recorded the species from the second week of September through the third week of March at Browning Inlet. There are still a few stragglers around in May in our area (4 May 1970, 10-12, and 26 May 1970, five at east Vargas Island; 8 May 1971, eight at east Vargas and, 28 May 1971, two at mouth of Toquart River, all DFH), but all have apparently gone by June and most do not return until September and October.

Other than locations in Tofino Inlet, our park sightings of this

species are at Gibraltar Island, four on 15 April 1970 (DFH), and Swan Lake, "a few" seen on 16 November 1971 (DFH). It will not often be seen far from eelgrass beds on our coast. The American Wigeon in PRNP is a locally abundant winter species.

Northern Shoveler (Le Canard souchet)
Anas clypeata (L.)

J, F, M, A1, M4, J1, J, A1, S, O5, N1, D = 13 records

This is another duck which appears in our area only during migration. Most observations are of singles or pairs, however a flock of 30 was seen in a Vargas Island bay on 8 May 1971 (DFH), 14 were seen "on the tide flats near Tofino" on 24 August 1965 (FB), and we have sightings of six (Ucluelet Inlet, 28 April 1972, DFH) and five (South Bay, 8 October 1972, AD). Richardson (1971) saw this species once each in October and November at Browning Inlet, and Gruchy et al. (1972), found the head of a female on deck at Ocean Station Papa (a weather ship), 1000 miles west of Vancouver Island, on the morning of 8 September 1969. They speculated that the bird had decapitated itself on a guy wire as it flew past.

There are only two records from within park boundaries: 29 May 1972, one pair on Swan Lake (DFH), and 28 October 1972, two in Grice Bay (AD). The Northern Shoveler is an uncommon migrant in PRNP.

**Wood Duck (Le Canard huppé)
Aix sponsa (L.)

J, F, M1, A, M3, J9, J4, A, S, O, N, D = 17 records

A pleasant surprise in our survey was the discovery of Wood Ducks

breeding at Swan Lake. We have seen this species in only one other location on this coast (10 July 1971, a female at Turtle Island, DFH), however, provincial game warden W.R. Hazledine (information from files of B.C. Fish and Wildlife Branch, Nanaimo) saw three males and six females and/or young on a lake in the Sarita Bay area near Bamfield (3 September 1972), and it is likely that Wood Ducks will eventually be seen on some of the small lakes and ponds in Phase III of the park.

On 13 June 1969 a pair was seen near Kennedy River (RWC), on 8 May 1972, two males and one female were seen on Swan Lake (DFH), and on 19 May there were two pairs present (NR). Five males, alone together when first seen on 29 May, were later joined by a female which flew in from the nearby woods, calling continually (DFH). There were a number of sightings in June, usually of single males, but on 23 June two females with at least one young were seen (AD). No young birds were seen again; the remaining three sightings were of two males and two females on 5 July, one male in eclipse plumage and one female on 14 July and a single male on 24 July (all AD). A sighting was also made on 28 March 1973 (one male, two females, AD). The northward spread of Wood Ducks in British Columbia probably reflects the increase in this handsome duck in the lower Fraser River area due to projects involving artificial nesting boxes being set out (first in 1961). To date at least 1500 boxes have been erected there where the Wood Duck is presently considered a frequent resident (Campbell et al., 1972).

The Wood Duck in PRNP is present only locally and should be considered an uncommon summer bird.

Redhead (Le Morillon à tête rouge)
Aythya americana (Eyton)

no records

Richardson (1971) saw a flock of eight birds at Grant Bay during the

first week of May 1968. The species is not common in either the Victoria area, (Tatum 1972) or the Vancouver area (Campbell et al., 1972). It is a rare bird on the coast, but we suspect it will eventually show up on the park list, probably from a sighting in the waters off McLean Point. Meanwhile, the Redhead is hypothetical for our area.

Ring-necked Duck (Le Morillon à collier)
Aythya collaris (Donovan)

J1, F, M2, A3, M2, J, J, A, S, O, N1, D = 9 records

This is another species that is seen, in our area, primarily at Swan Lake. The first of our records was of a pair seen at upper Kennedy Lake on 11 January 1970 (DFH). All other records are from Swan Lake: 3 May 1971, one male; 14 May 1971, one male seen in company with a male Mallard, both tipping up while feeding; 20 April (five males, two females), 21 April (four males, one female), and 27 April 1972 (five males, two females)(all DFH); 22 November 1972, five (AD), 7 March 1973, 2 males, one female (DFH); 28 March 1973, some present (AD).

It was not seen by Richardson (1971), and is considered "rare winter" in the Vancouver area (Campbell et al., 1972), although it is listed as a common winter visitor in the Victoria area (Tatum, 1972). In PRNP, the Ring-necked Duck is a rare winter species.

Canvasback (Le Morillon à dos blanc)
Aythya valisineria (Wilson)

J1, F3, M1, A1, M, J, M, A, S, O9, N7, D1 = 23 records

We have three records from Ucluelet Inlet: Two females collected on

24 February 1949 (BCPM 865 and 866, CJG); one male seen among a flock of scaup on 22 and 23 March 1972 (DFH). All of our other records are from the waters of southern Clayoquot Sound including the mouth of Lemmens Inlet (24 February 1969, eight, DFH), South Bay (10 October 1972, four, AD) and several sightings in the McLean Point-Indian Island area. The largest number recorded was a flock of about 400 birds in the Mikes Island area of lower Browning Passage on 7 December 1969 (DFH). A fairly large flock was seen frequently near Indian Island in fall 1972: 17 October, 35; 27 October, 78; 1 November, 100+; 11 November 45 (all AD). Richardson (1971) did not see Canvasbacks during his year on northwestern Vancouver Island, but the species is common in winter in both southern Vancouver Island (Tatum, 1972) and the Lower Mainland (Campbell et al., 1972).

In PRNP, the Canvasback is rare in winter.

Greater Scaup (Le Grand Morillon)
Aythya marila (L.)

J8, F6, M11, A13, M10, J1, J, A2, S5, O20, N19, D8 = 103 records

This gregarious duck is often seen in large flocks in waters of southern Clayoquot Sound and occasionally in other protected water such as that near the head of Ucluelet Inlet. It does not often appear in our deeper, open coastal waters. Our earliest fall sightings in most years are in September: 1969-two males at east Vargas Island on 20 September (DFH); 1971-one female at Turtle Island, 4 September (JB); 1972-one in Tofino Inlet, 21 September (AD). However, most of our wintering birds appear to arrive in October judging from the distribution of our counts of 100 birds or more. In 1971, 300 birds were seen near Indian Island on 27 October, after a count of just 20 there eight days

earlier (DFH). Also in that year, a flock of 100+ at the head of Ucluelet Inlet first appeared on 23 October (DFH). In 1972 our first count of over 100 was on 10 October at McLean Point (AD). The earliest large flock among our records is a concentration of 400-450 birds seen at Vargas Island on 28 September 1970 (DFH).

Individuals of this species stay throughout the winter, with certain local areas seeming to be used particularly regularly. A flock, usually numbering 200-350 birds, occurs almost daily during this season in the vicinity of Yarksis Bay, east Vargas Island; they were seen there often during the winters of 1968-69, 1969-70, and 1970-71. Occasionally this flock moves northward a mile or so up Father Charles Channel or eastward to join another flock which regularly inhabits the waters between Clayoquot Spit (Stubbs Island) and the village of Opitsat. There is usually another concentration at the mouth of Lemmens Inlet and, as indicated in the inlet waterfowl study (Hatler, 1973), still another in the Indian Island area.

Local numbers are augmented in March by migrants from elsewhere, perhaps the vanguard of the spring movement northward, perhaps birds which have gathered on the west coast to exploit the annual spring herring run or, more likely, probably the new arrivals come for both reasons. The largest flock among our records was 1000+ off Clayoquot Spit on 25 March 1971 (DFH). Flocks remain through April and into early May. Large flocks were said to be common in the Tofino area from 4-9 May 1931 (IMcTC); last recorded sightings in other years are 1969-five males and two females at Vargas Island on 29 May, although a single male was seen there on 9 June (DFH), 1970- two birds at Vargas on 30 May (DFH), 1971-35 at Vargas on 26 May (DFH), and 1972-102 near the head of Ucluelet Inlet, 8 May (DFH). Summer records, other than the June

sighting listed above, are of a single male near Portland Point on 6 August 1967 (RWC) and two birds at Vargas Island on 1 August 1972 (DFH).

Records from park locations other than the inlet area are rare. Sightings of one and two birds were made on 4 and 22 September 1971, respectively, at Turtle Island (JB), and flocks of scaup presumed to be this species were seen from the air at Hobiton Lake (50+ birds on 15 December 1971, DFH and JB) and Pachena Bay (80 birds on 28 November 1972, DFH and AD). Surprisingly, Richardson (1971) did not see this species at Grant Bay or Browning Inlet during his 1968-1969 stay there.

The Greater Scaup is a common winter bird in PRNP, with occasional individuals appearing during the summer months.

Lesser Scaup (Le Petit Morillon)
Aythya affinis (Eyton)

J, F, M1, A, M1, J, J, A, S, O2, N1, D = 5 records

Flocks of Greater Scaup have been searched carefully for this species throughout the five years of study. Our only records so far: 2 May 1971, at least one pair and perhaps two pairs with 28 Greater Scaup at the head of Ucluelet Inlet (DFH); week of 14 October 1972, present in Tofino Inlet, no details given (AD); 31 October 1972, two with 25 Great Scaup near Ginnard Point in Browning Passage (AD); 13 November 1972, 20 with 270 Greater Scaup near Mikes Island in Browning Passage (AD); week of 18-24 March, present in Tofino Inlet, no details (AD).

The Lesser Scaup is a rare migrant in PRNP.

Common Goldeneye (Le Garrot commun)
Bucephala clangula (L.)

J9, F7, M14, A5, M1, J2, J, A, S, O, N17, D8 = 63 records

Most of the positive records of this and the following species involve the presence of males, as identification of winter females is difficult and risky (see Godfrey, 1966). This species winters in protected waters of our area, and is among the latest arriving of the conspicuous winter species. Our first fall records: 1968-26 November, 10-12 birds seen in Tofino Harbour area (an unidentified female, probably this species, was seen in the same location on 24 November, DFH); 1969-5 November, "some" at Mary Basin (Nuchatlitz Inlet) and 29 November, one male in Tofino Inlet (DFH); 1970-22 November, nine including three males in Tofino Inlet (DFH); 1971-26 November, three males in Tofino Inlet (DFH); 1972-8 November, five in South Bay (AD). The bird may be seen daily, usually in small numbers, from November through March in Tofino Inlet (especially in the vicinity of Strawberry Island).

Courting activities are evident during February and March. On 1 February 1972, two groups of these birds were seen near Strawberry Island. The first, consisting of eight males and three females, was very active with all the males head-bobbing and occasionally causing a splash of water by extending one foot rapidly to the surface. The water splash is part of the ritual and is always accompanied by a peculiar buzz-whistle. The other group, some 50m distant, consisted of three males in breeding plumage and nine females and/or immature birds. There was no courting activity among this group. One of the courting males in the first group was of unusual plumage; it was in complete female plumage, including the brown head, but it had the bright white cheek patch appropriate for the species. Another bird in identical plumage was seen at lower Sproat Lake along the Port Alberni Highway on 13 April 1969 (DFH).

The largest flock of Common Goldeneyes which we have recorded in this area is a group of 26 seen near the mouth of Lemmens Inlet on 17 November

1972, while groups of 18 and 16 were seen in the same general area the previous day (all AD). All of our other records from November through January involve groups of ten birds or fewer, often singles and pairs. The courting activities mentioned earlier draw the birds into somewhat larger groups on the average: the occurrence of 23 birds in close proximity was already mentioned (1 February 1972); 1 March 1971, about 15 birds in Tofino Inlet; 4 March 1971, 12 near Vargas Island; 26 March 1972, 13 near head of Ucluelet Inlet (all DFH).

Most of the breeding birds have gone by mid-April. On 12 April 1972 a group of 8-10 goldeneyes, presumed to be this species but including no males in breeding plumage, was seen in Ucluelet Inlet (DFH); there were "some" near Hand Island on 15 April 1970, and four at McLean Point on 6 April 1972 (both DFH), but our other April sightings are of single birds. Our only sightings after 15 April are of single birds seen in the Grice Bay area on 9 June (NR) and 11 June 1972 (a female, probably same bird seen on 9 June, DFH). However, the species was noted as very common in the Tofino area on 4 May 1931 (IMcTC).

All of our Phase I records of this bird are from the inlet area. In Phase II, a spring sighting at Hand Island was cited earlier; in addition, a male was seen attempting to woo the females of two pairs of Barrow's Goldeneyes at Turtle Island, 3 March 1973 (DFH, SRJ), and an unidentified single female (or juvenile), perhaps this species, was seen at Turtle Island on 26 November 1972 and near Hankin Island in Thiepval Channel on the following day (DFH). On 28 November 1972, unidentified goldeneyes were seen from the air on Doobah Lake (40+), Sprise Lake (about 20) and on a small lake just west of Squalicum Lake (6) (DFH, AD).

The Common Goldeneye is locally common in winter in PRNP.

Barrow's Goldeneye (Le Garrot de Barrow)
Bucephala islandica (Gmelin)

J2, F, M1, A1, M1, J, J1, A, S, O2, N5, D = 13 records

This appears to be the less common of the goldeneyes in the park area, although it may be the one most likely to be seen at the mouths of and in local fresh water streams. It was seen near two streams in Mary Basin, Nuchatlitz Inlet, on 5 November 1969 (DFH), at the mouth of the Megin River (3 males, 3 females) and one-half mile upstream there (1 male, 2 females) on 14 November 1970 (DFH), and it was seen more often in Ucluelet Inlet (three sightings from January through April 1972, two of three birds and one of three pairs) than in Tofino Inlet (one sighting of three birds at Indian Island, 19 November 1972, AD), even though the latter area unquestionably was observed more often and more intensively.

Ucluelet Inlet apparently receives more fresh water in proportion to its total volume than do the lower reaches of Tofino Inlet; on some occasions during the cold winter of 1971-1972 (especially on the night of 24 January) a surface layer of ice two to three millimeters thick formed on many bays near the head of Ucluelet Inlet, and on the particular night indicated there was a complete layer from Ucluelet's government wharf across the inlet to the Canadian Fish camp at Port Albion (DFH). No such phenomenon has been witnessed in Tofino Inlet, where tidal movements are more spirited. Thus, it seems likely that J.A. Munro (cited in Godfrey, 1966) is correct when he states the Barrow's Goldeneye "does not favour highly saline water." The aerial sightings of unidentified birds in the Phase III lakes, listed in the text account under Common Goldeneye, may well have been this species.

Also in the account of the previous species, we alluded to an observation of two courting pairs and a single, frantically courting male Common Goldeneye

(Turtle Island, 3 March 1973, DFH and SRJ). This observation was of particular interest in that it enabled a close comparison of the courtship behaviour of the two species. Their repertoire is virtually identical except that on the "head-throw" the Common's head goes all the way back to the back, so that the bill is actually pointing backward, parallel to the tail, and the throat is up. The Barrow's end-point on the head throw is with the bill pointing straight up, perpendicular to the water. The unfortunate Common, in this instance, was not attracting the Barrow's ladies even a little bit.

On 17 July 1967, a male in breeding plumage was seen on Kennedy Lake near the swimming beach (RWC). A pair was present from 20-24 May 1971 at Power Lake (Ououkinsh Inlet, AEAH). These observations, particularly the first, raise the possibility that some breeding many occur in our area. Naturalists making summer visits to ponds, lakes and other fresh water bodies on our coast should keep alert for this species. Meanwhile, in PRNP the Barrow's Goldeneye is a rare winter species, and may eventually be found to be a rare resident.

Bufflehead (Le Petit Garrot)
Bucephala albeola (L.)

J23, F11, M28, A36, M25, J, J, A, S, O34, N59, D12 = 239 records

This is our most abundant diving duck, present in shallow protected waters from October through May, with flocks of 100 or more occurring commonly. First fall sightings during the years of our observations have been: 1968-31 October, eight to 10 birds at East Vargas Island; 1969-14 November, 50+ near Vargas Island; 1970-26 October, five adult males in Tofino Inlet (two birds were seen earlier, on 2 October, at Cachalot Inlet, Kyoquot Sound); 1971-26 October, 12-15 in Ucluelet Inlet (all DFH); 1972-10 October, two in South Bay (AD).

Richardson (1971) first recorded them in the first week of November at Browning Inlet.

The species can be seen daily in southern Clayoquot Sound from late October through early May. Among the large flocks we have recorded are, 300 in Tofino Inlet on 4 December 1968; 200 at the mouth of Lemmens Inlet on 24 February 1969; 200 at East Vargas Island on 18 March 1970; 500 at Clayoquot Spit on 25 March 1971; at least 1000 off McLean Point on 12 April 1972 (all DFH); 600 at Indian Island on 1 November 1972 (DFH,AD).

Most of the spring departure occurs in late April-early May. Spring counts from McLean Point of birds in outer Grice Bay (certainly among the best of our Bufflehead areas) are illustrative. On 6 April 1972, there were an estimated 800-1000 birds present, and this had risen to a peak of "at least 1000" by 12 April. There were quite likely migrants from wintering areas farther south arriving at that time. The number had fallen to about 500 on 27 April, and an estimated 300-400 on 28 April. A count on 8 May yielded just 13 birds, none of which were adult males. On 12 May, 80 birds were counted there, including one adult male, but within a week all were gone (all DFH). Our latest spring records for the years of the study were, 1969-14 May, one bird in Tofino Inlet; 1970-11 April, "some" in Tofino Inlet (a note in the fieldbook for 23 May of that year indicated that this species was no longer being seen); 1971-30 May, one at Turtle Island; 1972-19 May, one at Turtle Island (all DFH). The species was listed as "very common" in the Tofino area on 4 May 1931 (IMcTC). Richardson (1971) last recorded Buffleheads at Browning Inlet (five birds) in the first week of May.

Park area locations at which the species has been seen other than those listed previously include:

Kennedy Lake, 10 on 11 January 1970 (DFH); Mallard Lake, two males on 1 November 1971 (DFH, JB) and four

birds on 24 October 1972 (DFH, AD); Sandhill Creek, seven on 28 November 1972 (DFH, AD); Swan Lake, one on 20 and 21 April 1972 (DFH); Ucluelet Inlet, often throughout winter 1971-72 (DFH); Spring Cove, "lots" on 11 January 1972 (DFH); Hand Island, 20 on 19 April 1971 (DFH); Turtle Island area, seen regularly April-May 1972, October-November 1972, March 1973 in groups of 10-20 (DFH); Wouwer Island, 30-35 in protected bay on NE side (DFH, AD); Broken Group, general, small groups of 6-10 seen feeding or resting in protected bays and lagoons at nearly every island, aerial survey, 13 March 1973 (DFH, LR); Hobiton Lake, 25 on 28 November 1972 (DFH, AD).

A complete treatise on Buffleheads (Erskine, 1971) has been published recently by the Canadian Wildlife Service and certainly merits attention of naturalists in PRNP.

In PRNP, the Bufflehead is abundant in winter.

Oldsquaw (Le Canard kakawi)
Clangula hyemalis (L.)

J9, F8, M9, A4, M7, J, J, A, S, O3, N6, D9 = 55 records

This species is somewhat more pelagic than those covered previously; most of our records are from Father Charles Channel near Vargas Island, where big seas are common during the winter months. Yet this is still not the open Pacific. The observer who silences his outboard motor and drifts quietly near Clayoquot Spit on a calm winter day can scarcely fail to become aware of the Oldsquaw, whose peculiar calls echo musically over the swells.

It was first recorded on 13 November in 1968 ("some"), and 14 November in 1969 (20), one was heard on 16 October 1970, but the first sighting in that year was on 9 November (DFH). In 1971, a flock of 35-45 seen on 12 November constituted the first fall sighting (all in the area of Father Charles Channel described earlier, DFH), and in 1972 a single bird was seen at Carmanah Point

on 24 October (DFH, AD).

The bird stays throughout the winter, usually in small numbers (10-20) although a few larger concentrations have been seen: 200 off North Vargas Island, 18 February 1969 (DFH); 55 near East Vargas, 12 April 1971 (DFH). There are occasional records from inside waters: mouth of Lemmens Inlet, six on 24 February 1969, (DFH); Tofino Inlet, 12-15 calling on 7 March 1969 (DFH); 9 January 1971, lots in Tofino Inlet, (DFH); 12 December 1971, 8-10 in Tofino Inlet, (DFH); it was recorded present in Tofino Inlet on 9 of 25 weeks between 8 October 1972 and 31 March 1973 (AD). We also have one sighting of four birds at Wreck Bay, 22 October 1972 (SHR).

Birds may be paired up as early as 31 December (1971, DFH), and most have left for the breeding grounds by early May. Our latest spring sightings, all probably of stragglers, were: 1969-29 May, one bird; 1970-31 May, one male in partial moult; 1971-9 May, four (all Father Charles Channel, all DFH). "Several" were seen on 9 May 1931 (IMcTC).

The Oldsquaw is uncommon winter in PRNP.

Harlequin Duck (Le Canard arlequin)
Histrionicus histrionicus (L.)

J1, F5, M5, A15, M43, J51, J59, A35, S14, O11, N1, D4 = 244 records

The relative lack of winter records for this species is reflective not of its occurrence here in that season, but of its choice of habitat which, as described by Godfrey (1966) is "often the roughest and rockiest of shores where the water is highly turbulent and the surf breaks constantly." Potential observers rarely have occasion, or desire, to visit the offshore reefs and islets and exposed outer coast inhabited by Harlequins during the season of frequent storms.

The summer population, beginning in May, consists largely of males.

Some of these are undoubtedly non-breeding birds and some are those which have completed their brief conjugal duties and have returned to the coast to moult and feed: 15 May 1970, 28 males and one female; 31 May 1970, 22 males and one female; 16 June 1970, 54 males and four females, all Cleland Island (MGS); 12 June 1971, 14 males and three females at Turret Island (DFH); 26 May 1972, 30-35 birds, mostly males, at Faber Islets (DFH). Even in winter counts, males usually predominate: 19 February 1969, four males and one female at Vargas Island (DFH); 1 October 1969, seven males and two females at Wickaninnish Island (DFH); 25 April 1971, 12 males and five females, Wickaninnish Island (DFH).

Obviously-paired birds have been seen in April (ten occasions recorded, involving one to three pairs); May (five records), and June (three records). In 1972 two pairs were seen regularly from 7 April through 1 June at west Turtle Island. Courting activity has been recorded as early as 19 February (1969, four males and one female on west Vargas Island, DFH) and as late as 18 May (1972, two males and one female, Turtle Island, DFH). The February incident was particularly entertaining. The female took off from the water and all four males followed, soon catching up with her, and all five then went on three long, looping circles of the bay. The males were dipping and climbing around the female, performing the finest aerobatics, and they became so absorbed in this activity that they failed to notice when the female suddenly slipped back a bit, turned, and landed. Continuing on for another 100m, the males finally became aware that the object of their display was no longer present, and they wheeled around and beelined back to her side.

We have seen Harlequins on reefs and headlands along the entire park area coast from Clayoquot Sound to Port San Juan. Representative locations include:

Chesterman Beach, six, 23 May 1931 (IMcTC); White Island, three, 4 August 1969 (RWC), and 25 on 28 June 1970 (RWC, DFH); Sea-lion Rocks, "some" on 3 July 1967 (RWC), 10, 2 July 1972 (DFH,AD); Green Point, one, 6 July 1972 (AD);

Sandhill Creek, two, 27 September 1971 (JB); north Wreck Bay, 10, 30 June 1972 (AD); Florencia Island, 32 (mostly males), 28 June 1970 (RWC, DFH), many other records--this species has been seen on every visit to Florencia Island (DFH); south Wreck Bay, one, 17 July 1972 (AD); Starlight Reef, two, 24 July 1970 (RWC) and 55+, 4 July 1972 (DFH); Great Bear Rock, 24, 25 August 1970 (RWC), and the species present there on all other visits (DFH); Alley Rock, five, 20 July 1971 (DFH); Faber Islets, 12, 10 May 1972 (DFH); Village Reef, 15-20, 18 June 1972 (DFH); many other Barkley Sound locations (Benson Island area, Effingham Island area, Nantes Island, Turret Island, Puffin Islet, Owens Island, Lovett Island, Trickett Island, Pinder Rock, Hankin Island, Turtle Island Group, Hand Island area, Gibraltar Island, and Baeria Rocks (DFH, JB); Folger Island, 26, 26 June 1970 (RWC); Pachena Bay, one female, 8 August 1972 (AD); Seabird Rocks, five, 24 July 1972 (DFH); Darling River to Michigan Creek area, 19, 14 August 1972 (AD); Klanawa River area, two, 23 March 1968 (RWC) and 25, 13 August 1972 (AD); Bonilla Point, 12+, 17 August 1971 (DFH, JB); Walbran Creek, six, 17 August 1971 (DFH, JB); Camper Bay area, six, 20 August 1971 (DFH, JB) and six, 24 August 1972 (AD).

The Harlequin may breed along some of our coastal streams, but as yet we have no positive evidence for this. It is a common non-breeding resident of PRNP.

Steller's Eider (L'Eider de Steller)

Polysticta stelleri (Pallas)

no records

Though it has not been seen in our area, the Steller's Eider is here listed as hypothetical for PRNP on the basis of occasional sightings along the coast at or below our latitude, including a recent record at Mitlenatch Island off eastern Vancouver Island in the Campbell River area (Campbell, 1971). It will not occur here often.

White-winged Scoter (La Macreuse à ailes blanches)

Melanitta deglandi (Bonaparte)

J8, F5, M10, A13, M44, J32, J35, A21, S10, O21, N19, D5 = 223 records

The scoters are the true sea ducks of our area, occurring often in the open coastal waters, and often in large rafts. The White-winged Scoter frequently occurs with the next species, the Surf Scoter, by which it is almost always outnumbered in the PRNP area. The breeding and wintering ranges for these two species, as well as their choice of habitats, are very similar in western North America (see Godfrey, 1966), a truth indicated even further by the earlier mentioned fact that they so often occur together. One of the few biological theories which ecologists generally agree upon is one which states that two different organisms can not occupy the same niche. It follows that these two scoters do not overlap completely in their requirements, and it is most probable that they differ in food habits, perhaps by exploiting somewhat different portions of the local habitats which they share (see MacArthur, 1958).

There is some suggestion among our data that White-winged Scoters prefer more open, deeper waters than do Surf Scoters, but we make this suggestion cautiously. Among our scanty evidence is, first of all, the fact that White-wings usually outnumbered Surfs in winter in the deep, rugged channel north of Vargas Island (50 : 10, 10 December 1968; 200 : 100, 18 February 1969) while Surfs predominated at the same time in protected waters off East Vargas Island (150 : 10, 24 January 1969; 100 : 0, 17 February 1969), and in Tofino Inlet (200 : 100, mouth of Lemmens Inlet, 24 February 1969; 123 : 13, 2 November 1972) (DFH). During the Tofino Inlet waterfowl study (Hatler, 1973), the White-winged Scoter was noted 18 times as opposed to 52 for the Surf Scoter. Further, the Surf Scoter was listed as present during 23 of the 25 weeks between 8 October and 31 March 1972-73, while the White-winged was seen on only 13 weeks (AD). Some future naturalist may wish to test our hypothesis that depth of water and/or degree of exposure to large wave action separates these two species. This could

be done by making observations throughout the park area, noting the species composition of feeding scoter flocks, the depth of water in which they are diving (as recorded on marine charts), and approximate wave height, and analyzing the results statistically. It should be borne in mind that the total populations of the two species in our area are usually not equal, and adjustments would be required in consideration of this fact.

It is difficult to summarize our year-round array of records for the White-winged Scoter on a seasonal basis. It is clear that there was an influx of migrant scoters off Long Beach in June 1972. Numbers of 400 (1 June) to 1200 (10 June) were regularly recorded, but only 5-25 per cent of these were White-wings (AD). On 24 July, about 50 per cent of an estimated 850 scoters in Wreck Bay were this species (AD); it is possible that these represented the vanguard of a fall movement, probably of non-breeders. Some evidence of some kind of movement was obtained on 25 March 1971, when a flock of about 500 White-winged Scoters was seen near Clayoquot Spit (DFH); this exceeds, by some 300 birds, the next largest count we have obtained at any Clayoquot Sound location. It is probable that these birds had gathered at some local herring spawning bay, but whether or not they were enroute northward as a flock or would break up before migrating is unknown.

Generally speaking, the White-winged Scoter does not often occur in large flocks. Of 220 groups for which we have counts or estimates, 153 (69.5 per cent) were of ten or fewer birds, and 195 (88.7 per cent) were flocks smaller than thirty. Only six (2.7 per cent) of our recorded flocks exceeded 100 birds. Flocks of 51 or more birds were seen relatively most often in the month of August (5 of 17 flocks=29.5 per cent). This was an increase from 6.3 per cent (2 of 32) in June and 7.9 per cent (3 of 38) in July, and may reflect the beginning of the fall movement in our area. In 1968, an estimated 2000+ were seen moving south in Barkley Sound on 3 August, and birds were still "moving south in numbers" two

days later (CJG).

We have records for White-winged Scoters along the entire park shoreline from Clayoquot Sound to Port San Juan:

On 2 July 1972 alone, we saw six groups (one to three birds) between Cox Point and Gowland Rocks, two single birds between Gowland Rocks and White Island, another from there to Green Point and eight birds near Florencia Island (DFH,AD). The species is commonly seen pelagically and in deeper water channels of Barkley Sound: Loudoun Channel, near Chrow Islets, 13 birds, 26 March 1972 (DFH) and, near Hankin Island, 8 birds, 29 March 1972 (DFH); Thiepval Channel near Trickett Island (two, 25 April 1972), and west Turtle Island (16 birds, 29 April 1972) (DFH); Coaster Channel near Cooper Island (four, 7 June 1972) and Turret Island (one, 13 June 1972). It also occurs in more protected waters among the islands, having been sighted regularly in the Turtle Island Group during all seasons, and with records from the Onion Island area and Clarke Island (DFH). Along the West Coast Trail, we have records from Pachena Bay (most of 300 scoters present on 23 July 1972 were this species, DFH); bay near Shell Oil Cabin, some offshore on 17 August 1971 (DFH,JB); Owen Point area, three, 23 August 1972 (AD); Port San Juan, 80, 23 August 1972 (AD).

The White-winged Scoter is a common non-breeding resident of PRNP.

Surf Scoter (La Macreuse à front blanc)
Melanitta perspicillata (L.)

J13, F8, M18, A19, M35, J36, J31, A47, S21, O59, N38, D13 = 338 records

On our coast, this sea duck is ubiquitous. It was second only to the Bufflehead in frequency of sightings and abundance in the southern Clayoquot Sound waterfowl study areas in fall 1972 (Hatler, 1973), but in all areas outside those protected inlet waters, the Surf Scoter is number one.

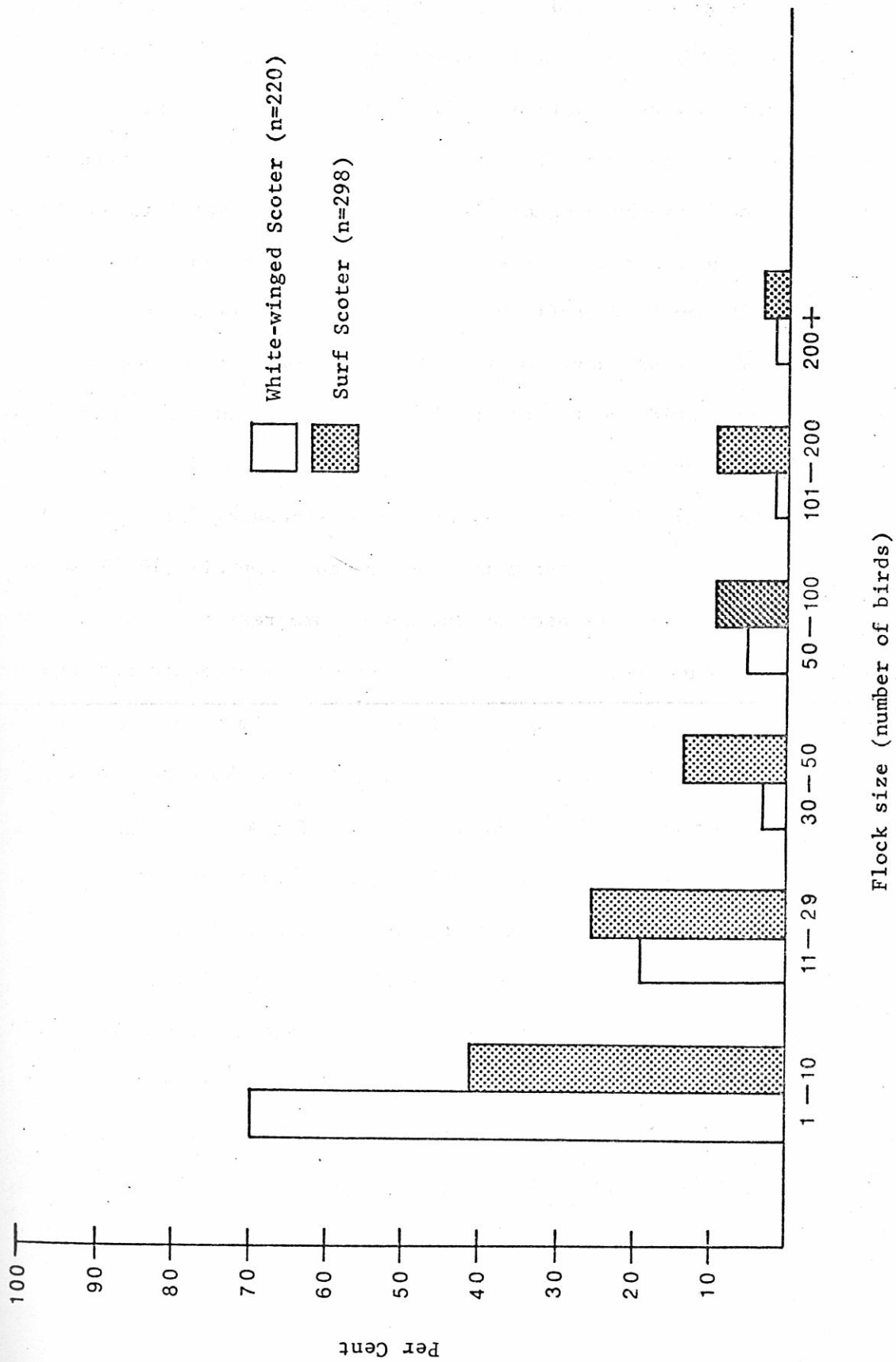
As implied in the account of the previous species, much of which was said there also applies here. This species comprised 75 to 95 per cent of the large raft of scoters (up to 1200 birds or more) which was seen regularly near Sea-lion Rocks and occasionally in Wreck Bay during June 1972 (AD). Numbers seen

here fluctuated throughout the month and into July, with 600-800 reappearing a few days after counts of 200 or less, and just when the observer was about to conclude that "the migration had passed," (e.g., 85 birds, both species, present in Wreck Bay on 17 July and 850 on 24 July, AD). Whether one large group of birds remained for a long period of time, or whether there was regular turnover with numbers arriving and leaving daily (or weekly) is not known. Actual movement northward of large numbers of birds was not evident if it occurred. On 29 April, four flocks (50, 130, 30, 50) flew high (over 300 feet), and in formation, north over Loudoun Channel, Barkley Sound (DFH). Thus we have some evidence for the spring migration occurring as early as April and as late as July.

Numbers of birds, probably mostly non-breeding first-year birds, can be seen in park waters throughout the summer, and Campbell (1968) believed that numbers off Long Beach increased as the summer progressed. This is probably a result of the gradual movement south of unsuccessful breeders and juveniles which migrated but did not breed. We have fairly good evidence that the main fall movement begins in August: 1967-flocks of about 25 birds moving south in Barkley Sound area on 6 and 10 August, and large flocks on 20 August (CJG); 1968-5 August, "flocks moving south," 10 August, 150 moving south, 14 August, 18 flocks numbering 400 birds moving south, 19 August, 10-15 flocks numbering 500+ birds, moving south, all Barkley Sound area (CJG); "up to 500 birds can be seen just beyond the surf at Green Point", last week of August (Campbell, 1968); 1969-23 August, count up to 250-300 at east Vargas Island, after counts of 30 (26 June) and 80 (15 July) there (DFH); 1971-17 August, several hundred offshore from Shell Oil Cabin, West Coast Trail (DFH, JB).

In contrast to the White-winged Scoter, the Surf Scoter commonly occurs in large groups (see Figure 3). Our largest count was of 4000 fairly carefully

Figure 3. Flock sizes of White-winged Scoters and Surf Scoters in Pacific Rim National Park area waters, 1970-1973.



estimated near Clayoquot Spit on 25 March 1971 (DFH); this was no doubt a concentration in response to herring spawn. The largest number of birds actually seen was a raft of birds near Lyall Point on 13 March 1973 (DFH, LR). Herring were spawning along Equus Beach and apparently in Mayne Bay, as evidenced by numbers of seine boats tending this area; our observation, from a Cessna 337 Aircraft, was severely hampered by poor light conditions, but we could see that a raft of divers extended from Lyall Point across the channel to Hand Island and half a mile or more in length. It was clearly comprised of several thousand birds, and the majority appeared to be Surf Scoters.

We have seen this species at every location already listed for the White-winged Scoter, and at many other as well. The bird simply occurs in all park waters. It is common between Sea-lion Rocks and Lovekin Rock, where it may often be seen diving near feeding gray whales (Eschrichtius robustus). It probably feeds on much the same items the whales are eating in that area. On 3 March 1972, many individuals in a flock of scoters had to "skitter" quickly aside when one of two feeding whales surfaced beneath them. This occurred a number of times (DFH).

The Surf Scoter is an abundant non-breeding resident of PRNP.

Black Scoter (La Macreuse à bec jaune)

Melanitta nigra (L.)

J, F2, M4, A1, M2, J3, J3, A4, S2, O4, N6, D2 = 33 records

Known formerly as the "Common Scoter", this is the least common scoter in our area. It is usually seen in company with the other scoter species, but in very small numbers. The largest group seen was 13 in Sechart Channel near Chalk Island, 26 October 1972 (DFH). The pattern of seasonal movement is probably similar to that of the other scoters; 12 were seen "migrating with Pintails"

past Cape Beale on 6 August 1969 (CJG). Three pairs were seen courting, with much whistling, near Vargas Island on 12 March 1969 (DFH).

We have records from all three park units:

Tofino Inlet, near South Bay, 1 on 13 November 1972 (AD); Portland Point, 2, 26 September 1971 (DFH, JB); Long Beach area, "usually four to six birds could be seen in company with Surf Scoters, off-shore, throughout the summer." (Campbell, 1967); Wreck Bay, three sightings in June and two in July 1972, 1-2 birds (AD); Faber Islets, five, 10 May 1972; Lyall Point, one male, 21 April 1971; Turtle Island, three, 25 October 1972; Pinder Rock, nine, 26 November 1972 (all Barkley Sound, DFH); Pachena Bay, one, 11 August 1972 (AD).

The Black Scoter is an uncommon non-breeding resident of PRNP.

*Hooded Merganser (Le bec-scie couronné)
Lophodytes cucullatus (L.)

J12, F4, M7, A6, M1, J5, J8, A7, S6, O11, N17, D5 = 89 records

Characterized as "primarily a fresh water duck" (Godfrey, 1966), this species was nevertheless seen commonly in Tofino Inlet during the fall waterfowl survey (Hatler, 1973), including one sighting of a flock of 18 birds (Maltby Slough, 11 November 1972, AD). It was recorded during all 25 weeks of the period 8 October through 31 March (1972-73) in the inlet area. It was most often seen in estuary situations, however, thus showing its fresh water affinities.

Like the Barrow's Goldeneye, the Hooded Merganser appears to be a regular denizen of salmon streams in the fall. In the Nuchatlitz Inlet area on 5 November 1969, we saw five males and three females at the mouth of a stream in Mary Basin and three males, two females in estuary waters at the head of Inner Basin (DFH, JSJ); a single female was seen on the Atleo River on 30 October 1970 (DFH, KB), 4+ were seen in the lower Megin River on 14 November 1970 (DFH), and a single bird was sighted in the lower Indian River, 27 October 1971

(DFH). There were numbers of spawning, dead, and dying salmon in all of these streams at the times indicated.

This species certainly breeds in our area, probably on small lakes and ponds, but our evidence is rather fragmentary. A female with four three-quarter-grown (flying) young was seen in a channel in the Brabant Islands on 20 August 1970 (DFH). A female with one large, flying young appeared in a bay at Turtle Island on 18 June 1972 (DFH). The supposed young bird was visibly smaller, somewhat, than the typical-looking female bird, and its head feathers were considerably more sparse. It may have been a moulting, older bird. On 9 July 1972, DFH surveyed the small lake on Effingham Island by kayak.

The following notes are extracted from his field book:

Due to an unscheduled swim shortly after my arrival, I was without the services of binoculars. No water birds were seen on the east side of the lake until four Common Mergansers were seen and flushed near the head (north) end. On the return trip about midway along the west side of the lake, a bird with three very small young were glimpsed briefly as they swam across an opening among the dead shrubbery (mostly Gaultheria shallon) and trees which ring the lake. I waited several minutes for them to reappear, but they did not so I paddled closer. I found one of the young, but it dove repeatedly and always surfaced at some distance from me and I could not get a satisfactory look at it. It was still downy about the head and neck and was certainly flightless. After fifteen minutes, I returned to the location where the four had been sighted, but could find no other bird. Continuing on along the shoreline, I flushed a female Hooded Merganser 75-100m. south, but saw no other bird even though I covered the entire shoreline, up and back, again. It seems quite likely, but it is not certain, that the bird I flushed was the mother of the brood seen.

Male-female pairs have been seen in October (15th, 1971 and 25th, 1972, both at Chalk Island, DFH), November (29th, 1972, Maltby Slough, DFH), January (24th, 1970, Bedwell River; 4th, 1972, 2 pairs at McLean Point; 25th, 1972, 3 pairs in Ucluelet Inlet, DFH), March 4th, 1972, McLean Point (NR), April (21st, 1972, McLean Point, DFH), and June (7th, Turtle Island, DFH). The significance, if any, of the October and November pairings is unknown; most

ducks do not maintain a pair bond much beyond the time of breeding. The other sightings, from January through April, and perhaps also the June occurrence are probably related to breeding, as Morse et al. (1969) indicate that this species nests from late February through April in Oregon.

Locations at which the bird has been seen other than those listed previously include: Swan Lake, four on 5 and 14 July 1972 (AD); Long Beach, Green Point-Incinerator Point area, two, 14 July 1972 (AD); Gibraltar Island Lagoon, one, 29 June and 5 August 1971 (DFH, JB); Bamfield Inlet, 10-12, 11 September 1971 (DFH); Pachena River estuary, two, 19 September 1971 (DFH, JB); San Juan River, three, 21 August 1972 (AD).

The Hooded Merganser is an uncommon resident of PRNP.

**Common Merganser (Le Bec-scie commun)
Mergus merganser L.

J4, F5, M10, A10, M30, J27, J19, A13, S8, O20, N3, D3 = 152 records

First known in our area from a specimen collected in the Clayoquot area on 8 May 1894 (Kermode, BCPM 100), this species breeds regularly among the Broken Group Islands and along local freshwater streams and may be found in protected waters of the area throughout the year.

Our breeding records are as follows:

	<u>Date</u>	<u>Location</u>	<u>Remarks</u>	
1.	2 June 1970	Maggie River	Ad. w/ 9 small young	(CJG)
2.			Ad. w/ 4 large young	(CJG)
3.	22 June 1970	Cooper Island	<u>Male</u> w/ 22 young	(RWC)
4.	17 July 1970	Moyeha River	Ad. w/ 5 large young	(DFH)
5.			Ad. w/ 7-8 $\frac{1}{2}$ grown	(DFH)
6.	27 July 1970	Sugsaw Lake	Ad. w/ 3, $\frac{3}{4}$ grown	(RWC)
7.	28 May 1971	Turtle Island	Ad. w/ "about a dozen"	(JW)
8.	31 May 1971	Tiny Group	Ad. w/ 5 small young	(DFH, JB)
9.	2 June 1971	Turtle Island	Ad. w/ 3 small young	(JB)
10.	3 June 1971	Turtle Island	Ad. w/ 10	(JB)
11.	4 June 1971	Turtle Island	Ad. w/ 1	(JB)
12.	5 June 1971	Turtle Island	Ad. w/ 7	(JB)
13.	6 June 1971	Turtle Island	Ad. w/ 7	(DFH)

	<u>Date</u>	<u>Location</u>	<u>Remarks</u>	
14.	9 June 1971	Turtle Island	Ad. w/ 2	(JB)
15.	29 June 1971	Gibraltar Lagoon	Ad. w/ 1 ($\frac{1}{2}$ grown)	(DFH)
16.	22 July 1971	Wouwer Island	Ad. w/ 5 large young	(DFH)
17.	28 May 1972	Walsh Island	Ad. w/ 6-7 tiny young	(DFH)
18.	29 May 1972	Turtle Island	Ad. w/ 6	(DFH)
19.	2 June 1972	Turtle Island	Ad. w/ 4	(DFH)
20.			Ad. w/ 1	(DFH)
21.	7 June 1972	Turtle Island	Ad. w/ 3	(DFH)
22.	1 July 1972	Clayoquot Arm	Ad. w/ 4	(DFH)
23.	8 July 1972	Turtle Island	Ad. w/ 3	(DFH)
24.	19 July 1972	Turtle Island	Ad. w/ 3, $\frac{3}{4}$ grown	(DFH)
25.	20 July 1972	Nettle Island	Ad. w/ 1 large young	(DFH)

As these data show, young appear in late May and early June, and brood sizes decline, especially from predation by crows and eagles in the islands, from then through July when the young are nearly full grown. Observations 7, 10 and 12-14 probably involved the same brood, which was being harassed by crows in observation 7, was reduced from 10 chicks to 9 by crows during observation 10 (JB), and was stooped at four times, half seriously, by an eagle during observation 12 (DFH). On the 4 June observation (no. 11) a pair of eagles made a determined, but unsuccessful effort to catch the single chick involved, and three or four crows were seen harassing a brood, individuals occasionally darting in and attempting to snatch young from the water, on 2 June (observation 9). Clearly, the larger the brood, the more difficulty a female merganser has in defending her family. It also seems evident that young mergansers are vulnerable to crows only in the first few days after hatching.

Another incident which should be related occurred subsequent to observation 8 (Tiny Group, 31 May 1971). On this occasion, a small chick was found sitting on a small, floating log shortly after a family group (5 young) was seen. At our approach (DFH, JB), it jumped into the water, but then acted in a most peculiar manner, swimming in small circles and acting very dazed and disoriented. We easily caught it and, foolishly, decided to try to reunite it with the rest

of the brood, which we located by the largest islet in the Tiny Group a short time later. As should be expected, the family fled from us, and one chick was inadvertently cut off from the rest as it skittered into a small, blind channel. It had quickly become obvious that the chick we had first picked up was far too weak to join the group, but we now felt a new obligation to "rescue" the second chick. With some difficulty, during which the chick became quite exhausted, we caught it and then sped after the family which, by then, was half way to Jaques Island. The group again fled, and we released the strong (originally) chick to its fate at that point. When last seen, it was hurrying, but not at full strength, in the proper direction, and it is possible that it eventually rejoined the brood. However, the remaining three chicks were riding on their mother's back at that time, and she was moving faster than was the trailing chick. An attempt was made to feed and care for the original chick (which was 2-3 days old), but it died that night. It weighed 37.8g, and its measurements (in mm) were: chord-34, exposed culmen-17, tarsus-22, hind toe-31, middle toe-6 (JB). The specimen was donated to the University of British Columbia Vertebrate Museum.

There are at least two lessons to be learned from this incident:

1. Attempts to "help" wildlife in its daily dealings rarely succeed.
2. Downy young of water birds are easily exhausted and should not be meddled with.

We have recorded courting activities among Common Mergansers only once. On 20 April 1972, near the head of Ucluelet Inlet, two males were courting a single female, and they frequently came to blows, biting and hitting each other with wings in most violent fashion so that the white water was thrown high in all directions. Birds have been seen flying among or landing in trees on three occasions: 29 June 1971, Willis Island, a female circled high among trees, and hovered, nearly landing, twice (DFH); 10 May 1972, Turtle Island,

a female was seen flying and weaving through trees, sometimes free-falling 8-10 feet and trying to hover. A male paralleled her in flight, but stayed outside the trees (DFH); 1 July 1972, by side of stream at head of Clayoquot Arm, Kennedy Lake, a female landed on a spruce limb about 70 feet above the ground, looked around a bit, then took off and came back, landing on another limb about 10 feet higher. She left three more times, and came back to this higher limb twice, coming in from different angles each time (DFH). Whether these flights involved searches for nest sites, attempts to lure young out of nest cavities, or some other behaviour is unknown.

Throughout the summer, Common Mergansers can be seen singly and in small groups (less than 10) roosting on floating logs and beach boulders throughout the islands, and feeding in coastal streams. In fall they apparently gather on salmon streams to feed on dead fish and spawn: 30+ were seen at the mouth of the Megin River on 14 November 1971 (DFH), and small numbers have been seen in other streams on many occasions. On 28 November 1972, at least 200 mergansers, presumably but not certainly this species, were gathered along a short stretch of the Hobiton River (DFH, AD, seen from air). Flocks were occasionally seen in southern Clayoquot Sound during the fall and winter of 1972-73. A flock of 150 was seen near South Bay on 15 October (DFH, AD), and there were 95 on the Ducking Flats the following day (AD). The species was listed present on 14 of 25 weeks, 8 October through 31 March (1972-73), in that area (AD). Our records suggest a local decrease in numbers from December through March, but there is not sufficient evidence to affirm it. On 30 May 1969, a flock of 43 birds including 25 males in breeding plumage was found roosting on a beach on northeast Vargas Island, and they moved northward later (DFH). This may have been a migratory movement.

The species is widely distributed in our area, but does not often

occur in waters along the open coast except at the mouths of streams, and in relatively protected bays:

Portland Point, one in sheltered bay there, 31 July and 6 August 1967 (Campbell, 1967); Wreck Bay, north end, one, 6 June 1972 (AD); Barkley Sound, a number of locations have already been mentioned; it is found in protected waters throughout the islands; Pachena River, 12, 8 August 1972 (AD); Klanawa River, 6, 11 August 1972 (AD); Tsusiat Falls area, 6, 15 August 1971 (DFH, JB); Walbran Creek, 6, 19 August 1971 (DFH, JB); Port San Juan, 7, 20 August 1972 (AD).

The Common Merganser is a common resident of PRNP.

Red-breasted Merganser (Le Bec-sci à poitrine rousse)
Mergus serrator L.

J7, F7, M9, A16, M13, J2, J1, A2, S1, O8, N18, D6 = 90 records

Though we have at least one record for each month of the year, this species does not often occur in our waters in summer. Our six June through September records are of two males and a female at Dodd Island, 22 June 1970 (RWC), a single female at Cleland Island on 2 June and 6 July 1970 (MGS), six birds near Kulaht Creek (Bonilla Point area), 17 August 1971 (DFH, JB), a single bird at Vargas Island, 1 August 1972, and eight in Pachena Bay on 17 September 1971 (DFH). Richardson (1971), recording this species during three weeks of July, and during the third week of September (20 birds), listed it as a "summer resident" in the Browning Inlet-Grant Bay area, but it has a summer status of "casual" in the Vancouver area (Campbell et al., 1972) and is rarely seen in summer in the Victoria area (Tatum, 1972). Further documentation of this species' summer occurrence in our area is desirable; identifications should be made with care.

In 1969 and 1970 the bird was not recorded, in fall, until November ("some" at Mary Basin, 5 November 1969, DFH, and one at Vargas Island, 21 November 1970, DFH), but October sightings were made in 1971 and 1972 (17 October 1971,

15 in Ucluelet Inlet, DFH, and 11 October 1972, two in Tofino Inlet, AD), and the bird probably arrives in October during most years. It is present and seen regularly from then until early May. In Tofino Inlet in 1972-73, it was seen during 24 of the 25 weeks from 8 October-31 March 1972-73 (AD).

We have seen a male-female pair as early as January (29th, 1972, Ucluelet Inlet, DFH), but pairs are seen commonly in April and May (several records). Six males were seen courting two females on 16 March 1970 (DFH). By early May, most have left. Our last spring sightings for the years of the study were: 1969-29 May, 12 at Vargas Island (DFH); 1970-27 April, 25-30 at Vargas Island (DFH); 1971-7 May, 30 at Ucluelet Inlet (DFH); 1972-19 May, 1 pair at Dodd Island (DFH).

Location records from all three park units have already been listed. In addition to these, we have seen this species at Pinkerton Islands, "several", 17 April 1970; Hand Island, 20, 19 April 1971; Turtle Island, six, 11 April 1972 (all DFH); Wreck Bay, three, 22 October 1972 (SHR).

The Red-breaster Merganser is a locally common winter bird in PRNP, with occasional stragglers present during the summer months.

Goshawk (L'Autour)
Accipiter gentilis (L.)

J1, F2, M1, A, M, J, J, A, S, O1, N, D1 = 6 records

Although our area is within the theoretical breeding range of this hawk (Godfrey, 1966), our present evidence is sufficient to say only that it winters here. The bird has been observed during just two of the five winters for which we have records. On 6 December 1968, an immature bird was seen over an Indian midden meadow on Vargas Island, facing into a stiff southeast wind so that it hung nearly motionless in the air. With the control typical

of hawks, it occasionally dipped one or the other wing slightly and slid straight sideways for up to 30m, and in this way it examined the entire meadow without once flapping its wings. On one occasion it made a bit of a stoop and flushed, but did not come close to catching, a Varied Thrush. It finally left after some harassment from two Ravens. Another sighting, probably of the same bird, was made in the same area on 11 January 1969 (both DFH).

On 25 February 1969, a Goshawk made an unsuccessful stoop at some Green-winged Teals, then swinging around to return to its perch, it spotted several Buffleheads on the water nearby and skimmed over them with talons outstretched. The Buffleheads easily escaped by diving, and the hawk hovered briefly over the water where they had gone down, then sat on a nearby snag and called repeatedly as though perturbed.

Our next records were of birds seen in the Tofino Inlet area, one at McLean Point on 22 October 1972 (SHR) and another near South Bay on 7 February 1973 (AD). Finally, on 3 March 1973, a handsome adult bird was watched at close range as it very nearly captured a Belted Kingfisher at Turtle Island (DFH, SRJ). The kingfisher escaped each time the hawk got close by diving headlong into the water. The hawk hit the water twice, and the second time he was in long enough for the kingfisher, which had switched directions under water, to escape to cover. The whole event was closely supervised by a flock of Northwestern Crows, which then mobbed the hawk when he perched.

The Goshawk is a rare winter bird in PRNP.

*Sharp-shinned Hawk (L'Épervier brun)
Accipiter striatus Vieillot

J1, F1, M1, A, M, J1, J6, A2, S6, O10, N4, D4 = 36 records

Our distribution of records suggests that this species is most common in our area during the fall migration (especially late September through October) and in winter, a situation which also pertains in the Victoria area (Tatum, 1972) and the Lower Mainland (Campbell et al., 1972). An adult male of this species was collected in Bamfield on 1 October 1931 (Martin, BCPM 5546), and this constitutes our first record. It has been seen in the area every fall, 1968-1973. Earliest sightings were, 1968-10 October, one at Vargas Island (DFH), although an adult was seen near Incinerator Point, flying toward the airport, on 28 August (RWC); 1969-20 September, one at Tofino Inlet (DFH); 1970-20 September, again one at Tofino Inlet (DFH); 1971-19 September, one harassed by crows at Turtle Island (JB); 1972-15 September, one making dives at crows (DFH).

Of interest, however, are our summer records which lead us to suspect that some breeding occurs locally. Most instructive are a series of observations from the Turtle Island area during the summer of 1971 (all JB). On 8 July an adult male was seen flying between Walsh and Dodd Island, and single birds were seen at west Turtle Island and at Willis Island just a short distance away on 12 and 16 July respectively. On 31 July, a pair (male and female) of these birds was seen flying over Willis Island in the same area. As a falconer, JB (Jim Biggar) is a serious student of hawks, and he had little doubt that there was a nest in the vicinity.

During the same summer, an adult Sharp-shinned Hawk was seen carrying a small bird from Benson to Clarke Island (20 July, DFH), and another bird of unknown age was seen briefly as it sped into an alder stand near Kennedy Lake (8 August, DFH). In 1972, one bird was seen near the head of Grice Bay (23 June) and another was seen on Radar Hill (6 July)(both AD). Despite the number of summer records, we have seen no actual nest and no recently fledged young, so the bird's breeding status must remain speculative.

Our spring records are insufficient to allow us to determine a migration date, but the species is said to leave the Vancouver area mostly in April (Campbell, et al., 1972).

The Sharp-shinned Hawk in PRNP is an uncommon resident.

Cooper's Hawk (L'Épervier de Cooper)
Accipiter cooperii (Bonaparte)

J, F, M, A, M1, J1, J2, A, S, O, N, D = 4 records

On 8 and 9 July 1960, a single bird was seen at Stubbs Island (CJG); a male was seen flying from Turtle to Willis Island on 22 June 1971 (JB); a single bird flew across Grice Bay in the McLean Point area on 10 May 1972 (NR).

The fact that we have only summer records is most peculiar, as this hawk is regarded as rather rare in summer, though common in winter, in other parts of southwestern B.C. (Campbell, et al., 1972; Tatum, 1972). However, several nests are known in the Victoria area (F.L. Beebe, pers. comm.). Though we have been provided with no field descriptions of the birds seen in our area, our observers are of good reputation, and we do not consider the occurrence of the Cooper's Hawk here unusual in view of its known distribution elsewhere. We therefore tentatively accept these records, but urge future observers to examine and describe accipiters carefully.

The Cooper's Hawk is very rare in PRNP. No seasonal designation is possible with the information we have available.

*Red-tailed Hawk (La Buse à queue rousse)
Buteo jamaicensis (Gmelin)

J8, F9, M10, A3, M2, J5, J3, A3, S4, O4, N4, D7 = 62 records

This is the most common hawk in our area, and although we have not seen

any nests, we are all but certain that it breeds locally. The nearest thing we have to evidence is an observation of a bird carrying a stick, 14 June 1969, in the Kennedy Lake area (DFH), although this is admittedly a bit late for nest construction in this species. The regularity of sightings throughout the summer is also suggestive.

Undoubtedly, however, the bird is most common in the winter months, as migrants move from snow-covered hunting ranges inland to the milder coast. Like many other carnivorous species here, the Red-tailed Hawk makes use of dead and dying salmon along streams in the fall. On 29 October 1970, one was seen along the Atleo River, and on 14 November 1970, two were seen within a mile along the Megin River (DFH). Much of their winter feeding in this area probably involves scavenging on beaches (e.g., one bird seen on MacKenzie Beach, 24 January 1972, feeding on the discarded carcass of a trapped otter, DFH), and perhaps use of intertidal invertebrates. There are few small mammals suitable as prey for this species, especially during recent years when populations of the Townsend vole have been at a low ebb (see Hatler, 1972). During the winter of 1968-69, a local population of this vole on a small Vargas Island meadow was thriving, and an immature hawk of this species was seen there seven times between 15 January and 21 March (DFH).

For warm-blooded prey in our area, the Red-tailed Hawk must rely mostly on birds, and undoubtedly does so to at least some extent. During the 25 week period of 8 October through 31 March (1972-73), it was recorded present on 17 weeks in the bird-rich wintering areas of Tofino Inlet (AD). On 29 December 1971, we saw an adult hawk standing on a rock headland of Vargas Island with a crow in its talons (DFH, JB). It was being mobbed by other crows and, surprisingly, by two ravens. The surprise comes from the fact that Ravens are, themselves, regularly harassed by crows, and one would not think they would be

concerned about the loss of a potential pest. Nevertheless, they were carrying the attack, diving within a foot or so of the hawk, while the crows yelled loudly from several yards away. As we approached for a closer look, the ravens pressed harder, nearly striking the hawk on several dives. The hawk dragged the crow a few feet up the rocks, then released it and flew to a nearby tree. The crow, which we had thought was dead, jumped up and flapped away with understandable haste, shedding half a dozen loose feathers as it went.

Locations at which we have seen the Red-tailed Hawk include:

Chesterman Beach, one beautiful light-phase bird, 14 January 1969 (DFH); Incinerator Point area, one adult seen soaring, 4 August 1967 (Campbell, 1967); Long Beach campsite area, one adult on power pole, 6 February 1970 (DFH); logged area just northeast of preceding location, 3 July 1972 (NR); Wickaninnish Road, one adult, 7 July 1972 (AD); Lost Shoe Creek Road, one bird 4 and 23 May, 10 June and 19 July (NR), and one adult, 4 and 22 June (AD), all 1972. (There may have been a nest in this area.); Swan Lake, one, 19 June 1972 (DFH); Highway Junction, one, 19 December 1971 (DFH); Ucluelet Dump, one adult, 5 February 1972 (DFH); Barkley Sound--one record only, one bird on Benson Island, 5 March 1973 (DFH, SRJ); West Coast Trail area--one record only, a bird seen soaring between Black Lake and Pachena Point on 24 October 1972 (DFH, AD, from aircraft).

The Red-tailed Hawk, though it is our most common hawk, is not seen often. It should be considered an uncommon resident of PRNP.

Rough-legged Hawk (La Buse pattue)

Buteo lagopus (Pontoppidan)

J, F, M, A, Ml, J, J, A, Sl, Ol, N, D = 3 records

On 10 October 1937, a female of this species was collected near Tofino (Peake, BCPM 52). We are aware of no other records for this coast from then until 1971. In that year a bird was seen near Power River (Ououkinsch Inlet) on 26 May (AEAH), and another was seen in the vicinity of the Tofino Gravel Pit on 15 September (DFH). In subsequent questioning, the May observers indicated

that their bird was a light-colored buteo with distinct black wrist patches; field notes associated with the September sighting call attention to the wrist patches and also to a white patch at the base of the tail. The latter bird was seen for several minutes in good light.

In the Vancouver area, this species is listed as common in the winter (Campbell et al., 1972), while it is considered rare on southern Vancouver Island (Tatum, 1972). In PRNP, the Rough-legged Hawk is a very rare migrant.

Golden Eagle (L'Aigle doré)
Aquila chrysaetos (L.)

While there are no records as yet for our area, Golden Eagles will certainly be seen here eventually. On 13 April 1969, an immature bird was seen flying over the "switchbacks" of the old highway on the mountain above Sproat Lake (DFH). Recently, apparently coincident with the spread of feral rabbits on southern Vancouver Island, there have been an increasing number of sightings in that area, and specimens of this bold bird have been obtained from local poultry farmers (RWC, pers. comm.).

The Golden Eagle is hypothetical for PRNP.

**Bald Eagle (L'Aigle à tête blanche)
Haliaeetus leucocephalus (L.)

J13, F9, M24, A21, M55, J72, J55, A37, S8, O17, N14, D7 = 332 records

This popular and impressive bird will be seen and recognized by thousands of visitors to the PRNP area, where it will too often be referred to as the "Bald-headed Eagle." This redundant terminology (bald clearly refers to head in this context, and no further description is necessary) has even been

heard more than once in beach talks given by naturalists.

It is common knowledge that the species has declined alarmingly over most of its former range in eastern North America, but there is no evidence of a similar decline in the west. Indeed, the coasts of British Columbia and Alaska harbour exceedingly large populations; certainly among Canadian national parks, only Pacific Rim can boast that Bald Eagles may be seen daily throughout the year within its boundaries. This species is conspicuous and most interesting to watch, yet it is secretive and widespread in occurrence so that to conduct a significant study would require more time and energy than is practical to devote to it in a project such as this, which is concerned with all of the park's avifauna.

Useful references already in existence include a report on detailed population studies now in progress in Alaska (see King et al., 1972), and a study of the species in the San Juan Islands off the southern end of Vancouver Island (Retfalvi, 1965). This last mentioned author has been flying regular eagle surveys along our coast, with emphasis on the Barkley Sound area, and his report on numbers and locations of nests will be most useful when it becomes available. There have been studies, including nest surveys, of Barkley Sound eagles previously (Hancock, unpublished).

Of immediate interest to naturalists who wish to fit this bird into the local ecological framework which they hope to portray is information on what it eats. Brooks (1922) and Munro (1938) have reported the use of carrion, crabs, fish and a variety of water birds, and this is in agreement with our observations. Following is a list of items, together with the circumstances under which they were obtained, which we have seen being used by Bald Eagles in the PRNP area. There are innumerable items which alert naturalists will be able to add to this list in the future.

Invertebrates

Octopus (Octopus sp.) -16 May 1968, five eagles feeding on a 30-35 pound specimen on a mudflats at Vargas Island. It was probably found dead, but seemed fresh (DFH).

Crabs (Brachyura)-Eagles are commonly seen on tide exposed mudflats feeding on crabs, especially Cancer magister and Cancer productus (DFH)

Fish

Skate (Raja sp.)-One bird seen feeding on one among high tide debris near Green Point, 8 May 1972 (DFH).

Herring (Clupea pallasii)-On 25 March 1972, at least six eagles were regularly cruising over a bay near the head of Ucluelet Inlet, where a large run of herring was spawning. The eagles made frequent stoops at gulls feeding in the area, and occasionally succeeded in snatching fish these birds had dropped (DFH). At least 15 eagles were seen soaring and sitting on perches near a herring run at Equus Beach, Barkley Sound, on 13 March 1973 (DFH, LR).

Salmon (Oncorhynchus sp.)-Congregation of eagles at salmon streams in the fall is common knowledge, and it will not be further documented here. We have not failed to see eagles at any stream in which salmon were present in numbers (DFH). We have no confirmed records of eagles catching salmon pelagically.

Seaperch (Embiotocidae)-A small fish plucked from the water by an adult eagle near Turtle Island, 1 June 1971 (JB) was believed to be of the species Damalichthys vacca. The fish pirated from an Osprey (in the incident related in the Osprey account) appeared to have been a seaperch (DFH).

Kelp Greenling (Hexagrammos decagrammus)-On 4 July 1972, an adult eagle was seen apparently attempting to entice a young bird to fly from a nest on Janson Island. When first detected the adult was calling from some distance away; it appeared carrying a 350-375mm fish, almost certainly this species. It flew near the nest tree twice, then on the third pass it landed at the edge of the nest. The eager young bird reached for the fish, but the adult took off again and landed on a tree some 50m distant, again calling. A few minutes later adult again flew near the nest without landing, but then became aware of the observer and flew away (DFH).

Red Snapper (Sebastes ruberrimus)-On 21 June 1970, an adult eagle was seen to hit the water near a reef in Tofino Inlet, and then commence swimming toward the reef. The fast incoming tide swept the bird beyond the reef, and it drifted up the inlet a considerable distance from the nearest shore, but was swimming steadily (DA). DFH arrived after the eagle had been in the water for 8-10 minutes, and a boat was launched. At the approach of its would-be rescuers, the eagle leaped from the water and flew to shore. It had left behind a 565mm red snapper, probably one which had been discarded by someone along the Tofino waterfront. This fish weighed exactly seven pounds, and it was clearly too much for the bird to lift.

Cabezon (Scorpaenichthys marmoratus)-On 16 March 1970, an immature eagle was surprised as it fed on a large (620mm) fish of this species (DFH). The fish was still alive, although it had been opened from vent to jaw, and much meat had been eaten from the body surrounding the coelom. The innards had been pulled out, but none had been eaten. It is possible

that the eagle had found the fish stranded in a nearby tide pool., but it is more likely that it had expropriated it from an otter (Lutra canadensis). These animals frequent that area, and they commonly catch large cabezons (see Hatler, 1972).

Midshipman (Porichthys notatus)-On 27 May 1971, an adult eagle, encountered suddenly at close range, flew up leaving a live midshipman behind on a rock (DFH). Another specimen, this one dead, was found in the water nearby. These fish are occasionally found in the intertidal zone (Clemens and Wilby, 1961), and with other intertidal fish, would be normal prey for an alert, shore-watching eagle.

Birds

Arctic Loon-On 4 June 1969, an eagle caught an apparently ill, immature bird and swam with it to shore. This incident has been related more completely elsewhere (Hatler, MS).

Pelagic Cormorant-Campbell (1969) watched an eagle swim to shore with a cormorant it had caught near Mitlenatch Island, on the east coast of Vancouver Island. In early spring 1969, nine eagles were seen sitting on a rock in Father Charles Channel near Vargas Island, and one of these was eating a freshly killed Pelagic Cormorant. It tried to fly away with the prey, but could not carry it and dropped it into the sea (DFH).

Canada Goose-A dead goose was found on a beach of Vargas Island on 8 November 1968; there were eagle tracks around the carcass and some feathers had been plucked. An eagle was calling from a nearby tree. It appeared that the goose had been taken as carrion, as there were also mink tracks around it and it had been decapitated in typical mustelid fashion. This is an area which is hunted by man, and the goose was probably found wounded or dead by the mink, and was later claimed by the eagle.

Ducks-A number of hunters in the Tofino Inlet area have reported having wounded ducks "stolen" by eagles. Doubtlessly many of the birds taken by Bald Eagles in this area have first been disabled by man, however, apparently healthy ducks may also be preyed upon under some circumstances. On 16 January 1970, DFH witnessed the following incident in a shallow bay near Vargas Island. A mature eagle was seen to stoop on a duck believed to have been a female Surf Scoter, and the duck dove. The eagle then flew in tight circles over the spot where the duck had gone down, clearly following its underwater progress, and stooped again just as the duck surfaced. The duck immediately went back down, and again the eagle was there when it arose. This was done five times in succession, and only on the last stoop of the five did the eagle actually touch the water. The duck narrowly escaped on that occasion, but was exhausted by that time and the eagle, almost casually, fluttered slowly down and reached tarsus-deep on his sixth descent, and then flew away to nearby woods with the duck in his talons.

This technique was seen again some days later, but the water surface was rippled by wind (it had been smooth in the previous instance) and the Bufflehead which had been the eagle's potential victim narrowly

escaped by flying, after surfacing, in a direction which the eagle was apparently not anticipating (DFH). Other observers have also reported the successful use of this hunting method (AD; Munro, 1938). On 14 May 1971, an eagle snatched a male Surf Scoter from the water near Tofino (RWC).

Gulls-In June 1968, an immature eagle was seen to stoop at a Glaucous-winged Gull which had temporarily become entangled in some fishing line, but he turned away when the gull faced him (DFH). On 5 July 1969, an adult eagle was seen on a mud-bar near Beck Island (Tofino Inlet) with a juvenile gull in its talons. There were numbers of California Gulls on an adjacent bar, and this was probably the species involved (DFH). Eagle pellets found on the D.O.T. light platform at Seabird Rocks were packed with the down and hard parts of Glaucous-winged Gull chicks (DFH). An adult Bald Eagle was seen perched there just before the pellets were found (25 July 1972).

Mammals

River otter (Lutra canadensis)-An immature bird was seen feeding on the very rotten carcass of a small otter, 20 July 1968. The evidence suggests that the animal was taken as carrion (DFH).

Northern Fur Seal (Callorhinus ursinus)-An immature bird was found feeding on the carcass of a pup, almost certainly carrion, on a Vargas Island beach 9 June 1969 (DFH).

Steller Sea Lion (Eumatopias jubata)-Over 30 birds seen soaring over, perched near, and feeding on a large bull which washed ashore on Bartlett Island 23 May 1969 (DFH).

Mink (Mustela vison)-On 19 June 1969, an eagle was seen to fly from a Tofino Inlet mudflats with an object which appeared to be a mink in its talons. Visibility was poor, because of rain, and identification of the object must remain tentative. There was "another" mink running on the flats near where the eagle had been before it flew (DFH). Other observers have reported seeing eagles catch mink, and though it undoubtedly occurs occasionally, DFH has frequently seen eagles and mink hunting crabs on the same mudflats, with neither paying much attention to the other. In March 1972, near Incinerator Point, an eagle was seen carrying a mustelid which may have been a mink, but which seemed to have been a marten (Martes americana) (DF, BBC).

Brooks (1922) stated that birds constitute the bulk of the winter and spring diet of British Columbia Bald Eagles. He based this statement largely on a series of observations he made in one small bay near Masset in the Queen Charlotte Islands, and most of the predation incidents he observed probably involved just a few eagles, or perhaps only one. While it may be that birds are

not used by all eagles to the extent suggested by this author, it is nevertheless true that at least some eagles are efficient bird hunters.

Further, it is evident that all eagles are much respected by their potential prey. The fact that large flocks of ducks always flew up when eagles appeared in the Tofino Inlet area has been noted elsewhere (Hatler, 1973). Flocks of gulls on the beach and on nesting islands react similarly. A perched eagle is no threat, and these birds will frequently be seen sitting on our seabird islands (Cleland Island, one to five eagles visited regularly throughout summers of 1969 and 1970, MGS; Great Bear Rock, 19 May-three adults and one immature, 6 June - one adult, 13 June-two birds, all 1972, DFH; Seabird Rocks, one adult, 25 July 1972, DFH). In every case, whenever a perched eagle on one of these islands lifts off, every gull on the island rises in unison, and most will remain in flight either until the eagle has perched again or until it has flown away.

It appears evident that most mammalian food is taken as carrion in this area. Small mustelids, especially the shore foraging mink, and the young of raccoons (Procyon lotor) are frequently in situations which would seem to make them vulnerable to eagle predation, but they seem to be taken only rarely. Clearly, the Bald Eagle in this area lives on birds and the fortunes of the tides.

Location records seem unnecessary for this bird. It may be stated simply that it has been seen over the whole of the Phase one shoreline, on all of the named and most of the un-named islands in Barkley Sound, and at many locations over the whole of the West Coast Trail. It is probably most abundant in Barkley Sound, especially in the northeastern end (outside park boundaries) (Retfalvi, pers. comm.) Although it is usually seen singly or in pairs, large numbers may often be seen congregating around some rich food source such as a dead sea mammal or a run of fish. Some documentation for this has already been presented. The most spectacular sighting, however, was that of 63 birds soaring and feeding around a shrimp boat in Barkley Sound, August 1970 (RWC).

The Bald Eagle is a common resident of PRNP.

Marsh Hawk (Le Busard des marais)

Circus cyaneus (L.)

J, F, M, A, M, J, J, A, S4, O2, N, D = 6 records

Our sightings are all of female or immature birds, seen as follows:

25 September 1970, one at Vargas Island being mobbed by crows (DFH); 19 September 1971, one flying from Lyall Point towards the Turtle Island Group (JB); 22 September 1971, one soaring near Sarita Bay (DFH); 19 September 1972, one flying low over a bay at the head of Ucluelet Inlet (DFH); 1 October 1972, one seen hunting over Grice Bay meadows behind the Lovekin Mansion (DFH); late October 1972, one in Tofino Inlet area (AD). This species, with its long wings and legs, characteristic white rump patch, and peculiar manner of flight, is easily identified and these are all satisfactorily documented records.

The Marsh Hawk is a rare fall bird in PRNP.

**Osprey (L'Aigle pêcheur)

Pandion haliaetus (L.)

J, F, M1, A16, M27, J36, J28, A31, S8, O, N, D = 147 records

This excellent fisherman, a bird which is declining in many parts of the United States (Henny and Ogden, 1970), can frequently be seen along beaches in the PRNP area. The monthly distribution of our observations indicates that it arrives here from its South American wintering grounds during April of most years, and is gone by the end of September. The earliest record during the years of our observations was a sighting of two birds near Green Point on 28 March 1971 (MEH). Birds were first seen between 16 and 28 April in other years.

Our latest record is 29 September 1969, Vargas Island (DFH); sightings were made on 25 September (DFH), 19 September (JB), and 9 September (DFH) in 1970-1972 respectively, and these constituted the last records for those years.

Nesting probably begins fairly soon after arrival, but we have not examined the contents of nests, and have no information on any aspect of reproduction in the park area other than that it occurs. Incubation certainly takes a month or more, and young ospreys are said to remain in the nest about eight weeks (Henny and Wight, 1969). Most of the nests we have seen in this area have been large stick structures perched on the tops of tall snags. One was much smaller, and was located on the limb of a low, wind-blown spruce (Picea sitchensis) little more than 12m above the ground (DFH). Mr. Don Close, a summer resident at Cox Bay where this nest occurred, told me that at least three young were raised there in the summer of 1970; he saw five birds perched on and near the nest on 28 August of that year. This nest has not been occupied in subsequent years. (1971, Don Close, pers. comm.; 1972, DFH).

At least three pairs, and very likely more, nest each year on Vargas Island, and many of our observations have come from there. The most easily observable nest, one located near the north end of Yarksis Beach on east Vargas Island, was occupied yearly, 1968-1971, but no ospreys were seen during two visits there in June 1972. The outcome of nesting in 1968 is unknown, but in 1969 a single young bird was raised. On 6 August an adult was seen flying high over the nest with a fish in its talons. It was calling continually, and was alternately climbing, then dropping toward the nest, then climbing again. It seemed evident that it was trying to entice the fully feathered young bird to fly. On 21 August, three birds, probably the adults and the single young, flew from the nest tree (DFH).

Sometime during the winter of 1969-70 the nest fell (undoubtedly it was blown) from the tree (first noticed 27 February). The Ospreys arrived on

22 April (they had not been present on either of the two days previous), and sat on the tree near where the nest had been. One called when an eagle passed over, indicating that it was territorial about the site. Both birds were seen sitting there on 25 and 26 April, with no sign of nesting activity, but on the morning of 27 April it was evident that nest building had begun. Several sticks had been placed across some uppermost branches, near where the previous nest had been. It was most incredible how fast this nest grew. By 4 May it was already an estimated 18 inches high and four feet or more in horizontal diameter. By 18 May the nest was of such a size that I would have thought it was the old nest had I not known better; at this time an adult bird was sitting on the nest, apparently incubating. The adults were there at least until late June; on 20 June one of them chased a Great Blue Heron which tried to land in a nearby tree, and on 21 June one was seen carrying a fish to a tree near the nest. Apparently, however, there were no young raised. Two birds were seen on the nest tree, but not on the nest, on 14 August, and a single bird was seen there on 16, 30 and 31 August, and on 18, 22 and 25 September.

Another nest, new that year and located about one mile north of the above, was discovered on 26 May with an adult bird apparently incubating. This nest, too, was believed to have been unsuccessful. The new nest was not reoccupied in 1971, but a pair was seen back at the Yarksis Beach nest tree on 8 May, and a single adult was seen at the nest on 8 July. There was no activity in the vicinity on 7 August, though, and I suspect that again they failed to produce young. As indicated earlier, they apparently did not return in 1972.

Henny and Wight (1969) point out that young Ospreys are subject to considerable mortality during the long period which they are confined to the nest. Though the completed clutch consists of 2-4 eggs in this species (Godfrey, 1966), Henny and Ogden (1970) calculate that just 1.22-1.30 young per nest need to be

fledged to maintain a stable population. These authors point out that in many areas of the United States, this level of production is not being realized. Indeed, the mean fledging rate for 239 active nests in Connecticut and Maine for the period 1957-1964 was computed as just 0.27 birds per nest (Henny and Wight, 1969). Henny and Ogden (1970) implicate pesticides in the decline of populations in the eastern United States. Whether our PRNP area Ospreys are producing at a satisfactory rate is unknown. Sightings of individuals hunting along local beaches have not declined noticeably over the years of the study, but the relative absence of August family groups over two in recent years may be cause for some concern (although it may also be "normal"). One healthy family group of five (i.e., probably three young) was seen in the Port San Juan area on 20 and 22 August 1972 (AD).

We know of only two actual nest sites within park boundaries, but know the approximate locations of a few others, judging from the regular appearance of hunting birds, the direction they fly after catching fish, and their behaviour to other species. One known nest discovered on 3 May 1972 (NR), less than a quarter mile directly southeast of the easternmost of the three "fingers" of Grice Bay. It can be seen from the logging road which branches off the Tofino Highway just north of the Long Beach campsite; more specifically, the nest is in line with, to westward, of the first spur road near the uncut forest in this area. The other nest is just north of Portland Point, about 150m from the shore (RWC). There is a nest somewhere in the vicinity of Cox Bay, at least one along Long Beach between Green Point and Quisitis Point, one near the north end of Wreck Bay, one somewhere in the vicinity of Pachena Bay, and at least one in the San Juan River area. In addition, after only two sightings of Ospreys in the Broken Group during previous years (Turtle Island, 31 August 1971, and, Effingham Island area, 19 September 1971, both JB), a pair has taken up residence

at Turtle Island in 1973 (JW). One bird was seen chasing an eagle from an area near the northeast end of the island on 10 July (DFH), and there is almost certainly a nest there. Finally, there is a nest south of, and visible from, the main road in mid-Port Renfrew (seen 22 August 1971, DFH, JB).

The locations mentioned were named on the basis of numbers of sightings from each over the years, and no further list of occurrence records will be presented here. The species is likely to be seen hunting over shallow water of sand beaches and mudflat bays or flying over headlands between such areas, throughout the park. An exception, as implied earlier, is the Broken Group area, where the birds are most uncommon--surprisingly so, as pile seaperch (Damalichthys vacca) frequent many of the shallow, protected bays in this area in large numbers and would probably be most vulnerable to hunting Ospreys.

The best time for observation of this bird is early morning, especially in June and July when, usually, tides are low and winds are light. It is from such observations that our opening description of the Osprey as an excellent fisherman was derived. Of 32 hunting stoops recorded over the years (DFH), 21 have been successful, and 5 of the 11 misses came on a single day when a strong northwesterly wind was apparently influencing the bird involved. In those instances on which it has been possible to identify the fish carried by these birds, 8 have been sculpins (Cottidae--most, if not all the Staghorn Sculpin, Leptocottus armatus) and 8 have been seaperch (Embiotocidae, mostly Phanerodon furcatus). The Yarksis Beach Ospreys were twice seen to take snakes to their nest (13 May 1968, DFH, and 21 July 1969, SRJ), and on 15 June 1971, one picked up a dead rat (Rattus norvegicus) which had been killed by dogs hours previously, and this bird and a companion were then harassed by eagles for several minutes as they tried to carry it away (Ucluelet Inlet area, MEH).

An adult Bald Eagle was seen successfully pirating a fish from an Osprey at Vargas Island on 26 June 1969. Though the Osprey had a considerable head start and appeared to be flying at full speed, the eagle caught up with

no apparent effort and harassed the victim at close range until the fish was dropped. The eagle then picked it up from the surface of the water, while the Osprey made two or three retaliatory dives which both clearly recognized were pure bluff, and calmly flew away to its own nest. The Osprey subsequently caught two more fish on that morning, and carried them away by a much more circuitous and laborious route than it usually used, flying straight to cover of nearby trees and weaving through them to its nest (DFH).

On 24 August 1969, an immature eagle pursued an Osprey which was carrying a fish, but he lacked the finesse displayed by the adult in the previously recounted incident. The Osprey, probably the same bird as that of the previous observation because it was in the same location, climbed high in a tight spiral; the eagle attempted to follow, clumsily, then gave up after a short time (DFH). Both birds of the nesting pair at Yarksis Beach were often seen diving on eagles which approached too close to the nest, and it is evident that the relationship between the two species is not amicable. It is possible, in fact, that there is some competition between the two for nest sites, a competition that would likely be won by the eagles, and the relative absence of Ospreys in the Broken Group may be related to the abundance of eagles there.

The Osprey is a common summer bird in PRNP.

Peregrine Falcon (Le Faucon pèlerin)
Falco peregrinus Tunstall

J10, F1, M1, A, M4, J, J2, A10, S, O8, N9, D5 = 50 records

Whenever this dynamic species appears, there is likely to be excitement. Following are several accounts of the Peregrine in action: 11

August 1967, a falcon stooped and captured an unidentified sandpiper from a flock on the beach near Green Point (Campbell, 1967); 11 August 1968, a falcon sailed low over the water from the south and killed a Surfbird which, with 12-15 others and a Black Turnstone, had been feeding on a Vargas Island reef (DFH); 15 October 1968, one adult male was seen plucking breast feathers from a still warm, immature California Gull on the beach at Wreck Bay (DFH); 12 August 1969, one swooped at a crow, but was mobbed and chased by gulls, and finally it flew off (Cleland Island, MGS); 13 January 1972, one stooped at two Buffleheads, then took a swipe at a Surf Scoter on the same dive. As usual, all of the ducks avoided capture by diving, from the wing (DFH); 24 October 1972, a falcon hit a Pintail which had been put to flight by our aircraft, knocking it down to the water in South Bay. It recovered sufficiently to dive when he tried to retrieve it, however, and it apparently flew away as it was gone minutes later and the falcon was sitting on a snag (DFH, AD); 1 November 1972, one killed a Green-winged Teal near the mouth of Maltby Slough (AD). Three other, "longer" incidents will be related in following paragraphs (all from the notes of DFH):

1) On 19 January 1971, the remains of a Mew Gull were found in a bay on Vargas Island, and signs indicated that it had been the victim of an avian predator. The following day the remains of a Varied Thrush were lying a short distance from those of the gull. Minutes later, as I went to my boat to leave that location, I flushed two Buffleheads, which took flight. They had just leveled off at full speed when I became aware of roaring wings; looking up I saw a stooping Peregrine. The Buffleheads responded by immediately closing their wings and free-falling to the water where both bounced, somersaulted, and dove. The falcon went back to its perch briefly, but then took off again, this time stooping low across a tide-exposed mudflat and hitting the ground behind a boulder. He arose with a small white object, undoubtedly a Sanderling or a Dunlin as I had seen a small mixed flock of these two species in that area a short time before.

2) On 15 November 1971, near the Pacific Paradise (now Pacific Sands) Resort access road, I stopped in amazement at the sight of a female Surf Scoter lying on the highway. I assumed that it had been hit by a car, and wondered what

circumstance had led it, a sea duck, into such a situation. I found, first, that the duck was still warm and, second, that a Peregrine was circling nervously overhead. Since the scoter was too large for a falcon to carry, it was apparent that it had been struck down over the highway, probably after a chase from the South Bay area less than a mile to the north (DFH).

3) The most spectacular of my Peregrine Falcon experiences came on 29 December 1971, again at Vargas Island. It began with a falcon stooping at Buffleheads which had taken off in front of my boat, and, characteristically, with the ducks diving headlong into the sea from flight when the hawk drew near. Rather than give up and go to a perch, however, this bird then flapped back to me and flew in tight little circles above me, expectantly. It was as though he had read my mind, for I had already decided that I would put up more ducks for him. For the next several minutes, this falcon used me, flying high behind me and launching into great roaring stoops which literally came right over my shoulder whenever I scared up potential prey. The stoops usually started high and then leveled off, paralleling the flight of the quarry from the rear and thereby probably enabling the hawk to come in from the blindest angle.

The hawk seemed to prefer Buffleheads, diving at them on three occasions when other species were also in the air, but it also made a good, nearly successful stoop at a Greater Scaup and an apparently not too determined swipe at a White-winged Scoter. Surprisingly, it passed up a chance at a passing Glaucous-winged Gull and a flock of crows. To the credit of the ducks which the falcon had picked out, their reactions were superb, and their arching dives into the sea from as high as 50m were very nearly as spectacular as were the Peregrine's stoops. The "game" soon ended without the falcon obtaining a meal. Those ducks which had not left the bay refused to fly, preferring my company at close range to that of the hawk.

The Peregrine Falcon, probably slowly following its migratory prey southward, moves into our area beginning in August, and individuals can then be seen fairly regularly until spring. The best place to look for the bird is probably among the waterfowl wintering areas in southern Clayoquot Sound. During the winter of 1972-73, the species was seen on 13 of 25 weeks (8 October-31 March, 1972-73) in this area (AD). The time of spring departure from the PRNP area is not clear from our records, which suggest diminishing numbers after January. Richardson (1971) saw the species from August through December

in the Winter Harbour area, but not at all from January through April. In 1971, the latest spring record from the Lower Mainland was 30 April (Campbell et al., 1972), while Tatum (1972) had records for March but none for April in the Victoria area. The bird is occasionally seen during the summer months in all areas. We are aware of no breeding in this area, though there may be suitable cliffs along some local inlets (e.g., Bedwell) and at places such as Clayoquot Arm of Kennedy Lake.

We have records of Peregrine Falcons in the following PRNP area locations:

Stubbs Island, one, 9 July 1960 (CJG); South Bay area, two playing tag in flight, 23 November 1972 (AD); McLean Point, one, 18 October 1972 (SHR); Long Beach campsite area, one, 25 May 1971 (DFH); Green Point area, one, 10 October 1972 (AD); Wreck Bay, one male and one female or immature harassed briefly by a Sharp-shinned Hawk, 15 October 1968 (DFH); Port Albion, one flew to Ucluelet, 26 January 1972 (DFH); Barkley Sound, no records yet, but it certainly occurs there; Cape Beale, one, 14 August 1946 (Martin and Myres, 1969); Port San Juan, one, 26 August 1972 (AD).

The Peregrine Falcon is an uncommon migrant and is very rare in the summer months in PRNP.

*Pigeon Hawk, or Merlin (Le Faucon émerillon)
Falco columbarius L.

J, F, M, A1, M1, J1, J, A6, S4, O5, N, D = 18 records

This little falcon appears to occur in our area only during migration, and it is not seen often. Some location records, from north to south, follow:

Tofino, one sitting on the post-office on 29 September 1971 (DFH); South Bay area, two, 7 October 1972 (AD); Long Beach, one near Green Point on 29 August 1968 (Campbell, 1968) and another at an unknown Long Beach location 25 September 1971 (RWC); Bamfield (Brady Beach), one chased a Surfbird--last seen at 1000 feet altitude, 13 August 1969 (CJG); Bamfield-Port Alberni Highway, one, 24 June 1970--this is a record of interest in that it

suggests possible breeding, but it is outside our area. Another bird was seen along this highway on 22 September 1971, an adult male near Sarita Bay (DFH); Darling River, one adult on 12 August 1972 (AD).

Richardson (1971) saw the species during the last two weeks of July in the Browning Inlet area, but only in September and October, and May and June, thereafter. It is sighted occasionally during the winter months in the Victoria area, but is otherwise seen primarily as a migrant there (Tatum, 1972). The 1971 Vancouver Christmas count of this species (nine birds seen) was the highest ever for North America, yet the species is listed as "rare winter" (also, casual summer, frequent transient) for that area (Campbell et al., 1972). These authors indicate that the fall migration occurred primarily from late August through mid-November, and the last spring date was 13 April during that year.

In PRNP the Pigeon Hawk is a rare migrant, and it seems to be occasionally present, but very rare in the summer months.

Sparrow Hawk or American Kestrel (La Crécerelle américaine)
Falco sparverius L.

J, F2, M, A4, M, J, J, A2, S, O, N, D = 8 records

Like the previous species, this bird is seen primarily during migration in our area, although unlike the previous species, the Sparrow Hawk seems to appear mostly in the spring. Our records:

15 August 1967, one seen on telephone lines in front of the Lovekin Mansion, Long Beach area (Campbell, 1967); 25 April 1969, one stooping, unsuccessfully, on a Savannah Sparrow at Clayoquot Spit (DFH); 26 April 1969, one in Kennedy Lake area (DFH, JGE); 29 April 1969, one on snag at Tonquin Island (DFH); 10 August 1969, one at Mence Island (poor viewing conditions, but identification 90 per cent sure, DFH); 25 April 1970, one by meadow at Vargas Island (DFH); 13 February 1972, one in Tofino (DFH); week of 25 February-3 May, one seen in South Bay area (AD).

Seen by Richardson (1971) only in April and May on northwestern Vancouver Island, this species is a "frequent transient" in the Lower Mainland (Campbell et al., 1972) where it was seen mainly in April and September in 1971, and is considered an uncommon resident and migrant in the Victoria area (Tatum, 1972). In PRNP, the Sparrow Hawk is a rare migrant.

**Blue Grouse (Le Tétrás sombre)
Dendragapus obscurus (Say)

J, F, M, A, M6, J7, J4, A1, S, O, N, D = 18 records

This is a common bird in local uplands and logged areas, where it may be heard hooting regularly from early May through mid-July. Actual observations within the park area are few, owing to the fact that much of Phase I is lowland area, the bird does not occur in the Broken Group Islands, and we have few records from the West Coast Trail area during the breeding season, when males especially are most conspicuous. The absence of winter records is likewise due to the park's not containing prime Blue Grouse habitat and the fact that the birds do not announce their presence at that time.

Our actual sightings are as follows:

17 July 1967, a female seen on the small hill near Incinerator Point (Campbell, 1967); 2 May 1972, three birds, including a hooting male, were seen in the 1964 logged area at Lost Shoe Creek (NR); 30 May, 12 June (NR), 18 June (AD), 1 July (NR), single birds in same area; 13 June 1972, one male on Radar Hill (AD); 25 June 1972, one female near Pine Ridge corner (DFH); 1 July 1972, a male and a female on Goldmine Trail (AD); 14 August 1972, feathers of this species found on trail between Pachena Lighthouse and Michigan Creek (AD). Most of our other records are from the Kennedy Lake area, where the species is much more commonly heard and seen.

In the 1964 burn (logged area) at Lost Shoe Creek, there were a minimum of three territorial males, one of which did his hooting from the crown of a small (about 35 feet high) hemlock. The females belonging to these males were

never seen (NR).

In PRNP proper, the Blue Grouse is an uncommon resident. It is, however, a common resident of closely adjacent areas.

**Ruffed Grouse (La Gelinotte huppée)
Bonasa umbellus (L.)

J1, F7, M7, A11, M9, J13, J6, A5, S2, O10, N5, D1 = 77 records

This is the park's common grouse, occurring particularly in alder stands and bog areas and, in fall, logged areas where berry plants prevail, but it is likely to be seen almost anywhere, and at any time. Both the red and gray colour phases occur here, and though Godfrey (1966) says that the red phase predominates in southwestern British Columbia, we have listed 6 gray and 5 red among the 11 birds whose colour we have noted.

The drumming of males can be heard, particularly in the airport-McLean Point area, from late April through June in most years. Our earliest drumming record is 20 April 1972, a bird near the junction of the Port Alberni Highway (DFH), and our latest recorded incidence of summer drumming is 30 June 1972, near the head of Clayoquot Arm, Kennedy Lake (DFH). Strangely, a bird along the Atleo River was heard to drum three times on 29 October 1970 (DFH). Females with young appear in early to mid-June. Our brood counts in the following list are minimal, as one rarely has a chance to see all the chicks in this heavily vegetated area:

1967-18 August	Wickaninnish Road	Ad. w/ 4, $\frac{1}{2}$ grown	RWC
27 August	Wickaninnish Road	Ad. w/ 6 large young	RWC
1968-17 August	Incinerator Point area	Ad. w/ 4 large young	RWC
1969-12 June	Vargas Island	Ad. w/ 3+	DFH
14 June	Vargas Island	Ad. w/ 2+	DFH
15 June	Vargas Island	Ad. w/ 1+	DFH
29 July	Vargas Island	Ad. w/ 2+, $> \frac{1}{2}$ grown	DFH
1972- 8 June	Kennedy Lake Road	Ad. w/ 5-7	AD

1972-19	June	Kennedy Lake area	Ad. w/ 1+, just hatched	AD
	21 June	Swan Lake	Ad. w/ young	AD
	24 June	McLean Point Road	Ad. w/ young	AD
			Ad. w/ young	AD
	25 June	McLean Point Road	Ad. w/ 1+	DFH
	7 July	Swan Lake	Ad. w/ young	AD

Location records other than those listed above include: Green Point area, one, 18 June 1972 (AD); Wreck Bay, one heard drumming, 6 June 1972 (AD); Combers area, one dead on road on 20 April and one alive there on 24 April 1972 (DFH); Barkley Sound, no records. Though grouse occur on local islands, e.g., Vargas and Stubbs, they have apparently not made it out to islands of the Broken Group; Keeha Meadows, one, 20 September 1971 (DFH); Pachena Lightstation, often seen on grounds by lighthouse staff, and Carmanah Lightstation, birds occasionally seen on lawn by lighthouse staff (both pers. comm. with DFH).

The Ruffed Grouse is a common resident of PRNP. That park visitors often make contact with this species is indicated by the number of carcasses that appear on the road in late summer and fall.

Sandhill Crane (La Grue canadienne)
Grus canadensis (L.)

J, F, M, Al, M, J, J, Al, Sl, O, N, D = 3 records

This species has not been seen on the ground in the park area, but it probably rests in local bog areas occasionally while on migration. Our records: 16 August 1968, three in flight over Imperial Eagle Channel (CJG); 19 April 1971, six flying north over the west end of the Stopper Islands (DFH); 19 September 1972, 18 flying south between Tofino and Wickaninnish Island (AD).

The Sandhill Crane is a very rare migrant in (or at least over) PRNP.

Virginia Rail (Le Râle de Virginie)
Rallus limicola Vieillot

J, F, M, A, M1, J, J1, A2, S, O, N, D = 4 records

Our sightings are all from Cleland Island, where an individual was seen in the vicinity of a rainpool at the center of the island during each of three summers: 1967, seen on 24 July and 25 August (Campbell and Stirling, 1968); 1969, one on 22 August, and 1970, one on 11 May (both MGS). In addition, Richardson (1971) saw birds (two sightings one day) at Browning Inlet on four occasions during October and November 1968. The species is listed as a rare resident in the Lower Mainland (Campbell et al., 1972) and an uncommon resident and migrant on southern Vancouver Island (Tatum, 1972). We haven't sufficient information to determine its residency or seasonality of occurrence in our area, but would point out that the kind of grassy, freshwater marsh habitat preferred by this species is rare here. The Virginia Rail is, at best, very rare in PRNP.

Sora (Le Râle de Caroline)
Porzana carolina (L.)

On 19 October 1971, a Sora was found dead in one of thirty Museum Special traps set for small mammals near the main runway, Long Beach Airport (DFH). The specimen was prepared as a scientific study skin and is now in the vertebrate collections at the Provincial Museum in Victoria (BCPM 11966). It is unlikely that this sampling procedure would yield similar results again, even if thirty-five traps were used. We have no other records of this species on the west coast of Vancouver Island; it is listed as an uncommon summer visitor on southern Vancouver Island, where it breeds (Tatum, 1972), but was not even listed among the 1971 Lower Mainland birds (Campbell et al., 1972). In PRNP, the Sora is very rare, if not accidental.

American Coot (La Foulque américaine)
Fulica americana (Gmelin)

J4, F, M1, A, M, J, J, A, S, O6, N3, D = 14 records

This species is most common in our area during fall migration, although some birds spend the winter here, where they will always be found in protected waters. A pair (two birds, sex unknown) spent the winter of 1968-69 near the Tofino Fishermen's Float (report from a fisherman; actual sightings of these two on 13 and 15 November and 14 January, DFH). Two birds were also seen near the main wharf in Tahsis that year (21 January 1969, DFH). Except for sightings at Mallard Lake (1 November 1971, one bird, DFH), and Ucluelet Inlet (24 January 1972, two; 31 January 1972, three, and 2 March 1973, six, all DFH), the rest of our records are from the inlet waters of southern Clayoquot Sound: 19 October 1971 (DFH); 11, 12, 14, 16 (AD) 19 and 22 (SHR) October 1972. The largest flock seen was 15 birds in the Ducking Flats area (north of Browning Passage) on 11 October (AD). Richardson (1971) saw the species once, on 29 October 1968, at Browning Inlet.

The American Coot is an uncommon migrant, and is rare in winter in PRNP.

Black Oystercatcher (L'Huîtrier noir)
Haematopus bachmani Audubon

J6, F7, M12, A15, M38, J57, J73, A36, S13, O8, N13, D8 = 286 records

Showy in proportion and colour, and lusty of voice, this large shorebird is a common sight on headlands, reefs and rocky offshore islets throughout the park area. We have many notes from Cleland Island, where there is a large nesting population. By 10 June in 1970, 45 nests had already been found there (JWd), and others appeared later. Recently, a dissertation has been prepared dealing with several aspects, including nesting and feeding behaviour, of this bird, based on studies of the Cleland population (Hartwick, 1973).

We are aware of nowhere else in this area where such a large number of breeding birds can be found, however, we have recorded nesting of from one to a few pairs at several locations; Table 4 lists these and provides summary data of the nesting effort we have recorded at each. We emphasize that in most cases we were looking at a variety of bird species, and were in a hurry both because we wanted to minimize our impact on all nesting species present in an area and often, because attaching a small boat to most of these rocks is precarious, and demanding of attention under most water conditions. In short, our counts as indicated in Table 4 are minimal; they are intended primarily to document the various locations as nesting areas and to give a means for assessing the approximate importance of each. The Faber Islets and Village Reef were exceptional in that on these areas, the oystercatcher is the only nesting species, and access is no problem. Counts indicated there are total counts.

Courtship begins as early as April and some nests appear toward the end of that month, but May appears to be the main month of nest initiation. Courting, without copulation, was seen on 14 April 1971 on the mudflats near Tofino (DFH); in 1972 copulation was recorded on 24 April (JW) and 3 May (DFH) at Turtle Island, and on 6 July (AD) at Green Point. The last observation was undoubtedly associated with a renesting attempt, as loss of nests is common among this species (Hartwick, pers. comm.). It is common to find nests containing eggs as late as the end of July, but as the data in Table 4 indicate, chicks begin appearing in late June and early July, and fully-grown young birds (recognizable as young by a black-tipped bill) may be seen by early August. The young are fed a wide variety of intertidal invertebrates, including mussels and isopods (see Hartwick, 1973).

The nest is usually in a small depression on bare rock or on beaches above the high tide line. It is usually, but not always, "lined" with small objects, often fragments of the shells of mussels and other bivalves, but small

Table 4. Information on reproduction of the Black Oystercatcher in and near Pacific Rim National Park, 1967-1973.

Location and Date	Nests (Contents) ¹	Remarks and Source
Clayoquot Spit		
1969 - 2 July	1 (2E)	Eggs pipping; hatched following day (DFH, RWC).
1970 - 18 May	1 (3E)	Same location, exactly, as last year (DFH).
15 June	1 (Nil)	Eggs must have hatched as adults acting very solicitous; couldn't find young (DFH).
Radar Beach Area		
1972 - 13 June	1 (Nil)	(AD)
White Island		
1968 - 30 July	?	6 adults and one young seen (RWC).
1972 - 2 July	1 (3E)	(DFH, AD).
1973 - 2 August	2 (Nil)	Three small young seen 10m from one nest (DFH, AD, WG, BMC).
Sea Lion Rocks		
1931 - 14 May	none seen	4 pair of adults present (IMcTC).
1967 - 3 July	1 (2E)	Central low rocks of largest islet (RWC).
1968 - 30 June	none seen	3 pair of adults present (RWC).
1970 - 27 June	1 (2E)	(DFH, RWC).
Green Point		
1972 - 12 June	1 (2E)	(AD).
Cormorant Rock		
1972 - 2 July	1 (Nil)	Adults and 1 half-grown young seen (DFH, AD).
Florence Island		
1968 - 2 August	?	One fully grown young seen (RWC).
1972 - 3 July	2 (3E, 3E)	(DFH, AD).
29 July	1 (2E)	Many adults seen (DFH).
Starlight Reef		
1970 - 24 July	?	22 adults and 2 large young seen (RWC).
1972 - 4 July	3 (2E, 2E, Nil)	One egg pipping (DFH).
Mara Rock		
1972 - 4 July	?	One pair solicitous adults (DFH).
Great Bear Rock		
1962 - 3 June	2 (3E, 3E)	24 adults counted (Guiguet, 1971).
1970 - 24 July	?	8 - 10 adults and one large young seen (RWC).
1971 - 20 July	?	35+ adults seen (DFH).
1972 - 19 May	1 (3E)	5 pairs of adults all acting nervous (DFH).
13 June	2 (3E, Nil)	Nest found last time is gone (DFH).

Location and Date	Nests (Contents) ¹	Remarks and Source
Alley Rock		
1970 - 3 June	1 (2E)	3 pairs present (Guiguet, 1971).
24 July	0	3 adults, only, seen (RWC).
1972 - 18 July	?	2 pair, one of which must have young (DFH).
Pinder Rock		
1970 - 17 June	1 (Nil)	Fresh prepared nest, one pair seen (Guiguet, 1971).
1972 - 4 June	none found	2 pairs present (DFH).
Village Reef		
1972 - 26 May	1 (Nil)	4 pairs seen, nest newly prepared (DFH).
2 June	5 (1E-2, 2E, Nil-2)	4 pairs seen; nest with two eggs is the one found last time (DFH).
18 June	4 (2E-2, Nil-2)	Most old nests gone; these may all be new (see text (DFH)).
19 July	4 (1E-2, Nil-2)	1 egg in 1 nest probably dead; 10 adults seen (DFH).
1973 - 10 July	3 (1E, 2E, 3E)	Hurried look; 9 adults seen (DFH).
Faber Islets		
1972 - 26 May	1 (1E)	Nest on pebble beach among recent drift; 4 pairs seen in area (DFH).
2 June	4 (3E-2, 2E-2)	Again, 4 pairs seen (DFH).
18 June	1 (Nil)	7 adults seen, at least one pair probably has young. Some nests lost (see text)(DFH).
19 July	?	At least 2 pair present (DFH).
Nantes Island (reef)		
1972 - 18 June	1 (Nil)	1 pair seen (DFH).
Turtle Island		
1969 - 18 May	?	1 pair seen, (acting territorial) (DFH).
1971 - 31 May	1 (1E)	Same area; this an islet just off NW Turtle (DFH).
4 June	1 (1E)	One adult incubating and other was leading a gull astray (DFH).
20 June	1 (1E)	Adult was still on nest (JB).
22 June	1 (Nil)	Egg gone; adults flying around bay but not really acting as though they have a young one (DFH).
1972 - 30 April	1 (Nil)	Fresh nest within 2 feet of last year's nest (DFH).
10 May	0	Nest gone, adults present, but no other nest (DFH).
17 May	0	Adults still around (DFH).
1973 - 28 May	1 (3E)	Nest in usual area (DFH).
5 June	1 (Nil)	Eggs probably washed away by high tide (DFH).
Willis Island		
1973 - 10 July	1 (2E)	Reef on north side, 1 pair attending (DFH).
Swale Rock		
1972 - 22 June	2 (2E, 1E)	2 pairs present (DFH).

Table 4 (continued)

Location and Date	Nests (Contents) ¹	Remarks and Source
Seabird Rocks		
1970 - 12 June	6 (1 to 3 eggs)	80+ adults present (Guignet, 1971).
1972 - 24 July	2 (LELY, 1E)	Minimum of 62 birds seen (DFH).

¹Number of nests and, in parentheses, number of eggs (E) or young (Y).

pebbles and wood chips are also used occasionally. On Great Bear Rocks the most common nesting material appears to be the hard parts of gooseneck barnacles (Mitella polymerus) which the adult birds have picked up from gull regurgitations (DFH). These birds often nest in association with Glaucous-winged Gulls, and much of the nest loss alluded to earlier is due to the predatory activities of this species, although Hartwick (pers. comm.) has seen oystercatchers fight most viciously, and usually successfully, in defense of their nests. Another contingency oystercatchers face results from their own poor planning. Many nests are situated fairly near the mean high water mark, and unusually high tides, or moderately high tides with wind, can result in considerable loss. Of nine nests seen on Village Reef and the nearby Faber Islets on 2 June 1972, only one certainly escaped inundation from early June 12-foot tides. Of five nests found in this area on 18 June, at least three and possibly four were new (DFH).

A final aspect of nesting which should be mentioned is the apparent faithfulness of individuals to particular territories, even on occasion to precise nest sites, from year to year. This has been evident in our experiences at Turtle Island where a pair of birds has been seen at the same location in May during every year from 1969 through 1973, at Clayoquot Spit where the same nest site was used two years in succession, and at Cleland Island where banded birds have been observed (Hartwick, pers. comm.).

Though some individuals undoubtedly stay in the nesting area throughout the year, many apparently move at least short distances as the local populations seem to decline by early fall. Just three birds were seen at Florencia Island on 26 September 1971 (DFH, JB) and there were only 32 on Cleland Island on 11 September 1972 (DFH). Meanwhile, sightings in other, non-nesting, areas increase in fall and winter and often fairly large flocks are involved: mouth of Lemmens Inlet, 75, 26 November 1968; east Vargas Island, 35, 4 December 1968; Ahous Bay, Vargas Island, 75, 19 February 1969; Tofino Inlet, 1969-19 September,

4; 18 December, 18; 31 December, 28; 1970-7 February, 15-16; 23 April, 6; 23 May and 28 May, 19; 1971-1 November, 60; 20 December, 30-35; 1972-16 November, 27; southwest Vargas Island, 24 October 1972, 50+ on rock (all DFH). These birds commonly feed on the tideflats of southern Clayoquot Sound in winter, and were recorded as present on 15 of the 25 weeks between 8 October and 31 March, 1972-73 (AD).

Table 4 and text accounts presented so far are sufficient to indicate the extent of the oystercatcher's distribution over the Long Beach and Broken Group units of the park; following are some observations which document locations at which the species has been seen along the West Coast Trail: Pachena Point, one, 24 March 1968 (RWC) and one pair, 12 August 1971 (DFH, JB); Pachena Point to Black River, seven, 14 August 1972 (AD); Michigan Creek, six, 6 August 1972 (AD); Darling River, one, 13 August 1972; Klanawa River, three, 23 March 1968 (RWC). Strangely, we have not yet recorded any observations south of the Klanawa River.

The Black Oystercatcher is a common resident of the Pacific Rim National Park area.

Semipalmated Plover (Le Pluvier à collier)
Charadrius semipalmatus Bonaparte

J, F, M, A7, M36, J1, J14, A22, S6, O2, N, D = 89 records

Individuals of this species were collected on local beaches as early as 1894 (Kermode, BCPM 292, 1653) and 1906 (Anderson BCPM 293-304). This collecting was all done in late April and early May, the usual time of appearance of this little plover in our area. Our early occurrence records are 1969-22 April, one at Clayoquot Spit (DFH); 1970-3 May, one near Green Point (MEH); 1971-1 May, 200-225 near Incinerator Point (DFH); 1972-27 April, 2 near Green Point (DFH).

The migration passes quickly, as evidenced by the fact that of our 36 May records, just two are later than the 15th (18th, 1970, six at Clayoquot Spit, DFH; 25th, 1971, three at Long Beach, AD). Our single June record was of two birds at Chesterman Beach on 10 June 1968 (RWC).

The first fall migrants, probably non-breeders, appear in early July and the species can be seen commonly chasing amphipods on local sand beaches from then until mid to late August, and occasionally into September. Our October records, of three and four birds at Chesterman Beach on 9 and 10 October 1972 respectively (AD) probably represent a rare straggling movement. Though flocks of 50 or more were seen on a number of occasions at Cleland Island in July 1970 (MGS, maximum, 106 on 17 July), most of our fall flocks are small (non-Cleland records-33 of 42 flocks less than 10 birds and 39 of 42 were 20 birds or less, maximum=35). In contrast, spring flocks (before June) commonly exceeded 20 (10 of 17) and five of 17 flocks recorded in that season consisted of 100 or more birds.

Some location records for the Semipalmated Plover in PRNP follow:

Schooner Cove, 18 July 1967 (RWC); Green Point area, 8 May 1972, 175+ (DFH); Sandhill Creek, 9 July 1972, 2 (AD); Wickaninnish Inn area, 13 July 1972, 1 (AD); McLean Point, 5 May 1972, 25 (NR); Fletcher's Beach (near Ucluelet), 5 August 1971, 3 (DFH); Great Bear Rocks, 9 August 1971, 1 (DFH, JB); Baeria Rocks, 9 August 1971, 1 (DFH, JB); Folger Island, 16 August 1965, 1, (CJG); Edward King Island, 11 August 1969, 2 (CJG); Pachena Bay, 7 August 1972, 4 (AD); Michigan Creek, 5 August 1972 (AD); Owen Point area, 23 August 1972, 4 (AD).

The Semipalmated Plover is a common migrant in PRNP.

Snowy Plover (Le Pluvier neigeux)
Charadrius alexandrinus L.

Poynter (1972) recently documented the occurrence of a single individual of this species on the beach near Comber's Resort. His report is based on

independent sightings by two groups of competent observers, neither aware of the other, on 29 April and 6 May 1972. One of his observers is a professional ornithologist (Dr. J.M. Winterbottom, Percy Fitzpatrick Institute of Ornithology, South Africa), who is familiar with the species in the Old World. Unknown to Poynter, we also recorded an observation of a Snowy Plover, probably the same bird, near Green Point on 9 June 1972 (AD).

The Snowy Plover is accidental in PRNP.

**Killdeer (Le Pluvier kildir)
Charadrius vociferus L.

J2, F, M, A3, M5, J18, J20, A11, S9, O3, N3, D5 = 79 records

This species is common on local beaches spring through fall, but most birds seem to move out during the winter months. A flock of 15-16 was seen on the lawn at Clayoquot Lodge (Stubbs Island) on 22 November 1968 (DFH), and there were 7 on a Vargas Island beach on 10 January 1969 (DFH), but most of our other winter records are of 2-3 birds on the Tofino waterfront.

Campbell (1967) wrote that the number of birds along Long Beach increased from a population of about 10 birds in late June to about 40 in mid-July, but had dwindled to about six by early September in 1967. The following year (Campbell, 1968), he indicated that at least 12 birds regularly frequented Schooner Cove from 6 June to early July. Our 1972 records indicate that sightings of one to seven birds were common throughout the summer along the entire beach from Schooner Cove to Wickaninnish Inn (AD), with the total number approximating that given by Campbell for previous years.

Killdeers nest locally, but our information is surprisingly scant. The occurrence of a nest with a full clutch of four eggs, 4 July 1967, at Schooner Cove, was reported by Campbell (1967), and we have a report (no date) of a bird performing a distraction display near the airport in the summer 1972 (NR).

We saw a nest on the sand dunes just south of Sandhill Creek in mid-May 1969 (RWC, DFH), but did not write down the details, and nests have been seen in subsequent summers on the ballfield at Tofino and along the road to the old water-tower site in Tofino (MEH). When a species is common, there is a tendency for an observer to not bother with detailed observations because of a conviction that someone else has already done so sufficiently. Our breeding information on the Killdeer is likely a reflection of that attitude.

Location records for the Killdeer in PRNP include: South Bay, one, 12 October 1972 (AD); Portlant Point, four, 1 August 1971 (NR); Grice Bay, one, 7 June 1972 (AD); McLean Point road, one, 16 June 1972 (AD); Combers' area, two, 21 July 1972 (AD); Pachena Bay, two on 21 September 1971 (DFH, JB) and two on 3 August 1972 (AD). We have no record for the Broken Group, and none other than the Pachena Bay records for the West Coast Trail.

The Killdeer is an uncommon resident in PRNP.

American Golden Plover (Le Pluvier doré d'Amérique)
Pluvialis dominica (Muller)

J, F, M, A, M2, J, J, A2, S6, O2, N, D = 12 records

Our only spring sightings were of five birds seen in the Tofino area on 7 May 1931 and four seen at Chesterman Beach on the following day (IMcTC). Identification should have been no problem for this observer, particularly at that time of year. The rest of our sightings, arranged chronologically, follow:

9 August 1965, two, Schooner Cove (FB); 2 September 1967, one, Lovekin Rock area (RWC); 21 August 1969, one catching amphipods among beach debris on Vargas Island (DFH); 10 October 1969, four, Vargas Island (DFH); 25 September 1971, three, Long Beach (RWC); 26 September 1971, four, Sea-lion Rocks (DFH, JB); 28 September 1971, four, Sandhill Creek and one Wreck Bay (JB); 9 September 1972, two, Vargas Island (DFH); 16 October 1972, one, South Bay (AD).

The species was recorded three times in the spring of 1971

in the Lower Mainland (Campbell, et al., 1972), but it is considered mostly a fall bird there and in the Victoria area (Tatum, 1972). It was not seen at all on northwestern Vancouver Island in 1968-69 by Richardson (1971). In PRNP, the American Golden Plover is a very rare spring and uncommon fall migrant.

Black-bellied Plover (Le Pluvier à ventre noir)
Pluvialis squatarola (L.)

J, F, M1, A5, M5, J, J5, A6, S3, O11, N2, D = 38 records

Like the Semipalmated Plover, this handsome shorebird migrates through our area on its way north during a short period from late April through early May, then is absent until the vanguard of the fall movement begins to show up in July. Some of our earliest spring records are, 1969-22 April, seven at Clayoquot Spit (DFH); 1970-26 April, three at Long Beach (DFH); 1972-28 April, one at McLean Point (DFH). Our latest spring sighting was 12 May 1972, two birds near Sandhill Creek (DFH). The largest spring flock among our records is 100+, seen at Chesterman Beach on 29 April 1969 (DFH). Most flocks are smaller than 20.

During the two years in which we had July sightings (1970 and 1972), the earliest records were on the 19th (one at Cleland Island, MGS) and the 13th (four near Green Point, AD) respectively. There appears to be a tendency for these birds to remain in the area fairly long into the fall with sightings on the tideflats of southern Clayoquot Sound, especially near South Bay, being rather common (11 sightings between 10 October and 16 November 1972, including flocks of 78 and 35 on 16 and 22 October respectively, AD). At least one bird was heard calling in the South Bay area on 6 March 1973 (AD, SRJ, DFH), and this could represent a wintering bird. Richardson (1971) saw the species only during August and September in the Browning Inlet area, however, Tatum (1972)

indicates that the bird winters on southern Vancouver Island, and Campbell et al. (1972) list this plover as "rare summer, frequent winter" in the Lower Mainland.

Several records for the Clayoquot Sound area and Phase I of the park have already been mentioned. We have a single record for the Broken Group (Effingham Island, one, 4 August 1965, CJG), and just one also for the West Coast Trail area (Pachena Bay area, two, 4 August 1972 (AD)). The Black-bellied Plover is an uncommon migrant, and is rare in winter in PRNP.

Surfbird (L'Échassier du ressac)
Aphriza virgata (Gmelin)

J2, F3, M1, A9, M8, J1, J39, A40, S5, O3, N5, D = 116 records

This species is most commonly seen feeding among the intertidal or roosting on offshore rocks, reefs and islets, as it moves casually along the coast between its breeding grounds and its main wintering areas. It was recorded in all months except June in the Victoria area, 1971 (Tatum, 1972), but was seen only in late fall and winter, and then rarely, in the Lower Mainland (Campbell et al., 1972). Richardson (1971) saw it from the second week of October through the second week of March, and once during July on northwestern Vancouver Island. The large number of records we have accumulated for the period April through August seems unprecedented for this latitude, and it indicates that Surfbirds can be seen throughout the year in southwestern British Columbia.

From our records, despite the presence of small flocks during most months, it is clear that there are strong migratory movements in late April and August. The Broken Group seems to be the best area to catch these movements, as indicated by the following records: 19 April 1971, 350-400 birds on a rock just offshore from Hand Island (DFH); 25 April 1972, a minimum of 4500-5000 birds roosting on rocks in a bay off west Turtle Island--a most impressive sight

when all took flight together (DFH); 29 April 1972, two flocks, 200 plus 225, on rocks near Beg Islets (DFH); 2 May 1972, c500 birds on Pinder Rock (DFH). Among the more illustrative fall records are the following: 9 August 1971, 200+, Baeria Rocks (DFH, JB); 12 August 1965, six flocks in Barkley Sound area (CJG); 10 August 1967, 700-1000 on Fleming Island--largest flock ever seen by CJG--until 14 August 1968, 2000+ on Tzartus Island.

As indicated earlier, sightings may be expected during most of the other months as well, as these are likely to involve flocks of two or three up to 100 or more. Some locations other than those mentioned previously include:

Chesterman Beach (Frank Island), 100, 28 January 1969 (DFH); Wickaninnish Island, eight, 13 February 1973 (AD); Indian Island, four, 19 November 1972 (AD); Sea-lion Rocks, three, 26 September 1971 (DFH, JB); Green Point, 24, 16 August 1967 (RWC); Quisitis Point, 16, 6 August 1971 (NR); Florencia Island, three, 2 August 1968 (RWC); Great Bear Rock, 8-10, 20 July 1971 (DFH, JB); Willis Island, 15, 26 November 1972 (DFH); Reeks Island, two, 5 August 1971 (JB); Alley Rock, eight, 18 July 1972 (DFH); Faber Islets, one, 26 July 1972 (DFH); Folger Island, 200+, 25 August 1970 (CJG); Bamfield, 6, 22 August 1964 (CJG); Klanawa River, 14, 23 March 1968 (RWC) Port Renfrew area, 110, 19 April 1972 (RWC).

In PRNP, the Surfbird is an abundant migrant which also occurs uncommonly in winter and in the summer months as a non-breeder.

Ruddy Turnstone (Le Tourne-pierre roux)
Arenaria interpres (L.)

J, F, M, A, M16, J3, J28, A15, S5, O, N, D = 67 records

In common with most of the shorebirds seen in our area, the Ruddy Turnstone appears for a short time in spring during its northern migration, is rare during June, then begins to move through again in July. Its spring arrival is later than that of most species; our earliest record is 9 May (1931, two specimens collected in the Tofino area, UBC 4228 and UBC 4229, IMcTC).

First sightings for other years were, 1969-15 May, three, Cleland Island (MGS); 1970-11 May, two, Cleland Island (MGS); 1972-10 May, two in partial moult on Faber Islets, one on Village Reef, and two in breeding plumage on Willis Island (DFH). Our only June sightings were of single birds (probably the same individual) on Cleland Island, 1, 2 and 6 June 1970 (MGS).

The earliest fall record is 2 July 1970, one bird at Cleland Island (MGS), but all of our other July records are on the 12th or later. Sightings are made sporadically throughout the month of August and into early September. The latest fall record is of four birds on Cleland Island on 11 September 1972 (DFH). All of our documented sightings are of small flocks, the largest of which was 10, Cleland Island, 24 July 1967 (Campbell and Stirling, 1967).

The species is usually seen foraging among the intertidal zone, often in company with Black Turnstones and Surf-birds, on offshore reefs and islets. Location records for the park area include: Schooner Cove, one, 10 August 1971 (DFH); Sea-lion Rocks, two, 23 July 1967 (RWC); Green Point area, one, 24 August 1968 (RWC); Florencia Island, two, 29 July 1972 (DFH); Starlight Reef, one, 24 July 1970 (RWC); Great Bear Rock, one photographed (PDF 63), 25 August 1970; two, 9 September 1971 (DFH, IR); Alley Rock, four, 18 July 1972 (DFH); Baeria Rocks, four, 7 August 1972 (DFH); Taylor Island (Deer Group), one, 7 August 1968 (CJG); As yet we have received no records for Phase III of the park.

The Ruddy Turnstone is an uncommon migrant in PRNP.

Black Turnstone (Le Tourne-pierre noir)
Arenaria melanocephala (Vigors)

J2, F4, M4, A11, M10, J4, J64, A56, S19, O14, N8, D4 = 200 records

This is the common turnstone of our coast, regarded mostly as a winter species by Tatum (1972) and Campbell et al. (1972). As was the case for the

Ruddy Turnstone, this species is rare in June, when most individuals have moved to northern breeding grounds, but appears in numbers in July and may be seen regularly on rocky shores from then through the following May. Flocks of 50 to 100 or more are common.

Our records do not point to any clearcut period of spring migration, and it is possible that this is because the migration is early, before observers were regularly frequenting the typically rugged habitat of the outer coast. Campbell et al. (1972) reported that spring migration was in March in the Vancouver area in 1971, however, Tatum (1972) implied that there was a late April or early May movement during that year in the Victoria area. Richardson (1971) recorded no spring sightings at all for this species in the Browning Inlet area. Our single record suggestive of spring movement is of a concentration of about 500 birds, with a large flock of Surfbirds, near Turtle Island on 25 April 1972 (DFH).

Flocks of Black Turnstones numbering 10-15 up to 100+ (1 January 1971, DFH) can be seen almost daily on the Tofino waterfront during the winter months. These observations were usually not recorded, but sightings can be documented for each month, as follows: 28 November 1972, about 30; 24 December 1969, 50+; January--see above; 9 February 1972, 20; 22 March 1969, about 60; 27 April 1969, 60+ (all DFH). The species was recorded as present on 8 of 25 weeks (8 October-31 March) along the tideflats of southern Clayoquot Sound in the winter of 1972-73 (AD).

The Black Turnstone has been seen at many locations other than those listed above:

Wickaninnish Island, 25, 26 November 1971 (DFH); Chesterman Beach, 11, 17 October 1972 (SHR); White Island, three, 25 August 1970 (RWC); Sea-lion Rocks, c100, 26 July 1965 (FB); Florencia Island, 15, 2 August 1968 (RWC); Great Bear Rocks, two, 26 July 1972 (DFH); Starlight Reef, 32, 24 July 1970 (RWC); Faber Islets, 45, 26 October 1972 (DFH); Beg Islets, 60+, 26 April 1972 (DFH); Trickett Island, 10, 18 July 1972 (DFH);

Hand Island, two, 9 August 1969 (DFH); Cree Island, 50-60, 25 August 1970 (CJG); Bamfield, 14, 12 August 1964 (CJG); Michigan Creek, two, 5 August 1972 (AD); Klanawa River, 12, 23 March 1968 (RWC); Port Renfrew area, 95, 19 April 1972 (RWC).

The Black Turnstone is a common winter species, and occurs uncommonly as a non-breeder in the summer months in PRNP.

Common Snipe (*Le Bécassine ordinaire*)
Capella gallinago (L.)

J3, F2, M, A4, M3, J, J, A1, S1, O11, N2, D4 = 31 records

This is a wintering species in our area. Our two pre-October fall records are of one bird on the Tofino waterfront, 14 August 1970 (DFH), and of one in a meadow on east Vargas Island, 28 September 1969 (DFH). First fall sightings in 1971 and 1972 were 15 October (head, Ucluelet Inlet, DFH) and 4 October (Maltby Slough area, DFH) respectively. Though our records are sparse, this is largely because we have not often tramped through the estuarine meadows and bogs which are the appropriate habitat for this species during the winter months. During winters in which temperatures drop sufficiently to freeze the ground (and thus prevent feeding of this probe-hunter), individuals move into the towns where they may be seen on the thawed ground at septic tank seepages and adjacent to buildings (25-30 December 1970, one seen daily on one lawn in Tofino, DFH; 2 February 1972, one at seepage by MacKenzie Beach access road, ground frozen elsewhere, DFH). This species was seen on 9 of 25 weeks during the period 8 October 1972 - 31 March 1973, and was last recorded in the third week of January during this period. Our paucity of February and March records, which agrees with the results of Richardson (1971) for northwestern Vancouver Island, suggests that there is a gradual diminution in numbers over the winter, possibly through movement to more climatically hospitable areas.

Our records are not sufficient to determine when, or even if, our

local wintering population is augmented by migrants from points farther south. We have no spring sighting (for any one day) of more than two birds, and there was no time during the spring season when snipes seemed unusually common. Our latest spring sighting is 12 May 1972, a bird near the head of Ucluelet Inlet (DFH). The 1971 spring movement was said to have occurred in April in the Lower Mainland (Campbell et al., 1972), and Tatum (1972) indicates that the latest record for the Victoria area during that year was 7 May.

Locations: Maltby Slough, two, 20 October 1970 (DFH); Echachis Island, one in Indian site meadow, 24 October 1970 (DFH); McLean Point, two by creek, 27 October 1971 (DFH); Indian River estuary, two, 28 October 1971 (DFH); Grice Bay "fingers", three, 28 October 1971 (DFH); Long Beach airport area, two, 29 April 1959 (DFH); Swan Lake, one, 7 October 1972 (DFH); Lost Shoe Creek area, two, 2 May 1972 (NR); Hand Island, one, 19 April 1971 (DFH); Turtle Island, one standing on rocky beach, 1 May 1972 (DFH). We have no records for Phase III, but the species certainly occurs in areas such as the Pachena River estuary and Keeha Meadows, and the Cheewhat River area.

The Common Snipe is uncommon in winter in PRNP.

Whimbrel (Le Courlis corlieu)

Numenius phaeopus (L.)

J, F, M, A3, M39, J10, J34, A24, S10, O, N, D = 120 records

There is a strong movement of this species through our area in spring, beginning in late April or early May in most years. The only year for which we have April sightings was 1972, when 4, 4 and 7 birds were seen in a bay at McLean Point on 27, 28 (DFH) and 29 (NR) April respectively. Some early records for other years follow: 1894-6 May, one collected, (Kermode, BCPM 1643); 1931-4 May, four at Meares Island (IMcTC); 1969-8 May, one, Incinerator Point area (RM); 1970-2 May, one, Tofino (RWC). Our June records are mostly during

the first week of the month, but a single bird was seen on the 16th, and the 25th at Cleland Island in 1970 (MGS). These were certainly stragglers of the northward migration. Some sizeable spring flocks have been recorded, including 42 at McLean Point on 8 May 1972 (DFH) and 150 at Chesterman Beach on 10 May 1931 (IMcTC).

As with many of the other shorebirds, the main movement southward appears to occur in July and August (records throughout both months). Of our 10 September records, six are of birds collected by a provincial museum party at Wreck Bay and Long Beach between 19 and 23 September 1917 (Kermode and Carter, BCPM 4644-4650). More recently, we have September sightings (all 1971) as follows: 9th, one, Great Bear Rock (IR); 11th, one, Long Beach (PP); 25th, one Long Beach (RWC); 28th, one, Sandhill Creek area (JB). It would appear that in most years the birds have already passed through by the end of August.

Locations, in addition to those mentioned:

Vargas Island, 18 May 1971, Seven (DFH); Stubbs Island, five, 1 June 1969 (DFH); Schooner Cove, one, 12 May 1969 (DFH); Portland Point, one, 6 August 1971 (NR); Green Point, one, 23 June 1967 (RWC); Quisitis Point, three, 5 August 1971 (NR); Grice Bay, 25, 19 July 1972 (AD); Turtle Island, 27 flew low overhead, 11 May 1972 (DFH); Barkley Sound, two, 10 August 1967 (CJG); Bamfield, three, 5 August 1965 (CJG); Michigan Creek area, four, 5 August 1972 (AD); Darling River, seven, 13 August 1971 (DFH, JB).

The Whimbrel is an uncommon migrant in PRNP.

Bristle-thighed Curlew
Numenius tahitiensis (Gmelin)

This species is almost indistinguishable, in the field, from the Whimbrel. We list it here as a hypothetical species for PRNP on the basis of a specimen collected at Grant Bay, northwestern Vancouver Island on 31 May 1969 (Richardson 1970, 1971).

**Spotted Sandpiper (La Maubèche branle-queue)
Actitis macularia (L.)

J3, F1, M2, A1, M20, J2, J19, A50, S9, O5, N2, D2 = 116 records

Widely distributed in small numbers along our coast, this species does some nesting locally, probably mostly along streams. Our breeding records are: 23 July 1967, nest with 4 eggs found at the base of a clump of wild rye (Elymus sp.) among drift logs at Portland Point (RWC); 18 July 1970, female with 4 downy young along Moyeha River, about 1 mile up from mouth (DFH); 30 June 1972, nest with 4 eggs on gravel bar at head of Clayoquot Arm, Kennedy Lake (DFH).

Though the "spotty" has been seen throughout the year in our area, there seem to be movements through mainly in May and August. The spring movement was particularly evident in the Broken Group in May 1972 when birds were sighted on several different islands between the 10th and the 25th, including 11 at Chalk Island on May 20th (DFH). May was also the month of migration in 1971 at Victoria (Tatum, 1972) and the Lower Mainland (Campbell et al., 1972). In August 1971, there were seven birds on the 5th and 12 on the 6th in the vicinity of Quisitis Point, while at Portland Point five and four birds respectively were tallied on those two days (NR). In 1972, 17 birds were counted between the Darling and Klanawa Rivers on 13 August, and 13 were seen from Darling River to Michigan Creek on the following day (AD). On 5 August 1971, birds were seen at Ucluelet (3), Stubbs Island (1), Meares Island (1), Beck Island (1) and Vargas Island (2), indicating that migrating birds were spread widely over the area (DFH).

Most of our winter records were obtained in 1972-73 along the protected inlet waters of southern Clayoquot Sound. The species was recorded present on 9 of 25 weeks between 8 October and 31 March (AD), but it is unquestionably

less common during this period than during the rest of the year.

Some other locations at which we have seen this species:

Wickaninnish Island, one, 26 September 1969 (DFH); Schooner Cove, two, 27 August 1965 (FB); Box Island, one, 11 May 1969 (DFH); Florencia Island, one, 2 August 1968 (RWC); Highway junction gravel pits, two, 19 June 1972 (AD); Kennedy Lake, one, 18 July 1972 (AD); Turtle Island, three, 18 May 1969 (DFH); Pinkerton Islands, one, 21 April 1971 (DFH); Effingham Island, one, 4 May 1972 (DFH); Dempster Island, four, 4 August 1971 (JB); Bamfield, one, 8 August 1967 (CJG); Michigan Creek, three, 12 August 1972 (AD); Camper Bay area, one, 24 August 1972 (AD); Owen Point, three, 25 August 1972 (AD); Port San Juan, two, 20 August 1972 (AD).

The Spotted Sandpiper is an uncommon resident of PRNP.

Wandering Tattler (Le Chevalier errant)
Heteroscelus incanus (Gmelin)

J, Fl, M, A6, M53, J16, J69, A74, S10, O5, N, D = 234 records

This is another bird of the surf-washed, rocky outer coast. In the pattern of its local arrivals and departures, it is similar to most of the shorebirds discussed previously. First records are in late April or early May: 1969-26 April, two, Long Beach (JGE); 1970-2 May, two, Long Beach (MJG, KLM); 1971-12 April, one heard at Vargas Island (DFH)--first sighting 8 May 1971, one, Vargas Island (DFH); 1972-29 April, one, Turtle Island (DFH), and the bulk of the spring movement occurs throughout the month of May. Of our 13 June sightings, 11 were recorded at Cleland Island during the first three weeks of the month in 1970 (MGS). Stragglers of the northern migration probably meet the vanguard of the fall migrants in early July in some years, as we have numbers of early July records for this area. Daily sightings of from one to 20 birds were recorded for Cleland Island for the period 4 July to 20 August in 1970 (MGS), and it is likely that there are birds moving through during that time in most years. Many birds are still present in September,

but most have moved through by October. Our latest record is 22 October 1972, one bird seen at Green Point (SHR). The single February record is of call notes heard from a reef off the southern end of Wickaninnish Island on 24 February 1970 (DFH), but no bird was seen. In the light of the temporal distribution of the rest of our observations, this record must now be treated with suspicion.

Locations: Frank Island, two, 8 May 1931 (IMcTC); Portland Point, eight, 5 August 1972 (NR); White Island, two, 4 August 1969 (RWC); Box Island, two, 10 May 1969 (DFH); Sea-lion Rocks, five, 9 July 1967 (RWC); Quisitis Point, four, 31 July 1971 (NR); Florencia Island, about three, 29 July 1972 (DFH); Great Bear Rocks, seven, 24 July 1970 (RWC); Starlight Reef, 16, 24 July 1970 (RWC); Cree Island, 12, 24 August 1970 (CJG); Chow Islets, c15, 8 May 1969 (DFH); Sail Rock, one, 27 July 1972 (DFH); Alley Rock, five, 20 July 1971 (DFH); Village Reef, four, 10 May 1972 (DFH); Gibraltar Island, one, 17 June 1972 (DFH); Owens Island, one, 26 July 1972 (DFH); Fleming Island, one, 11 June 1970 (CJG); Bamfield, two, 14 August 1964 (CJG); Pachena Point, at least two, 12 August 1971 (DFH, JB); Darling River area, one, 12 August 1972 (AD); Klanawa River area, three, 13 August 1972 (AD).

The Wandering Tattler is a common migrant in PRNP.

Greater Yellowlegs (Le Grand Chevalier à pattes jaunes)
Tringa melanoleucus (Gmelin)

J, F, M, A17, M11, J5, J23, A19, S11, O1, N1, D = 88 records

The crisp three-note call of this species can be expected any time between about mid-April and the end of September. Our earliest records for recent years have been : 1969-18 April, nine, Vargas Island (DFH); 1970-18 April, two, Toquart Bay (DFH); 1971-19 April, one heard, Toquart Bay (DFH)--first sighting that year on 21 April, 14 at Hand Island (DFH); 1972-10 April, one in roadside

ditch near Pineridge corner (DFH). The largest flocks, suggesting the main spring movement, have been seen in late April and early May as mentioned earlier, 14 at Hand Island on 21 April 1971; 31 at Pinkerton Islands same day (DFH); nine at McLean Point, 29 April 1969, 10 there on 21 April 1972, and 15 there on 28 April 1972 (DFH). Our only other record of 10 or more birds in a flock was a sighting of just 10 in flight over Turtle Island on 1 June 1971 (JB).

As with several other species discussed previously, there are occasional stragglers present in June, but in July the fall movement southward begins, and sightings are common from then through August. Last sightings are mid to late September in most years: 1970- 24th, two, Vargas Island (DFH); 1971-28th, one, Sandhill Creek (JB); 1972-16th, one heard at Turtle Island (DFH). We also have one sighting in the third week of October 1972 (Tofino Inlet, AD), and a bird was heard during the night of 6 November 1970 on the Tofino waterfront (DFH).

Locations:

Clayoquot Spit, one collected on 6 May 1894 (Kermode, BCPM 1630); Grice Bay, one, 7 May 1972 (NR); Portland Point, one, 29 July 1967 (RWC); Sandhill Creek--of 10 records from the Long Beach area over the years of our observations, eight were from this vicinity (observers RWC-2, JB-2, AD-4); Ucluelet Inlet, one, 28 September 1971 (DFH); Great Bear Rocks, one, 9 September 1971 (DFH, IR); Howell Island, one overhead, 22 July 1971 (DFH); Chalk Island, three, 2 May 1972 (DFH); Edward King Island, one, 11 August 1969 (CJG); Pachena River estuary, three, 18 September 1971 (DFH, JB) and four, 7 August 1972 (AD); Port San Juan, one, 25 August 1972 (AD).

An observation of some anecdotal interest was made on 24 April 1972 in one of the estuarine "fingers" at the head of Grice Bay (DFH). On this occasion, two Greater Yellowlegs were seen, one of which flew across a small tidal slough. The second bird waded into the water to full leg-length, then commenced swimming. Its progress was very slow and laborious, and its carriage in the water suggested that of a phalarope. Eventually it swam to the other side of the slough, a distance of about 30m, where it again encountered water of wading depth. Of additional interest was the call uttered by this bird as it swam, which can best be described as a one-note shriek, very flicker-like, but not so piercing. I have not heard

yellowlegs make this sound on any other occasion. Tatum (1972) reports that one of his observers witnessed swimming Greater Yellowlegs five times in 1971.

As our records indicate, the bird is occasionally seen along the open coast. However, it is more typically a bird of estuaries and protected bays, and areas such as McLean Point, especially in early May, would be the most fruitful for birdwatchers wishing to see this species. In PRNP the Greater Yellowlegs is an uncommon migrant.

Lesser Yellowlegs (Le Petit Chevalier à pattes jaunes)
Tringa flavipes (Gmelin)

J, F, M, A, M, J, J2, A4, S2, O, N, D = 8 records

All of our records follow: 15 July 1960, one, Stubbs Island (CJG); 1 August 1965, one, Bamfield (CJG); 5 August 1971, one Gibraltar Island (JB); 19 September 1971, at least three, Pachena River estuary (DFH, JB); 9 July 1972, one, Sandhill Creek area (AD); 2 August 1972, one, Pachena Bay (AD); 21 August 1972, one, San Juan River (AD); 24 September 1972, one, Tofino Inlet (AD). Like the larger species, with which it often occurs, it is a bird of protected bays and estuaries.

Although we have not seen this bird in Spring, Richardson (1971) had a sighting in late April (10 birds) and recorded the species in the first week of May (1969) at Browning Inlet, thus we should expect spring records in the future. The rarity of spring sightings is also true of the Lower Mainland (Campbell et al., 1972) and southern Vancouver Island (Tatum, 1972). The Lesser Yellowlegs is a rare migrant (perhaps very rare in spring) in PRNP.

Red Knot (Le Bécasseau à poitrine rousse)
Calidris canutus (L.)

J, F, M, A, M4, J1, J10, A4, S1, O2, N, D = 22 records

This species is occasionally seen on offshore rocks and on outer beaches in our area. Ten of our 22 records are from Cleland Island, 1969 and 1970. Other locations and numbers are: Long Beach, mostly Green Point to Incinerator Point area, eight on 24 August 1965 (FB), two on 29 August 1967 (RWC), one on 31 August 1968 (RWC), 10 on 13 July and one on 14 July 1972 (AD), and four on 9 October 1971 (MJF, KLM); Sandhill Creek area, 36, 12 July 1972 (RS); Starlight Reef, one, 24 July 1970 (RWC); Baeria Rocks, one, 24 July 1970 (RWC); Kirby Point (Bamfield area), four, 28 August 1970 (CJG).

Our data, though sparse, suggest that this species is another which passes through, northward, in May and returns primarily in July and August, with stragglers in September and October. The Red Knot was not seen in the Lower Mainland (Campbell et al., 1972) or on northwestern Vancouver Island (Richardson, 1971), and is listed as an uncommon migrant for the Victoria area (Tatum, 1972). It is a rare migrant in PRNP.

Rock Sandpiper (Le Bécasseau aléoutien)
Calidris ptilocnemis (Coues)

J, Fl, M, A, M, J, J, Al, Sl, O2, N, D = 5 records

Our records: 9 August 1968, one with Surfbirds, Tzartus Island (CJG); 20 September 1972, two, Chesterman Beach; 4 October 1972, 17, Tofino Inlet; 10 October 1972, four, Chesterman Beach; 13 February 1973, 10-12, rocks, south end of Long Beach (all AD). The species is rare in winter in the Lower Mainland (Campbell et al., 1972), with just two sightings recorded there in 1971. However, it is locally common in winter in the Victoria area (Tatum, 1972). The Rock Sandpiper may be more common in our area than the paucity of records would suggest, but until naturalists procure further information, we list it as a rare winter bird in PRNP.

Sharp-tailed Sandpiper (Le Bécasseau à queue fine)
Calidris acuminata (Horsfield)

J, F, M, A, M, J, J, Al, S, O2, N, D = 3 records

Single birds seen on 27 August 1966 on Long Beach (FB), 16 October 1972 at South Bay (AD), and possibly on 25 October 1972 at Chalk Island (DFH). The Chalk Island bird was seen in flight and at rest for a brief period, but heavy rain made observation difficult. It appeared to possess more characteristics of this species, particularly in its rustiness of head and in its lack of a sharply cut breastband, than it did of the Pectoral Sandpiper, but identification can not be considered certain. It is apparently seen yearly in the Lower Mainland, where it is considered a rare transient (Campbell et al., 1972), but it had been recorded only three times (all years) in the Victoria area through 1971 (Tatum, 1972). In PRNP, the Sharp-tailed Sandpiper is a very rare fall species.

Pectoral Sandpiper (Le Bécasseau à poitrine cendrée)
Calidris melanotos (Vieillot)

J, F, M, A, M2, J, J1, A7, S8, O2, N, D = 20 records

Our two spring sightings were of four birds at Cleland Island, 16 May 1969 (JGS), and of a single at Swan Lake on 19 May 1972 (NR). This agrees with the results of Campbell et al. (1972), who recorded just three 1971 spring sightings of the species in the Lower Mainland, and Tatum (1972) who, with no observations in spring 1971 on southern Vancouver Island, lists the Pectoral Sandpiper as an uncommon fall migrant. These two sources list July-November and July-October as the periods during which fall migrants were seen in their respective areas, and this, too, is in general agreement with the results we have accumulated over several years. Most of our sightings are of 1 to 3 birds, but a flock of 15-20 was seen on a west Vargas Island beach on 10 September 1972 (DFH, AD).

Although grassy areas such as that in estuaries and fresh water marshes

are preferred by this species, it also feeds along sand beaches and rests on offshore rocks during migration. Some location records include:

Chesterman Beach, one, 26 September 1971 (DFH); McLean Point road, one, 10 October 1972 (AD); Green Point, two, 27 August 1968 (RWC); Sandhill Creek area, one, 19 July 1972 (AD); Great Bear Rock, 13 on 25 August 1970 (RWC) and two on 9 September 1971 (IR, DFH); Pachena River estuary, three, 19 September 1971 (DFH, JB); Pachena Beach, two, 21 September 1971 (DFH); Camper Bay, one, 20 August 1971 (DFH, JB).

The Pectoral Sandpiper is a rare spring and uncommon fall migrant in PRNP.

Baird's Sandpiper (Le Bécasseau de Baird)
Calidris bairdii (Coues)

J, F, M, A, M1, J, J8, A7, S6, O, N, D = 22 records

Like the preceding species, the Baird's Sandpiper has been seen but rarely in spring in the Vancouver (Campbell et al., 1972) and the Victoria (Tatum, 1972) areas, and we have just one record (2 May 1971, three, Tofino waterfront, DFH). Fall migrants appear in July (earliest record 13 July 1960, three, Vargas Island, CJG), and may be seen well into September (latest record 20 September 1972, 1, Chesterman Beach, AD).

Some locations other than those listed above: Cleland Island, one, 28 July 1970 (MGS); Schooner Cove, several, 9 August 1965 (FB); Green Point area, two, 25 August 1968 (RWC) and one, 21 July 1972 (AD); Sandhill Creek area, one, 19 July 1972 (AD). In our area, it seems to be largely a bird of sand beaches.

The Baird's Sandpiper is a very rare spring and uncommon fall migrant in PRNP.

Least Sandpiper (Le Bécasseau minuscule)
Calidris minutilla (Vieillot)

J, F, M, A3, M19, J2, J46, A36, S10, O, N1, D = 117 records

This tiny, yellow-legged "peep" passes through from late April through mid-May, usually in company with Western Sandpipers. Some early records are, 1931-4 May, very abundant in Tofino area (IMcTC); 1969-22 April, c20, Clayoquot Spit (DFH); 1970-6 May, small flock, Tofino Inlet mudflats (DFH); 1971-2 May, 50, Tofino waterfront (DFH); 1972-28 April, 30, Ucluelet Inlet (DFH). The latest May date among our records is the 14th: 1906-two specimens collected on that date (Anderson, BCPM215, 217); 1969-5 on Tofino waterfront (DFH). Our June records are of a single bird, no doubt a straggler of the spring movement, at Schooner Cove on the 6th, 1968 (RWC) and of another, probably in the fall vanguard, at Cleland Island on the 29th, 1970 (MGS). The birds are seen regularly on local beaches and mudflats, and in small numbers by tide pools in rocky areas, throughout July and August, and September sightings are not unusual. Of five September records in 1971, the latest was of two birds on Box Island on the 27th (JB), and the latest of four records during that month in 1972 was on the 23rd, a single bird at Chesterman Beach (AD). Our November sighting, one bird at Indian Island on the 19th, 1972 (AD) is unusual, although Campbell et al. (1972) recorded two December records in the Lower Mainland in 1971. The spring migration in that area was 24 April-14 May and fall birds were seen from 4 July through 30 October. Comparable dates in Victoria for 1971 (Tatum, 1972) were 24 April-16 May and 3 July-16 October. Richardson (1971) saw the species during the last week of April and first three weeks of May, and then mainly from July through early September in Browning Inlet. As can be seen, all of these dates agree well with ours.

Locations:

Grice Bay meadows, 11, 7 July 1972 (AD); Green Point area, one, 5 July 1972 (AD); Sandhill Creek area, 44, 9 July 1972 (AD); Quisitis Point, one, 6 August 1971 (NR); Great Bear Rock, two, 25 August 1970 (RWC); Gibraltar Island, two, 5 August 1971 (DFH); Hand Island, some, 9 August 1969 (DFH); Bamfield, several, 5 August 1965 (CJG); Cape Beale, 3 flocks of five to six each, 30 July 1970 (CJG); Pachena River area, a few, 19 September 1971 (DFH, JB); Pachena Bay, 15, 9 August 1972 (AD); Michigan Creek, three, 5 August 1972 (AD); Darling River, eight, 13 August 1972 (AD); Klanawa River area, eight,

13 August 1972 (AD); Dare Point, two, 17 August 1971 (DFH, JB); Walbran Creek, two, 17 August 1971 (DFH, JB); Logan Creek, one, 19 August 1971 (DFH, JB); Owen Point, 104, 23 August 1972 (AD).

The Least Sandpiper is a common migrant in PRNP.

Dunlin (Le Bécasseau à dos roux)
Calidris alpina (L.)

J5, F2, M4, A12, M25, J3, J1, A2, S1, O10, N20, D4 = 89 records

This species winters, often occurring in large flocks, on local beaches and mudflats. Unlike most other sandpipers, its appearance in July and August is unusual, and most do not arrive, in fall, until October or November. Our first fall records in recent years were, 1969-10 October, one, Vargas Island (DFH); 1970-14 October, two, Vargas Island (DFH); 1971-25 September, two, Long Beach (RWC); 1971-16 October, 60 at South Bay (AD) and two at Long Beach (SHR). The species was present on 19 of 25 weeks during the period 8 October-31 March (1972-73) in southern Clayoquot Sound (AD). On the tideflats of that area, flocks of over 500 birds were seen 10 times between 16 October and 29 November, and on 17 November a flock of an estimated 2500 birds was seen on the Ducking Flats, across Browning Inlet from South Bay (Hatler, 1973).

On 22 December 1971, 380 birds of this species were found dead near the mouth of Sandhill Creek (DFH). A few specimens were taken for cause-of-death determination, but these were never picked up by the B.C. Fish and Wildlife Branch which was contacted about them. We would like to point out that the entire sample of 380 specimens could have been most useful in studies of taxonomy and life history (food habits, seasonal sex and age ratios, etc.) and we would urge naturalists who find large samples of any species to collect, and freeze as soon as possible, all specimens involved, and provide proper data as to date and location of the kill. The B.C. Provincial Museum would be most happy to receive such samples.

Though Dunlins are present throughout the winter, numbers dwindle in the later part of this season and the species is not really conspicuous until April

and May when birds in breeding plumage appear among the large flocks of northbound Western Sandpipers. First April sightings in recent years have been, 1969-22nd, two, Tofino Inlet (DFH); 1970-26th, three, Vargas Island (DFH); 1971-21st, 15-20 with Sanderlings, Long Beach (DFH); 1972-24th, four, Grice Bay meadows (DFH). Just one of our May sightings occurred after the middle of the month: 18 May 1970, two, Cleland Island, (MGS). The migration pattern as indicated by our records, agrees well with observations compiled for the three other southwestern British Columbia areas which we have been regularly referring to.

Some location records for the species in our area include: Chesterman Beach, one, 29 April 1969 (DFH); Schooner Cove, three, 3 May 1972 (NR); Box Island, a few, 10 May 1969 (DFH); Green Point area, 350-400, 22 January 1971 (DFH); Sandhill Creek area, 50, 3 January 1973 (AD); Ucluelet Inlet, 75-100, 7 May 1971 (DFH); Great Bear Rock, one, 26 July 1972 (DFH); Village Reef, three, 26 October 1972 (DFH); Sanford Island, a few, 10 August 1967 (CJG). We have not yet received a record of the species in Phase III of the park, but this is undoubtedly because we have not been there during the appropriate season.

The Dunlin is an abundant winter bird in PRNP.

Dowitchers

(Limnodromus sp.)

J, F, M, A9, M14, J, J15, A18, S1, O6, N1, D = 64 records, unidentified birds

J, F, M, A16, M26, J, J70, A28, S4, O12, N1 D = 157 records, all dowitchers

The two species of dowitchers both occur in our area, often in mixed flocks, and the difficulty of distinguishing the two in the field (see Godfrey, 1966) necessitates this discussion of the two together. Our observations of unidentified dowitchers are here lumped with those sightings for which we have at least tentative identifications to give a general picture of the pattern of

occurrence of the genus in our area. Brief accounts of each species will follow.

First arrivals are in April in most years: 1969-22nd, a flock in Tofino Inlet (DFH); 1970-23rd, one, Tofino Inlet (DFH); 1971-21st, one, Pinkerton Islands (DFH); 1972-24th, c55, Ucluelet Inlet (DFH). Sightings may be made throughout May, but are most common during the first half of the month. By June the northern migration has passed but, in common with many other shorebirds, the first fall migrants begin to appear in early to mid-July (earliest record; 3 July 1970, three L. griseus on Cleland Island, MGS; dowitchers were seen daily on Cleland Island in numbers of from one to 100, from that date through 13 August in that year, MGS). Most of the fall migrants pass in July and August, but individuals and small flocks appear into October, and we have one November record (8th, 1972, one, at South Bay, AD). This general pattern is in agreement with observations compiled for the Lower Mainland (Campbell et al., 1972) and southern Vancouver Island (Tatum, 1972) in 1971.

Dowitchers are generally birds of tideflats, estuaries and protected bays where they feed by probing in soft substrates. However, they are fairly commonly seen resting at locations along the exposed coast during migration. Some location records for our area include: Vargas Island, seven, 25 August 1969 (DFH); Chesterman Beach, 75, 29 April 1969 (DFH); Schooner Cove, three, 5 August 1967 (RWC); Incinerator Point area, nine, 10 August 1968 (RWC); Sea-lion Rocks, one, 26 July 1965 (FB, DS); Sandhill Creek area, 34, 12 July 1972 (AD); McLean Point road, one, 19 July 1972 (AD); Grice Bay, two, 14 July 1972 (AD); Ucluelet Harbour, 11, 10 May 1972 (DFH); Starlight Reef, two, 24 July 1970 (RWC); over Loudoun Channel near Chrow Islets, two, 10 May 1972 (DFH); Bamfield, three, 16 August 1965 (CJG); Pachena Bay, one, 23 July 1972 (DFH); Seabird Rocks, three, 24 July 1972 (DFH); Michigan Creek, one, 5 August 1972 (AD); Darling Creek, one, 13 August 1971 (DFH, JB); Klanawa River area, one, 14 August 1972 (AD). A particularly good spot to observe dowitchers is the McLean Point-Grice Bay area, especially in late April and early May.

With regard to identification of the individual species, one of our observers (AD) wrote,

Separation of these two species in the field was based on the following: I found the Long-billed to be richer and darker in colour with the brown of the breast extending between the legs and usually somewhat on the undertail coverts. The barring on the sides of the Long-billed was neater and thinner. The sides of the upper breast (the area directly in front of the wing) was barred on the Long-billed and spotted on the Short-billed. Sometimes, also, the bill was obviously longer in scolopaceus, and often all of these features were used in conjunction with the call notes.

Most identifications to species among our records is based on this difference in call notes between the two species. That both occur here has been shown conclusively by the fact that both have been collected locally: UBC number 4430-4434, 11 May 1931, and number 4435, 26 May 1931 (Racey); UBC 10736, 14 August 1961 (Morley)= Short-billed Dowitchers. B.C. Provincial Museum numbers 196, 4 May 1904 (Kermode); 199, 201-206, 24-30 April 1906 (Anderson)=Long-billed Dowitchers. All of these specimens were taken in the Clayoquot Sound. We feel that most of the records which provide the data for the following species account are satisfactorily documentable, but we do acknowledge our humanity, i.e., our susceptibility to occasional error, and request that at least a tinge of tentativeness be read into the following section.

Short-billed Dowitcher (Le Bécasseau roux)

Limnodromus griseus (Gmelin)

J, F, M, A3, M9, J, J38, A9, S3, O, N, D = 62 records

Long-billed Dowitcher (Le Bécasseau à long-bec)

Limnodromus scolopaceus (Say)

J, F, M, A4, M3, J, J17, A1, S, O6, N, D = 31 records

Our evidence suggests that griseus is more common than scolopaceus in

our area. This is supported somewhat by the observations of Richardson (1971), who listed only the former species (second week of July, last two weeks of April, and first week of May) in the Browning Inlet area. Also, Tatum (1972), while remaining largely noncommittal, indicates that records of scolopaceus were not confirmed in the Victoria area until 1970, and implies that griseus is the more common species in that area. However, in the Lower Mainland (Campbell et al., 1972) griseus is listed as a "rare transient" with just six records in 1971, while scolopaceus, listed as a "common transient" was apparently seen often, especially in the fall. There were also some wintering scolopaceus in that area. It should be mentioned that the field observations in the Lower Mainland were bolstered by the results of mistnetting and banding operations near the Vancouver Airport during several evenings in the fall of 1971. There, 79 dowitchers were captured and measurements (wing, culmen and tarsus) were obtained for each. All but 7 proved to be scolopaceus. Godfrey (1966) and Peterson (1961) both mention that griseus is more frequent along salt water than is scolopaceus, and a proportionally greater occurrence of griseus along the outer shores of Vancouver Island and scolopaceus on the mainland delta could be considered consistent with this fact.

As indicated earlier, both species have been collected locally in the spring, and the temporal distribution of our observations does not allow any conclusions about seasonal differences in local occurrence of the two species. There is a bit of evidence that scolopaceus may occur later in the fall than does griseus; of 11 dowitcher sightings on the tideflats in lower Clayoquot Sound between 7 October and 8 November 1972, the birds were identified as scolopaceus on 5 occasions and were not identified to species on the other six (AD). Recall that scolopaceus, but not griseus, has wintered in the Vancouver area.

Among our sightings of birds which we identified as scolopaceus, just three involved flocks of more than 10 birds: 60, Cleland Island, 27 July 1970

(MGS); 14 and 12, South Bay, 16 and 17 October 1972 (AD). Our griseus sightings of more than 10 birds in a flock numbered 12, and included a sighting of 75 at Chesterman Beach, 29 April 1969 (DFH); 100+ at Cleland Island, 26 July 1970 (MGS); 250 near Sandhill Creek, 12 July 1972 (RS); and 750-1000 at McLean Point 26 April 1970 (DFH). At the last mentioned observation, the air was filled with a literal euphony of the mellow "tu-tu" calls characteristic of griseus.

A banding programme such as that described for the Vancouver area, conducted in the bays near McLean Point during late April or early May, and again in late July, would probably turn up some unusual shorebird records, and could provide some much needed, concrete data on the migration and local occurrence of the two species of Limnodromus. Meanwhile, dowitchers are common migrants in PRNP. Probably, the Short-billed is common both spring and fall, while the Long-billed may be uncommon during both, but somewhat more common in the fall.

Stilt Sandpiper (Le Bécasseau à echasses)
Micropalama himantopus (Bonaparte)

J, F, M, A, M1, J, J1, A, S, O, N, D = 2 records

Single birds were seen on 15 July 1960 at Stubbs Island (CJG) and 25 May 1971 on Long Beach (AD, DSa). This species is apparently seen regularly (seen each year, but not often) in the Lower Mainland (Campbell et al., 1972), but it is not listed among the 1971 birds of the Victoria area (Tatum, 1972). Our observers are of good repute, and we consider our records acceptable. The Stilt Sandpiper is a very rare migrant through PRNP.

Semipalmated Sandpiper (Le Bécasseau semi-palmé)
Calidris pusilla (L.)

J, F, M, A3, M6, J, J5, A2, S, O, N, D = 16 records

This species was first reported present in the Tofino area in May 1931

(IMcTC). Our other records since then have been: Vargas Island, five, 8 May 1971 (DFH); Echachis Island, five, 26 April 1971 (DFH); Chesterman Beach, six, 28 April 1971 (DFH); Schooner Cove, seven, 3 May 1972 (NR); Green Point area, several on 2 August 1965 (FB), five on 22 April 1971 (DFH), one on 25 May 1971 (AD, DSA) and one each on 14, 18 and 21 July 1972 (AD); Sandhill Creek area, one, 19 July 1972 (AD); Great Bear Rock, one, 25 July 1972 (DFH); Walbran Creek, one, 17 August 1971 (DFH, JB).

The species is most often seen accompanying other peeps, especially Western Sandpipers, on sand beach and tideflats habitats. It has been distinguished from that species in our observations largely by its shortness of bill and grayer plumage, especially in spring. Our observations plus those from published sources suggest that the species is somewhat more common on the outer coast than in other areas of southwestern British Columbia. Tatum (1972) did not list it for the Victoria area, and Campbell et al., (1972), with no spring records and few in fall during 1971, list it as a "rare transient" for the Lower Mainland. However, Richardson (1971) recorded Semipalmated Sandpipers during three weeks of August and one of September in 1968, and had sightings during two weeks of May 1969 in the Browning Inlet area. This apparently greater frequency of sightings on the outer coast is not entirely consistent with the known habits of the species, which is the common peep of the interior (see range maps in Godfrey, 1966, and Robbins et al., 1966). However, once having reached the coast, the bird might find local habitats along the Strait of Georgia less appropriate than those along more exposed shores.

Speculation aside, we actually have no concrete evidence that the species occurs here at all, as there have been no specimens collected and even our sight records have not been adequately documented with descriptions of birds seen.

While we are forced into the uncomfortable position of having to be suspicious of our records, we nevertheless have convictions that at least some are authentic. We urge naturalists to try to obtain documentary evidence, such as photographs and written descriptions, which can be assessed by a suitable ornithological records committee so that this bird can gain a more certain place on the list of the park's avifauna. Specimens of Calidris found dead should certainly be saved. The weight of our evidence plus our convictions leads us to list the Semipalmated Sandpiper as a very rare migrant in PRNP.

Western Sandpiper (Le Bécasseau du Nord-Ouest)
Calidris mauri Cabanis

J, F, M, A1?, M45, J10, J92, A65, S11, O6, N, D = 246 records

This is the most abundant sandpiper occurring in our area. It is nearly always the predominant species in flocks of peeps seen on local beaches and mudflats, and it sometimes occurs in flocks which defy enumeration. On 30 April 1971, a carefully estimated 4500-5000 birds on a small section of mudflats on Stone Island (Tofino Inlet) constituted only a small proportion of the total number present in the area. Tight flocks up to 100m or more long were regularly flying up in formation and landing again on the Arakun Flats less than a mile to the north (DFH).

This bird's migration pattern is similar to that of several other species considered previously, with a main spring movement from mid-April through mid-May, and a strong return flight throughout July and August. First spring sightings for recent years were, 1969-18 April, five, Vargas Island (DFH); 1970-6 May, a few, Tofino Inlet (DFH); 1971-22 April, one, Green Point area (DFH); 1972-23 April, seven, Ucluelet Inlet (DFH). Of 45 May records, only two were later than the 17th of the month: 24th, 1970, one at Cleland Island (MGS); 25th, 1971, 30 at Long Beach (AD). The appearance of the fall vanguard seems to be somewhat earlier than that for most of the other species, with a late June arrival the rule:

1968-24 June, 30 near Incinerator Point (RWC); 1969-25 June, one, Cleland Island (MGS); 1970-13 June, one--perhaps a spring straggler? Otherwise, first fall record was 1 July, one, both of these at Cleland Island (MGS); 1971-first fall record on 2 July, 22 at Ucluelet Inlet (DFH); 1972-26 June, 11, Sandhill Creek area (AD). October records were obtained only in 1971 and 1972, but these were years during which observers were much more active at that time than was the case previously, and we consider it likely that a few birds can be seen in October during most years. Our latest sighting was of a flock of 100 birds in South Bay on 16 October 1972 (AD).

Following is a list of locations at which the Western Sandpiper has been observed in our area. In most cases the observations involving the largest flocks seen at each location have been selected, but the reader should bear in mind that this species is commonly seen in two's and three's as well:

Clayoquot Spit, c400, 5 July 1969 (DFH); Chesterman Beach, 250+, 29 April 1969 (DFH); Portland Point, four, 1 August 1971 (NR); Schooner Cove, 25, 8 August 1965 (FB); Green Point area, c2000, 10 July 1972 (AD); McLean Point, hundreds, 28 April 1972 (DFH); Grice Bay, c2000, 26 August 1965 (FB); Sandhill Creek area, 650, 9 July 1972 (AD); Quisitis Point, two, 14 August 1971 (NR); Great Bear Rocks, five+, 9 September 1971 (IR); Clarke Island, two, 9 July 1972 (DFH); Turtle Island, 27, 7 July 1971 (DFH); Gibraltar Island, 15, 5 August 1971 (JB); Village Reef, two, 19 July 1972 (DFH); Faber Islets, some, 12 July 1971 (JB); Edward King Island, eight, 11 August 1969 (CJG); Pachena Beach, 24, 3 August 1972 (AD); Michigan Creek, 22, 12 August 1972 (AD); Darling River, six, 13 August 1971 (DFH, JB); Klanawa River, 13, 13 August 1972 (AD); Hole-in-the-Wall, 30, 16 August 1971 (DFH); Cheewhat River area, some, 17 August 1971 (DFH, JB); Dare Point-10, Carmanah Point-one, Owen Point -250+, 23 August 1972 (AD); San Juan River, 15, 21 August 1972 (AD).

Because of its preference for sand beaches and mudflats, this species is less often seen in the Broken Group than in the other two park units but, as the above records show, it may be seen widely throughout the park. The Western Sandpiper is an abundant migrant in PRNP.

Buff-breasted Sandpiper (Le Bécasseau roussâtre)
Tryngites subruficollis (Vieillot)

This species was seen during the first week of September 1968 on northwestern Vancouver Island (Richardson, 1971), and a single, "very tame" bird was seen on 1 and 2 September 1964 at Long Beach. It was photographed (PDF 185) on the former date (BW).

In British Columbia the Buff-breasted Sandpiper is an irregular fall migrant along the coast, being recorded here in August and September (Campbell, in press). All specimen records are of juveniles. This sandpiper is easy to identify and should be looked for in PRNP especially where short grassy areas prevail. The species remains a very rare fall migrant in the PRNP area.

Marbled Godwit (La Barge marbrée)
Limosa fedoa (L.)

J, F, M, A, M, J3, J7, A4, S2, O1, N, D = 17 records

This large shorebird appears on the coast almost exclusively in the fall, although Tatum (1972) reports a May record from Victoria. One of our June records, 6 of our July records, and 3 of our August sightings were at Cleland Island. All of our other records are: 15 August 1967, one near Portland Point (RWC); 5 and 6 June 1968, one between Green Point and Incinerator Point (RWC); 3 July 1970, one at Stubbs Island (DFH); 25 September 1971, one, Chesterman Beach (BH); 26 September 1971, one, Chesterman Beach--no doubt the same bird--this sighting made independent of knowledge of previous one (DFH, JB); 9 October, one at Chesterman Beach (AD). On no occasion was more than one bird seen.

The Marbled Godwit is a very rare migrant in PRNP.

Sanderling (Le Sanderling)
Calidris alba (Pallas)

J12, F4, M3, A11, M22, J2, J10, A7, S20, O8, N4, D4 = 107 records

We have sightings for every month, and in the single year April 1972 through March 1973, we recorded observations during all months except August. The species seems to have a migration pattern much like the Dunlin, with which it often associates. The main fall movement begins fairly late in the fall, peaking in September. From then numbers decrease, but some birds are present throughout the winter, and local numbers are augmented briefly in mid-April through mid-May by passing migrants. Summer is the season of fewest sightings. Strangely, one of our two June records and nine of our ten July records were obtained in 1972, all on Long Beach between Sandhill Creek and Incinerator Point (representative sightings-one on 21 June, 12 on 15 July, 55 on 19 July, 5 on 21 July, 75 on 25 July, and 12 on 27 July, all AD). Whether there was an unusually early group of fall migrants or a group of birds which did not migrate during this year, or whether Sanderlings were present during most years in June and July but have simply not been seen (unlikely) is unknown. Six of our 7 August sightings occurred in the second half of the month, and this further indicates the birds' tendency toward a later arrival than that of most sandpiper species.

Sanderlings are largely birds of sand beaches, but they also occur on tideflats occasionally, and may be seen resting on offshore rocks. Park area location records follow:

Vargas Island, five, 18 February 1969, and 200, 19 April 1969 (DFH); Clayoquot Spit, six, 18 May 1970 (DFH); Clayoquot Spit, six, 18 May 1970 (DFH); Chesterman Beach, 130 (three flocks), 8 May 1972 (DFH); Schooner Cove, two, 29 September 1971 (JB); Incinerator Point, 15, 2 September 1967 (RWC); Green Point, 55, 19 July 1972 (AD); South Bay, two, 16 October and one, 8 November 1972 (AD); Sandhill Creek area, 85, 1 January 1973 (AD); Great Bear Rock, three, 25 August 1970 (RWC)-note: no other records from Barkley

Sound; Carmanah Point, two, 17 August 1971 (DFH, JB).

The Sanderling is a common migrant, and is uncommon in winter in PRNP.

Red Phalarope (Le Phalarope roux)
Phalaropus fulicarius (L.)

J, F, M, A, M5, J, J2, A4, S2, O2, N1, D = 16 records.

Martin and Myres (1969) have indicated that this species is commonly encountered offshore, especially in warmer waters, during migration, but that it is only during periods of storms and persistent westerly gales that significant numbers are driven shoreward to subsequent encounters with land-locked birdwatchers. These authors report sightings of flocks of 50 birds or more off Ucluelet between 12 and 17 May 1949, and the senior author collected specimens at that time (BCPM 3979-3982). They listed the species as numerous on offshore tuna fishing grounds between 26 July and 11 August 1946.

Martin's specimen records comprise four of our five spring sightings. The other was a brief observation of 20 birds at the edge of a thick fogbank near the Chow Islets in Barkley Sound, 8 May 1969 (DFH). Some of these were in near if not full breeding plumage and were certainly Red Phalaropes. Our fall records: 13 September 1969 (20), 31 July 1971 (two), and 29 July 1972 (25), all seen by Vancouver Natural History Society members in pelagic bird watching trips (15+ miles offshore from Tofino); 11-12 October 1940, some collected off Barkley Sound (R&W); 31 August 1964, 20 off Tofino (BW); 26 August 1969, eight, Sandford Channel in howling southeast wind (CJG); 30 August 1967, 11 in a tidepool, in heavy fog, near Green Point (RWC); 10 September 1971, two phalaropes glimpsed briefly, believed to have had yellow bills and therefore of this species, Imperial Eagle Channel in 40 m.p.h. southeasterly (DFH); 13 November 1972, one on the Arakun Flats, Tofino Inlet (AD). We also have a record of a dead bird of this species picked up on Long Beach in late September 1971 (JB), but the exact date has been lost.

The Red Phalarope is a rare migrant along PRNP waters.

Northern Phalarope (Le Phalarope hyperboré)
Lobipes lobatus (L.)

J, F, M, A1, M33, J1, J18, A28, S16, O4, N2, D = 103 records

The Northern Phalarope also migrates over the pelagic waters of our coast, but it regularly occurs close to shore and is much more abundant than is the Red Phalarope. The spring migration, which is best seen by salmon trollers just a few miles at sea, peaks in May. Martin and Myres (1969) reported sightings of large flocks, up to 5000 birds, offshore from Ucluelet 1-4 May 1949. Vancouver Natural History Society members reported "hundreds" seen on pelagic bird trips on 2 May 1970 and 8 May 1971, but certainly the most spectacular observations have come from Cleland Island. On 15 May 1969, Northern Phalaropes began accumulating just offshore there at about 17:00 P.S.T., and had built up to an estimated 20,000 by dusk. These were gone the following morning, although a flock of 4000 was seen later in the day, 3000 more were seen on the 17th, and throughout 18 May continuous flocks of 100 to 5000 birds were seen passing by on their way north (MGS, RHD, RWC). Again in 1970, thousands of birds were seen in migration past Cleland, especially on 19 May (MGS).

The southern migration begins in early to mid-July. Martin and Myres (1969) point out that some commercial fishermen call this species "coho bird" because its appearance at that time is regular and coincidental with the early runs of coho salmon. (Note: "sea-snipe" is another name tagged to this bird by local fishermen). The fall movement seems to consist largely of a steady trickling of small flocks of birds southward from July through September, although large concentrations may be encountered in this season as well. On 29 July 1970, 8000+ were seen in Queen Charlotte Strait and, more locally, a flock of c1000 was

seen in Barkley Sound on 4 September 1971 (both JEVG). October and November sightings are not common, but do occur: Three of our October sightings are from waters north of Vancouver Island in 1968 and 1969, and do not concern us here except as they indicate that in those years there were still birds available to pass by our shores later on (records from JEVG); one was seen in the Tofino area during the week 22-28 October 1972 (AD); several small flocks were seen between Tofino and Nuchatlitz Inlet on 4-5 November 1969 (DFH, JSJ); a single bird was seen between Tofino and Vargas Island on 14 November 1969 (DFH). The fall movement probably peaks in August, as indicated by the number of our observations obtained then, including several from the Bamfield-outer Barkley Sound area (all CJG) as follows: 5 August 1965, large number, Bamfield; 12 August 1965, in quantity in Barkley Sound now; 21 August 1967, lots, Imperial Eagle Channel.

As the following list will show, most of our sightings have been of birds on the water, but we have occasionally seen the species on land. Some locations:

Vargas Island, one on beach, 4 June 1969 (DFH); Chesterman Beach, 240, 20 September 1972 (AD); water near Sea-lion Rocks, one on 22 July 1967 and two on 19 July 1968 (RWC); Big Bank, near Ucluelet, 1000+ in many bunches (DFH); Great Bear Rocks area, 25-30, 30 July 1971 (JB); Batley Island area, four, 24 July 1971 (DFH); Thiepval Channel near Turret Island, c 100, 4 September 1971 (JB); Imperial Eagle Channel near Sandford Island, 200+ in many small flocks, strong southeasterly winds and rain, 10 September 1971 (DFH); Loudoun Channel near Chrow Islets, 12, 26 April 1972--this is our earliest spring record (DFH); near Beg Islets, 40, 9 May 1972 (DFH); Hankin Island area, Loudoun Channel, 250+, 13 September 1972 (DFH); Coaster Channel near Benson Island, 11, 14 September 1972 (DFH); near Camper Bay, 23, 24 August 1972 (AD).

The Northern Phalarope is a common (often abundant) migrant in offshore waters of PRNP.

Pomarine Jaeger (Le Labbe pomarin)
Stercorarius pomarinus (Temminck)

J, F, M, A, M, J, J1, A3, S4, O2, N, D = 10 records

Jaegers are largely pelagic birds in our area, occurring here mostly in the fall. This species was recorded from waters near Ucluelet on 22 and 27 August 1949 (Martin and Myres, 1969), and among our records has been seen locally as follows: Vancouver Natural History Society pelagic bird trips in waters 10-15 miles off Tofino-13 September 1969 (three), 26 September 1970 (two, off Long Beach), 31 July 1971 (one), 25 September 1971 (one); waters off Tofino, one, 31 August 1964 (BW); just off Ferrer Point, Nuchatlitz Inlet area, 4-5 jaegers seen and one of these positively identified as a Pomarine, 1 October 1970 (DFH); near Camper Bay, one adult, 24 August 1972 (AD).

The Pomarine Jaeger is a rare fall species in PRNP waters.

Parasitic Jaeger (Le Labbe parasite)
Stercorarius parasiticus (L.)

J, F, M, A, M2, J3, J1, A4, S2, O, N, D = 12 records

This species is the jaeger seen most frequently in other areas of southwestern British Columbia, bearing a status of "common fall migrant" in the Victoria area (Tatum, 1972) and "frequent transient" in waters adjacent to the Lower Mainland (Campbell et al., 1972). The Vancouver Natural History Society has recorded the species on pelagic trips from Tofino as follows: 13 September 1969 (six); 15 May 1970 (three); 26 September 1970 (two); 31 July 1971 (six). Other local records include: Barkley Sound, one, 16 August 1965 (CJG); Effingham Island area, one immature, 19 and 20 August 1967 (CJG); Cleland Island, 1970-4 June (two), 26 June (one), and 6 August (two, MGS); pelagic waters off Tofino, one,

31 August 1964 (BW); Hand Island area, two adults seen sitting on a floating log, 27 May 1971 (DFH); Stopper Islands area, two, probably this species, seen flying to northwest, 27 June 1971 (DFH, JB).

The authors cited previously list single May sightings for both the Victoria and Vancouver areas in 1971, and indicate that spring records for the species are quite rare. Thus, the fact that nearly half of our records were obtained in May and June is of some interest. Martin and Myres (1969) reported spring migrants, but did not separate this species from the Long-tailed Jaeger in the field. We also have five June records of unidentified jaegers which were possibly this species; four were from Cleland Island where only parasiticus was positively identified in other sightings.

Records obtained thus far suggest that the Parasitic Jaeger is an uncommon migrant (perhaps rare in spring) off PRNP waters.

Long-tailed Jaeger (Le Labbe à longue queue)
Stercorarius longicaudus Vieillot

Martin and Myres (1969) speculate that this species is most common far offshore on the warm water tuna fishing grounds, as indicated by specimens taken in such areas. There have been a few sightings in past years in the Victoria and Vancouver areas (Campbell, 1968) but these have been exceedingly rare. We have one record; on 28 May 1931, a bird said to have been this species was seen at Chesterman Beach (IMcTC). Unfortunately we have no further details on this sighting, and we therefore prefer to list the Long-tailed Jaeger as a hypothetical species for PRNP.

Skua (Le Grand Labbe)
Catharacta skua Brúnnich

J, F, M, A, M, J, Jl, Al, Sl, O, N, D = 3 records

Our sightings were of single birds seen in Barkley Sound near Bamfield (5 August 1965, CJG) and offshore from Tofino by Vancouver Natural History Society members, including RWC (26 September 1970 and 31 July 1971). Martin and Myres (1969) list a few records, including collected specimens, for the offshore areas between Cape Flattery and Goose Island Banks, and speculate that this species is a regular visitor to our waters.

The Skua is a very rare fall bird in waters adjacent to PRNP.

Glaucous Gull (Le Goéland bourgmestre)
Larus hyperboreus Gunnerus

J, F, Ml, A, M5, J, J, A, S, O, N, D = 7 records

This, our largest gull, is one of the least common in our area. A specimen was collected on 18 May 1931 at Chesterman Beach (Racey, UBCM 5646), and three juveniles were seen on Long Beach near Green Point on 14 May 1931 (IMcTC). One of these was also collected. Edwards (1968) saw one at Long Beach among a flock of gulls of several species, 18 May 1966, and we have some more recent records as follows: 26 May 1971, one at Long Beach and one at Tofino (AD). Independently of the previous record, we also received a record of a Tofino bird on 25 May 1971, and this was documented with a photograph (BB, PDF 181); 26 March 1972, at least one beautifully feathered adult was seen among a large flock of gulls exploiting a herring run at the head of Ucluelet Inlet (DFH).

We have no other records for our shores, but it is interesting that during a winter cruise 15 miles or more offshore, in late February and again in late November, 1971, Glaucous Gulls were seen in small numbers following the ship (RWC).

This species is listed as "rare winter" in the Lower Mainland (Campbell et al., 1972), but was apparently not seen on southern Vancouver Island during 1971 (Tatum, 1972). We would expect, as did Edwards (1968), to see the Glaucous Gull more often here. However, on the basis of our sightings, we must list it as very rare winter on shores within PRNP.

Glaucous-winged Gull (Le Goéland à ailes glauques)
Larus glaucescens Naumann

J10, F7, M27, A18, M60, J98, J89, A64, S33, O20, N17, D8 = 451 records

This is the resident, nesting gull of the PRNP area, and it may be seen daily throughout the year at many locations in all three park units. Due to its widespread distribution here, both in space and time, we will dispense with location records and will not discuss seasonal movements at any great length. Though this species is probably our most common gull, it is not necessarily the most abundant gull on local beaches, especially in summer. It is seen in large concentrations in early spring when herring are spawning in local bays and inlets: 30 March 1971, c3500 on a beach on east Vargas Island, 1500 on south Meares Island and another 2000+ on northwest Meares Island (DFH); 26 March 1972, 500+ fishing for herring at head of Ucluelet Inlet (DFH). The species is also seen in numbers on the nesting areas.

There are a number of publications dealing with the biology of this species in southwestern British Columbia, including a study by Vermeer (1963) on Mandarte Island near Victoria, and reports of work done on both Mandarte Island and Cleland Island (Drent et. al., 1964; Henderson, 1972; Ward, 1973). These sources should be consulted for detailed information regarding aspects of behavior, reproduction, and population dynamics.

Table 5 lists the results of our surveys of gull nesting colonies in and near PRNP waters. Following are brief descriptions and recent histories of

these colonies:

1. White Island - This is a steep-sided, completely unvegetated rock off Portland Point. The gulls nest mainly on the high ridges beside surge channels on the southern half of the island. On 24 June 1972, an Indian family was seen collecting gull eggs from White Island (AD), and this accounts for the low nest and egg count obtained on 2 July 1972.
2. Lovekin Rock - A small colony of gulls apparently occupied this rock into the early 1960's (I. Smith, pers. comm.), but we have no records of birds nesting there since 1966. Smith speculates, probably correctly, that human disturbance accompanying increasing tourist use of the Long Beach area was responsible for the colony's demise. However, raccoons have been observed on Lovekin Rock in recent years (Hatler, 1972), and it is possible that at least part of the effect was due to more natural causes.
3. Sea-lion Rocks - As Table 5 indicates, this colony has remained fairly stable at 150 to 175 nesting pairs over the past several years. The gulls in this colony seem much more solicitous than most, and the naturalist who goes ashore to count nests or band young should expect to be hit on the head a time or two.
4. Florencia Island - This is the only forested island in our area on which birds nest in numbers, and it supports the largest gull colony in the PRNP area. As indicated by Hatler (1972), there are apparently no mink on this island, and this is probably the key to the success of nesting birds there.
5. Starlight Reef - The second largest gull colony in our area occurs on this moderate-sized, low rock which constitutes the last bit of land to westward at the mouth of Barkley Sound. Access to this island is difficult under most water conditions, and we suspect that of the birds nesting in this area, those at Starlight are the least likely to suffer from human disturbance.
6. Great Bear Rocks - Also at the mouth of Barkley Sound, this is another islet which can not always be landed upon. There appeared to be an uncommonly small number of gull chicks present there on 2 August 1973 (DFH), but the reason for this was not evident.
7. Seabird Rocks - This is the least known of our gull nesting colonies. Apparently there have been no complete nest counts prior to 1972, and the count of just 108 nests in the main nesting area in that year is much lower than that expected on the basis of the estimated 400-500 nesting pairs using the area previously (Guiguet, 1971). In addition, there were remarkably few chicks present on 24 July 1972, and those seen were all recently hatched. Human disturbance, perhaps egg-collecting, was suspected, although at least some young birds were taken by eagles; the presence of gull chick remains in pellets found at Seabird Rocks was mentioned previously in the Bald Eagle account.

Table 5. Nests, eggs, and young counted in Glaucous-winged Gull colonies, Pacific Rim National Park area, 1967-1973.

Location and Date	No.	No.	No.	Remarks ¹ (Observers)
	Nests	Eggs	Young	
White Island				
28 June 1970	72	186	0	1E-7, 2E-16, 3E-49 (RWC, DFH).
2 July 1972	35	27	0	Empty-25, 1E-1, 2E-2, 3E-8 (DFH, AD). This colony plundered; see text.
2 August 1973	62	8	93	1E-1, 2E-1, 3E-1, E+Y-2. Many young 3/4 grown (DFH, AD).
Lovekin Rock				
late June 1961	15+			Eggs present (Ian Smith, pers. comm).
Sea Lion Rocks				
3 July 1967	131	205	99	1E-8, 2E-19, 3E-39, E+Y-28; 266 young were banded on 22 July (RWC).
30 June 1968	170	439	5	1E-7, 2E-44, 3E-113, 4E-1, E+Y-1; also, three newly hatched young in one nest (RWC).
28 June 1970	141	351	0	Eggs near hatching (RWC, DFH).
10 August 1971	?			Banded 127 young, saw 29 others too small to band, and 15 eggs (DFH, JB).
2 July 1972	171	424	24	Some, but not many, eggs pipping (DFH, AD); 190 young banded on 29 July (DFH).
2 August 1973	175	44	232	1E-17, 2E-6, 3E-4, E+Y-2; young 1/2 to 3/4 grown; adults very solicitous (DFH, AD).
Florencia Island				
28 June 1970	259	551	73	1E-9, 2E-29, 3E-151, E+Y-23 (RWC, DFH).
3 July 1972	307	348	348	1E-17, 2E-31, 3E-66, E+Y-58; peak of hatching right now--many eggs pipping (DFH, AD); 264 were banded on 29 July, at which time many young were fledged (DFH).
Starlight Reef				
24 July 1970	159	46	178	1E-7, 2E-7, 3E-5, E+Y-8 (RWC).
4 July 1972	182	368	5	1E-20, 2E-31, 3E-93, 4E-1, E+Y-2 (DFH).
2 August 1973	181	93	138	1E-18, 2E-19, 3E-9, E+Y-10; numbers of small chicks seen, but some are 1/2 grown (DFH, RWC).

Table 5. (continued)

Location and Date	No. Nests	No. Eggs	No. Young	Remarks ¹ (Observers)
Great Bear Rocks				
24 July 1970	47	3	64	2E-1, E+Y-1; most nests hatched (RWC).
20 July 1971	39	71	17	1E-8, 2E-9, 3E-15, E+Y-1 (S. rock only) (DFH). Banded 119, both rocks, on 9 August (DFH, JB). Two chicks not yet fledged (IR).
9 September 1971			2	Most nests newly built; 70 nests on N. rock and 62 on S. rock; Empty-32, 1E-37, 2E-24, 3E-39 (DFH).
13 June 1972	132	202	0	Nests present on both rocks, but only south rock counted; 1E-3, 2E-3, 3E-1, E+Y-2 (DFH, RWC).
2 August 1973	53	14	29	
Seabird Rocks				
12 June 1970	many			Nesting population estimated at between 400 and 500 pairs (Guiguet, 1971).
24 July 1972	108+	20	5	This count includes main islet and those reefs accessible at low tide; one inaccessible reef had at least two nests (DFH).

¹Nest contents-1E, 2E, 3E, 4E=1....4 eggs; E+Y=nests containing both eggs and young; the term "empty" as used here applies only to nests in which eggs had not been laid, or had apparently been lost prior to hatching.

Although most local Glaucous-winged Gull breeding is done at the above-mentioned sites, there are some pairs (termed "isolates" by Drent and Guiguet, 1961) which nest in small numbers, often singly, at many other locations: Gowland Rocks, one empty nest, 2 July 1972 (DFH, AD); Cormorant Rock, two nests (1E, 3E) on 2 July 1972 (DFH, AD) and at least one (contents unknown) on 1 August 1973 (AD); George Fraser Islands, less than ten pairs nesting, nests with one to three young, 23 July 1970 (RWC); Wouwer Island, one nest with three pipping eggs, 24 July 1970 (RWC); Alley Rock, two nests (2Y, 3Y), 24 July 1970 (RWC); Turtle Island, one nest (3E), 20 June 1972 (DFH). The Turtle Island nest is a depression on a thick moss pad some 80 feet up in a dying cedar. The incubating bird deserted this nest when it was checked from an adjacent tree on 20 June 1972, and did not return for approximately four days. After it did return, it incubated the then-dead eggs until at least 8 August (DFH). In 1973 the pair involved returned to this nest site and an incubating bird was seen there throughout 9 and 10 July (DFH), but no attempt was made to check nest contents in this year. Cumming (1930) apparently recorded Glaucous-winged Gulls nesting in similar situations in the Queen Charlotte Islands, thus the Turtle Island tree-nester is not unique. One or two pairs of gulls seem to frequent each of the major island groups in the Broken Group throughout the year, and probably most of these nest in trees.

A typical Glaucous-winged Gull nest is a cup of grasses about 30cm in diameter and up to 10cm deep, and this is usually located on bare rock some distance above the high water mark. However, many other nest materials may be used in conjunction with the basic grass matrix, including seaweeds, feathers, strips of cedar bark, lichens, mosses, and herbs such as nodding onion (Allium sp.) and Indian Paintbrush (Castilleja sp.) (RWC, DFH). In our area, these items must be collected from sources off the nesting islands except in the case of Florencia and Seabird Rocks, both of which are adequately vegetated. On Starlight Reef and

Great Bear Rock, seaweeds such as Fucus predominate. As indicated above, most nests are out in the open on bare rock, even on Florencia Island where an alternative exists. There are some nests in the grass and under beach-fringing brush there and on Seabird Rocks, however.

As the data in Table 5 indicate, nests are built in early to mid-June in most years and incubation proceeds through early July. Most of the nests found on Great Bear Rock on 13 June 1972 were very freshly new as indicated by the fact that the bladders of the Fucus composing them were still dark and turgid (DFH). By the last week of July in most years, the chicks are at least half-grown, and most are flying by about mid-August.

Sometimes called "garbage geese" because of their propensity for lingering around human refuse pits, Glaucous-winged Gulls are nevertheless competent hunters of natural foods. During the summer small fish (especially sandlance) appear to predominate in the diet of this bird in this area, as indicated by the great volumes of these items which are regurgitated upon visitors to gull colonies during this time. Other summer items seen include: fragments of small purple sea stars (Pisaster ochraceus), a 20cm sea pen (Leioptilus guernei) (both RWC), and small squid (species unknown, DFH). On 26 March 1972, a flock of 500+ gulls, mostly this species, was seen fishing for herring at the head of Ucluelet Inlet (DFH). The technique used most was a hovering rise from the water to a height of 1-2m, followed by a headfirst dive straight downward which sometimes carried the bird underwater nearly to its wingtips. When a fish was caught, the successful bird then had to flee from all others nearby. It was most interesting to see birds manipulate 30cm fish which had been caught by the middle to a headfirst position, then swallow them whole--all in a few seconds, and all while in flight. DFH has seen gulls using crabs, especially Cancer gracilis and Cancer productus, from tideflats areas, where they catch them by shallow dives such as that described for herring or by waiting for

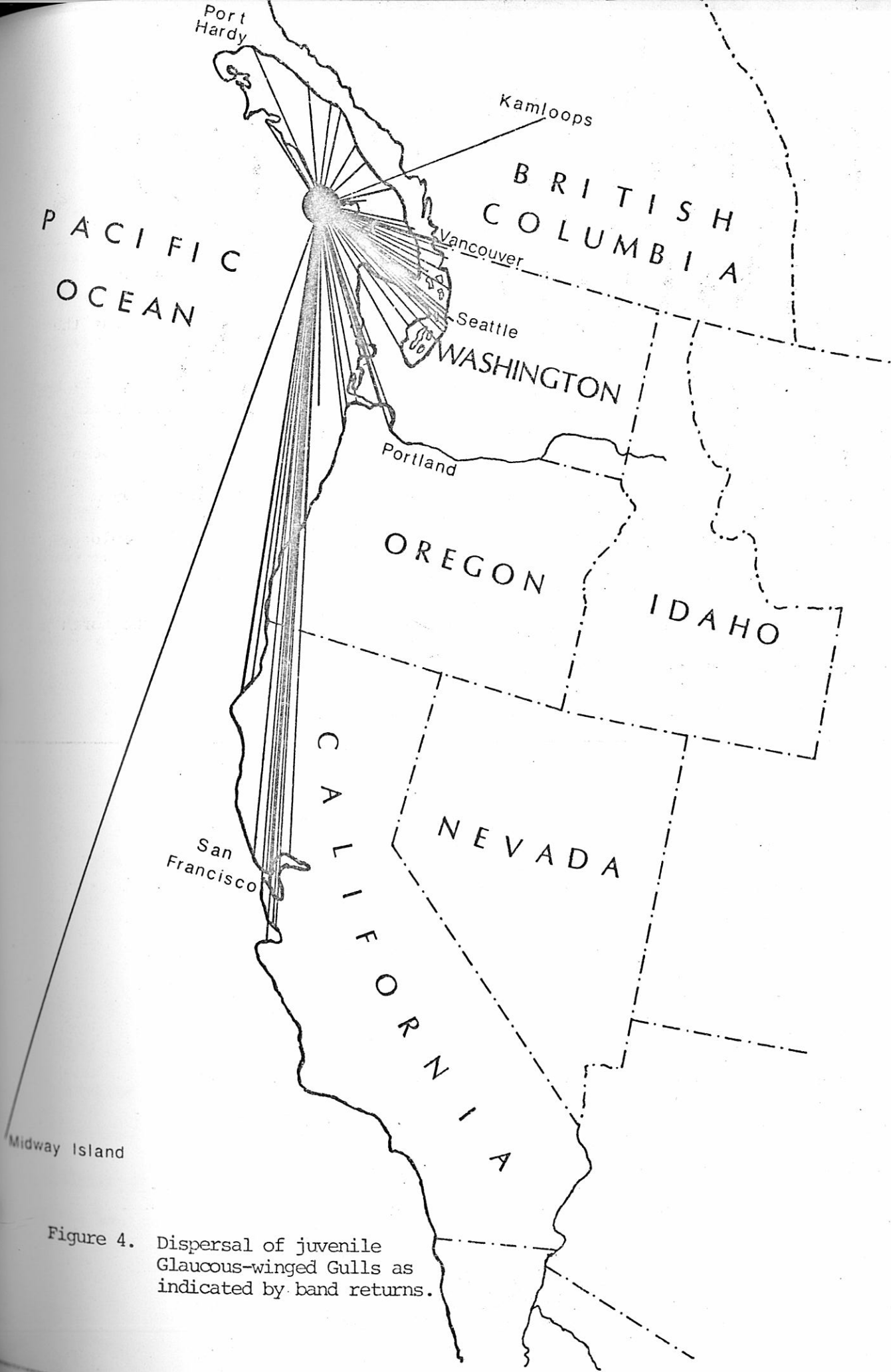


Figure 4. Dispersal of juvenile Glaucous-winged Gulls as indicated by band returns.

tide-exposed animals. Molluscs picked up under similar circumstances will often be dropped to the ground from several meters so that they may be broken open. Sea stars seem to be eaten more often in the winter months, when most food is generally less available, than at other times, but this is a subjective observation; we have no detailed food habits data. In spring and early summer, gooseneck barnacles are eaten, and these will be found commonly in regurgitations around the nesting areas at that time.

A total of 6552 Glaucous-winged Gulls have been banded in this area during the years 1967-1972 inclusive (see Appendix 3), and 297 returns have been realized from these bandings. Figure 4 portrays the movements indicated by these returns. The data show that most movement is along the coast (the Kamloops record is unusual), and suggest that it is mostly southward from our area, although the relative paucity of potential observers along the coast to the north of us would make many returns from there unlikely.

The Glaucous-winged Gull is a common resident of PRNP.

Western Gull (Le Goéland de l'Ouest)
Larus occidentalis Audubon

J4, F2, M1, A, M10, J21, J41, A12, S2, O2, N3, D2 = 100 records

As pointed out by Edwards (1968), this dark-mantled bird replaces our Glaucous-winged Gull as the resident gull of the coast along Pacific shores in the United States, with the main area of overlap occurring largely in the state of Washington between about 47° and 48° N. latitude. Pearse (1946) reported observations of Western Gulls in our area and speculated that some hybridization with L. glaucescens probably occurs. Martin and Myers (1969) remarked that in mid-March 1946, Western Gulls comprised 5 to 10 per cent of the gull population of Barkley

Sound. The species is rarely seen along inside waters of this province, especially in summer (Campbell et al., 1972; Tatum, 1972, Edwards, 1968).

Our records suggest that there is a post-breeding movement northward, where immatures especially can be seen in small numbers from late June into August. From 10 June to 28 July 1972, one to six birds were recorded on Long Beach with other species on 21 days, and on 29 July, 21 birds, none fully mature, were seen there (AD). On 7 July 1971, c50 immature Western Gulls were seen with California Gulls on Village Reef (DFH). The largest number recorded, however, was 100+ seen by Vancouver Natural History Society members on a pelagic bird trip on 2 May 1970 (RWC). Adult birds have been seen in all seasons, and on 14 August 1967, one was seen "on territory" with Glaucous-winged Gulls at Cleland Island (Campbell and Stirling, 1967). An apparent hybrid of these two species was seen at Sea-lion Rocks on 26 July 1970 (RWC).

We have records of this species in all three park units, with some representative locations as follows:

Vargas Island, five, 14 November 1968 (DFH); Tofino Inlet, three, 8 May 1971 (DFH); Green Point, one, 22 October 1972 (SHR); Sandhill Creek area, three, 24 July 1972 (AD); Florencia Bay, two, 27 June 1972 (AD); Benson Island area, one, 23 June 1972 (DFH); Alley Rock, one immature, 24 July 1970 (RWC); Cree Island, two adults, six immatures, 4 August 1970 (CJG); Cape Beale, one collected, 23 March 1946 (Martin, BCPM 876); Pachena Point area, 10, 14 August 1972 (AD); Klanawa River, one adult, 23 March 1968 (RWC); Owen Point area, three, 23 August 1972 (AD).

The Western Gull is an uncommon, non-breeding resident of PRNP.

Herring Gull (Le Goéland argenté)
Larus argentatus Pontoppidan

J2, F2, M6, A3, M8, J2, J19, A13, S7, O9, N1, D2 = 74 records

At least some, perhaps many, of the records here listed for the Herring Gull are actually attributable to the Thayer's Gull, which was not distinguished from the former species here until 1972. As indicated in our remarks on nomenclature

(p. 4), these two species were not officially recognized as distinct until 1973, although some authors (e.g., Godfrey, 1966) had recognized them earlier. Edwards (1968) apparently saw both species among large flocks of gulls at Long Beach in April and May 1966, and indicated that "pale-eyed" birds (Herring Gulls) outnumbered "dark-eyed" ones (Thayer's Gulls) approximately two to one on 21 April 1966. Tatum (1972) reports that both species occur in the Victoria area, and that at least occasionally the Thayer's Gull predominates in some flocks. The remarks of Campbell et al. (1972) are more positive, based on considerable effort expended by some of their observers to distinguish these two species in 1971; both are now given a status of "frequent winter" in the Vancouver area.

Clearly, Herring and/or Thayer's Gulls occur here throughout the year. Most of our observations are of small numbers (ten birds or fewer) and careful examination of the large flocks of gulls exploiting herring runs would probably reveal larger numbers. Martin and Myers (1969) reported that 15 to 20 per cent of the gulls in the Barkley Sound area in mid-March 1946 were argentatus (no doubt including thayeri). We have records for Herring and/or Thayer's Gulls from all three park units, including most of the locations listed previously for the Western Gull. Positive Herring Gull records (all AD) include a sighting of six birds near Sandhill Creek on 25 July 1972, one at Pachena Point on 14 August and two at Owen Point on 23 August 1972. The species was listed as present in the park Phase I area during 11 of 25 weeks, 8 October-31 March 1972-73, with at least one sighting during each month of this period.

The Herring Gull is an uncommon, non-breeding resident of PRNP.

Thayer's Gull (Le Goéland de Thayer)
Larus thayeri Brooks

J1, F2, M1, A, M, J, J, A, S, O1, N, D2 = 7 records

As indicated in the account of the previous species, the exact status of this species in our area is not clear at this time because we did not attempt to distinguish it from the Herring Gull until recently. It was recorded on 7 of 25 weeks during the period 8 October 1972 to 31 March 1973, and failed to appear in our records only in November of the six months involved (AD). The presence of dark-eyed Herring Gull-like birds at Long Beach during April and May 1966 (Edwards, 1968) was mentioned previously. In the future, some patient naturalist who is not easily frustrated may wish to try to obtain species composition counts from flocks of gulls on our PRNP beaches. Such information, carefully obtained, will be necessary before a better than tentative appraisal of the status of this species can be made. Meanwhile, though there is some evidence that the Thayer's Gull is somewhat less abundant in our area than is the Herring Gull, we have no reason to believe that it occurs less often. For now, we will list the Thayer's Gull as an uncommon, non-breeding resident of PRNP.

California Gull (Le Goéland de Californie)
Larus californicus Lawrence

J3, F2, M5, A1, M8, J27, J97, A73, S34, O12, N5, D3 = 270 records

Without question, this is the gull which attains the highest numbers in the PRNP area, especially in July and August. The following records will serve to document both the sizes of some representative flocks and some locations at which the species has been seen:

Vargas Island, 500+, 30 March 1971 (DFH); Schooner Cove, c800, 25 July 1972 (AD); Portland Point, 260, 12 August 1971 (NR); Green Point area, 300+, 22 July 1972 (AD);

Sandhill Creek area, c5100, 24 July 1972 (AD); Florencia Island, 1500+, 29 July 1972 (DFH); Ucluelet Boat Basin, c2500, 2 August 1971 (DFH); Great Bear Rock, 800 on 15 August 1969 (RWC) and 750 on 26 July 1972 (DFH); Cape Beale, c1000, 22 August 1969 (CJG); Pachena River mouth, c1500, 20 September 1971 (DFH); Seabird Rocks, 12-1500, 24 July 1972 (DFH); Michigan Creek, c5000, 6 August 1972 (AD); Darling River, 500+, 13 August 1971 (DFH, JB); Klanawa River, c200 on 14 August 1971 (DFH, JB) and 5-6000 on 13 August 1972 (AD); Kulaht Creek area, c5000, 17 August 1971 (DFH, JB); Owen Point area, 520, 23 August 1972 (AD); San Juan River, 450, 22 August 1972 (AD).

On a sea mammal census flight, 13 September 1971 (DFH, JB), large concentrations of gulls, probably mostly this species, were seen at Sandhill Creek, Pachena River, Black River, Michigan Creek, Darling River, Klanawa River (several thousand), and Tsusiat River area including well over 1000 on Tsusiat Lake). Although large flocks occur at other places, it appears that this species prefers to congregate at the mouths of fresh water streams.

The really large concentrations appear to move on after about mid-September, and we have no records of flocks larger than 100 from the end of September until March (25th, 1971, c250 on Vargas Island, DFH). Martin and Myres (1969) report that California Gulls were numerous off Ucluelet during the first week of April 1946, but had become scarce by the end of that month. Edwards (1968) indicated that hundreds had been seen at Long Beach during the months of April, May, July, August and October, while Richardson (1971), with sightings during each of the months from August-November and March-early June, had daily totals of over 100 only during August, September and March (northwestern Vancouver Island, 1968-69). The species is listed as a "common migrant" in the Victoria area, with 1971 records in March and May through November (Tatum, 1972), and in the Lower Mainland it has a "frequent transient, rare winter" status (Campbell et al., 1972). In the latter area, the main spring movement was March through May and the fall migration was from the end of July through the third week of October; a few birds stayed overwinter.

The overwintering status holds true in at least some years for our area

as well. The species was seen on 14 of 25 weeks (and at least once in each month) between 8 October 1972 and 31 March 1973 (AD). Since the California Gull has been seen in each month of the year in the PRNP area, it is as deserving of the non-breeding resident status as were the Herring and Thayer's Gulls, but since local numbers fluctuate so dramatically over one annual cycle, a single abundance rating will not suffice.

The California Gull, a non-breeding resident of PRNP, is abundant fall, common spring and is uncommon at other times of the year.

Ring-billed Gull (Le Goéland à bec cerclé)
Larus delawarensis Ord

J1, F, M, A2, M3, J2, J4, A14, S6, O3, N1, D1 = 37 records

This species appears most frequently in the fall among the flocks of California Gulls loafing and roosting on local beaches and offshore rocks. The largest number recorded in one place was 6+, seen at Seabird Rocks with 1200+ L. californicus, 24 July 1972 (DFH). On 10 May 1972, four birds including one adult were seen with Glaucous-winged and Herring Gulls on the Faber Islets (DFH). A colour photo showing the adult was secured at this time and is now on file (PDF 291). Our other spring records are of four birds at Vargas Island on 19 April 1969, one at Chesterman Beach on 26 April 1969, and two on the Faber Islets, 26 May 1972 (all DFH). Ring-billed Gulls were also seen on 4 May 1931 on Meares Island (IMcTC).

Edwards (1968) suggests that this species, which is basically an inland gull, has become increasingly common in the Lower Mainland since the late 1940's. It is now listed as a "frequent transient, rare resident" in that area (Campbell et al., 1972). Tatum (1972) indicates that there were sightings in the Victoria area during all months except May in 1971, but he cautiously lists the status as

"uncertain" there, because such a series of records is apparently unusual. Richardson (1971) saw Ring-billed Gulls in August, September, April and May on northwestern Vancouver Island, 1968-69. The suggested range expansion into the Lower Mainland has probably led to increased chances for observation of wanderers all along the coast of Vancouver Island, for the species certainly does not seem to be as scarce in this environment as it was previously considered to be (Godfrey, 1966).

The Ring-billed Gull is a rare migrant in PRNP.

**Mew Gull (Le Goéland cendré)
Larus canus L.

J9, F3, M6, A9, M20, J19, J38, A22, S12, O10, N8, D2 = 158 records

The Mew Gull is largely a bird of fresh water and protected inlets, although small numbers are occasionally seen on the open coast. The following records will serve to document the distribution of the species in our area:

Vargas Island, two, 24 January 1969 and 30, 18 September 1970 (DFH); Chesterman Beach, two, 17 October 1972 (SHR); Portland Point, one, 4 August 1971 (NR); Incinerator Point area, one, 29 August 1967 (RWC); Green Point area, two, 19 June 1972 (AD); Sandhill Creek, 30, 3 January 1973 (AD); McLean Point, five, 19 October 1972 (SHR); Grice Bay, two, 20 July 1972 (AD); Quisitis Point area, one, 28 July 1971 (NR); George Fraser Islands, one, 23 July 1970 (RWC); Loudoun Channel near Chow Islets, one, 20 May 1972 (DFH); Lovett Island, one, 12 June 1972 (DFH); Turtle Island, three, 13 September 1972 (DFH); Nettle Island, one, 15 September 1972 (DFH); Benson Island area, one, 5 March 1973 (DFH); Swale Rock, one, 22 June 1972 (DFH); Imperial Eagle Channel, 50, 10 August 1967 (CJG); Bamfield, five, 22 August 1969 (CJG); Pachena Bay area, one, 4 August 1972 (AD); Camper Bay, one, 20 August 1971 (DFH, JB); Owen Point area, six, 23 August 1972 (AD); San Juan River, one, 21 August 1972 (AD).

As these records indicate, the Mew Gull occurs fairly widely over our area. It is best looked for in the inlets, however. It was seen on 21 of the 25 weeks (8 October 1972-31 March 1973) in the Tofino Inlet area (AD) and was recorded

regularly in Ucluelet Inlet January through August 1972 (DFH). The species frequents salmon streams in the fall: Mary Basin, many, 8 November 1969; Ououkinsh River, some, 4 October 1970; Atleo River, at least one, 29 October 1970; Megin River, some, 14 November 1970; Indian River, two, 19 November 1972 (all DFH). In summer it is commonly seen on local fresh water lakes, where it breeds. Campbell (1970b) has provided detailed information on the nesting of Mew Gulls at Kennedy Lake, pointing out that the colonies there are relatively new and indicating that there is ample room for expansion there. He found a minimum of 11 nesting pairs in Clayoquot Arm and 21 pairs in the main (eastern) arm of the lake in 1969. On a visit to Clayoquot Arm on 30 June 1972, DFH and MEH found downy young and/or empty nests at just two of the six islets on which Campbell recorded nesting, but encountered excited adult birds on all but one of them, and also found young on one island on which nesting had not been recorded previously. There were a minimum of 18 pairs of adult birds seen in Clayoquot Arm on this occasion.

The Mew Gull is a locally common resident of PRNP.

Franklin's Gull (La Mouette de Franklin)

Larus pipixcan Wagler

J, F, M, A, M, J1, J, A2, S, O, N, D = 2 records

On 29 June 1931, a male of this species was collected near Tofino (Racey, UBC 3004). There were no other records for this area until 4 August 1972 when AD saw an immature bird at Pachena Bay. Campbell and Footitt (1972) have examined all previous records of this species in British Columbia, and have concluded that within the past decade it has become a regular migrant, in small numbers, along the southwest coast. Most of the 159 records they have reviewed are

for the period July through October, and most involve immature birds. Several fall records were compiled for the Lower Mainland (Campbell et al., 1972) and southern Vancouver Island (Tatum, 1972) in 1971.

It seems likely that this species will be seen more often in our area as the number of observers here increases. Meanwhile, we must consider the Franklin's Gull a very rare fall bird in PRNP.

Bonaparte's Gull (La Mouette de Bonaparte)
Larus philadelphia (Ord)

J1, F, M1, A6, M11, J16, J16, A27, S8, O7, N5, D1 = 99 records

This handsome little gull appears in our area in April in most years (1969-29 April, six, Chesterman Beach; 1971-11 April, one, Chesterman Beach; 1972-22 April, two, Ucluelet Inlet, all DFH), but the main movement in spring seems to occur in May. Large flocks have been seen in spring as follows: c75, Cleland Island, 16 May 1969 (MGS); 18, Cleland Island, 1 June 1970 (MGS); c100, Schooner Cove, 11 May 1969 (DFH); 100+, of which only three immature, Vargas Island, 26 May 1970 (DFH); c40, Lovekin Rock area, 1 May 1972 (BBr); 21, Vargas Island, 11 June 1972 (DFH). Edwards (1968) reported seeing 52 birds at Long Beach on 18 May 1966. Most of our June and all but one of our July records are of small flocks (fewer than 10 birds, often just one) and probably involve non-breeders, which Godfrey (1966) says are commonly found outside the breeding range in summer.

The exceptional July record alluded to above was a sighting of 40 birds at Cape Beale on 30 July 1970 (CJG), and this flock was certainly among the vanguard of the fall movement. This movement may peak in our area in August, as suggested by the following records: 14 August 1968, 50 Barkley Sound (CJG); 20-25 August 1972, 28 to 58 counted in nine sightings, Port San Juan area (AD). However, we have

some records of flocks occurring in local inlets and protected bays later in the fall, including 35 birds at Toquart Bay on 15 October 1971 (DFH) and 45 in Tofino Inlet on 16 October 1972 (DFH, AD). The largest flock seen in this area from November through March was six birds at Vargas Island, 12 November 1971 (DFH). These records are generally in agreement with those for the Lower Mainland (Campbell et al., 1972) and the Victoria area (Tatum, 1972).

Some locations other than those already mentioned may be documented as follows:

Portland Point, one, 1 August 1971 (NR); Incinerator Point area, 11 immature birds, 7 June 1968 (RWC); McLean Point, seven, 19 October 1972 (SHR); Sea-lion Rocks, eight, 26 September 1971 (DFH, JB); Green Point, six in breeding plumage, 17 July 1972 (AD); Sandhill Creek, one, 21 July 1972 (AD); Florencia Bay, nine, 6 June 1972 (AD); Spring Cove (Ucluelet), two, 11 January 1972 (DFH); Clarke Island, three, 15 September 1971 (JB); Turtle Island, two, 24 July 1971 (DFH); Faber Islets, four, 19 July 1972 (DFH); Nettle Island area, four, 15 September 1972 (DFH); Stopper Islands, one, 19 July 1971 (DFH, JB); Bamfield, six, 8 August 1967 (CJG); Pachena Bay, 2 August 1972 (AD); Camper Bay area, 10, 25 August 1972 (AD); Owen Point area, 13, 23 August 1972 (AD).

The Bonaparte's Gull is an uncommon migrant in PRNP, and occasional non-breeders and stragglers may be seen here during the summer months and early winter.

Heerman's Gull (Le Mouette de Heerman)

Larus heermanni Cassin

J, F, M, A, M, J12, J88, A42, S30, O4, N, D = 176 records

As indicated by Godfrey (1966) there is a postbreeding movement of this species from its nesting grounds on islands off the coast of Mexico, north to about northern Vancouver Island. It appears that 1972 was unusual, in that sightings in June were common. The first sighting, of two adult birds near Green Point, came on the 16th of the month (AD), and this observer then recorded eight other observations

of from one to 26 birds on beaches between Florencia Bay and Incinerator Point from then until 29 June. The highest count came on the last day. Meanwhile, DFH recorded 20-25 adults and juveniles on northwest Vargas Island on 25 June, six near Wickaninnish Island on 29 June and another five between Gowland Rocks and Box Island on the same day.

Our earliest sightings in the five years immediately preceding were 1967-15 July, one adult on Sea-lion Rocks (RWC); 1968-10 July, two adults on Sea-lion Rocks (RWC); 1969-13 July, two near Vargas Island (DFH); 1970-3 July, one adult at Cleland Island (MGS); 1971-20 July, two on Alley Rock (DFH). The species is rather common from July at least through September in this area, where it is more likely to be seen on offshore reefs and islets than at other park locations. Edwards (1968) reports sightings in the Long Beach area until mid-October, and documents it with a record of 14 birds there on 6 October 1966. In our experience, October sightings are not common; all of ours follow: 11-12 October 1940, some, Barkley Sound (P&W); 7 October 1970, two, Calmus Passage (DFH); 15 October 1971, five, Toquart Bay (DFH); 6 October 1972, five, west of Tofino (AD). It is likely that if observers had frequented the rugged offshore habitats more during the fall period when bad weather and rough water is the rule, more and later records would have been obtained.

The Heerman's Gull is not often seen in large flocks. The largest recorded was 110+, once on 7 August and again on 13 August 1970, at Cleland Island (MGS). The following list of observations includes information on sizes of other flocks, and documents locations at which the species has been seen in the PRNP area:

Wickaninnish Island, 40, 26 September 1969 (DFH);
 Portland Point, 11, 6 August 1971 (NR); White Island,
 three, 4 August 1969 (RWC); Schooner Cove, one, 21 July
 1972 (AD); Box Island, 33, 16 July 1972 (AD); Green Point,
 eight, 6 July 1972 (AD); Sandhill Creek area, 19, 27 July
 1972 (AD); Florencia Island, two, 22 July 1968 (RWC);

Amphitrite Point, some, 26 September 1971 (DFH, JB); Great Bear Rock, 70, 9 September 1971 (IR); Starlight Reef, 18-20, 4 July 1972 (DFH); Wouwer Island, three, 6 July 1972 (DFH); Peacock Channel, 12, 21 September 1971 (JB); Clarke Island, two, 17 September 1971 (JB); Turtle Island, five, 9 September 1971 (DFH); Village Reef, four, 19 July 1972 (DFH); Dempster Island area, 20+, 15 September 1972 (DFH); Cree Island, four, 28 August 1970 (CJG); Cape Beale, eight, 23 July 1972 (DFH); Seabird Rocks, c25, 24 July 1972 (DFH); Klanawa River area, one, 13 August 1972 (AD); Camper Bay area, eight, 24 August 1972 (AD); Owen Point to Hobbs Creek, 51, 25 August 1972 (AD); San Juan River, three, 22 August 1972 (AD).

The Heerman's Gull is a common fall bird in PRNP.

Black-legged Kittiwake (*La Mouette tridactyle*)
Rissa tridactyla (L.)

J, F, M, A, M53, J74, J76, A21, S10, O, N, D1 = 235 records

Published records from southwestern British Columbia present a very confusing picture of the occurrence of this species. Martin and Myres (1969) list it as "constantly present from the end of March until the end of May," and it was noted that by 20 April 1946, immature birds made up the bulk of the population. These authors imply that sightings after June are rare. Edwards (1968) reported 20 birds seen at Long Beach on 20 April 1966, but apparently saw no others in his visits here. He comments that the Black-legged Kittiwake is an offshore gull which is infrequently seen from shore. Tatum (1972) listed a March sighting for southern Vancouver Island, the first for that area, but indicated that most of the birds seen there in 1971 were in the second half of May. In the Lower Mainland, records of from one to four birds were obtained for May, June, September (2) and October, while on northwestern Vancouver Island, Richardson (1971) saw kittiwakes in September, February, and April through the first week of July (1968-69).

Our own records are more easily interpreted. During the years 1969-1972,

kittiwakes have been seen at least once in each of the months May through September with the single exception that there were no September sightings in 1970. Our only record outside this five month period was the finding of a dead, partly decayed specimen on a Vargas Island beach on 6 December 1968 (DFH).

During these four years, first sightings were, 1969-15 May, one seen on the Big Bank (DFH) and c200 travelling north by Cleland Island (MGS); 1970-12 May, one, Cleland Island (MGS); 1971-26 May, 40+, Tofino Inlet (DFH); 1972-16 May, 48 immature birds, Loudoun Channel near Chrow Islets (DFH). Sightings of flocks numbering 100 birds or more have been seen in May (18th 1969, 200 immature birds at Cleland Island, MGS), June (22nd 1970, 300+ at Cleland Island, MGS), July (24th 1972, 300 or more at Sandhill Creek, AD), and August (4th 1969, 250 at White Island, RWC), but there are no such records for September. Generally it is evident that numbers are dwindling by August of most years. Our last sightings for the four years indicated were, 1969-9 September, nine birds offshore from Tofino (Vancouver Natural History, BH); 1970-11 August, at least five on Cleland Island (MGS); 1971-26 September, trip by boat from Ucluelet to Tofino--some, including a few adults, seen at Amphitrite Point, Box Island, and Gowland Rocks (DFH, JB); 1972-16 September, seven, Loudoun Channel near Hankin Island (DFH). Strangely, the year during which kittiwakes seemed most abundant (1970) was also the year during which no September sightings were made. There were 116 sightings in that year, including 16 of flocks numbering 100 or more birds (up to 500), while in 1971, the year during which our latest recorded sighting was made, there were only 26 records and no flocks numbered 100. It appears that the pattern of abundance and duration of occurrence in our area is relatively unpredictable, and these are probably related to phenomena (e.g., hatching success) on the breeding grounds.

Kittiwakes are most often seen on offshore reefs and islands, but we do have records for other shore habitats as well. Some locations not mentioned

previously follow:

Clayoquot Spit, 30-35, 15 June 1970 (DFH); Schooner Cove, two, 21 August 1968 (RWC); Incinerator Point area, 102, 5 July 1972 (AD); Green Point, 12, 6 July 1972 (AD); Quisitis Point, two, 1 August 1971 (NR); Florencia Bay, 180, 24 July 1972 (AD); Florencia Island, 140, 28 June 1970 (RWC); Ucluelet Harbour, three, 23 May 1972 (DFH); Beg Islets, c55, 3 June 1972 (DFH); Starlight Reef, 100's, 24 July 1970 (RWC); Great Bear Rock, 15, 6 July 1972 (DFH), Loudoun Channel near Chow Islets, 13 including one adult, 7 July 1972 (DFH); Hankin Island, 45+, 28 June 1971 (DFH); Pinder Rock, c50, 30 June 1971 (DFH); Dicebox Island area, many, 22 July 1971 (DFH, JB); Turtle Island, 65 overhead, 17 May 1972 (DFH); Toquart Bay, 50, 27 May 1971 (DFH, JB); Cree Island, four, 17 August 1969 (CJG); Bamfield, some, 16 August 1969 (CJG); Pachena Bay, one, 9 August 1972 (AD); Kulaht Creek, at least four among 5000 California Gulls, 17 August 1971 (DFH, JB); Walbran Creek, a few, 17 August 1971 (DFH, JB).

The Black-legged Kittiwake is an uncommon migrant in PRNP, with non-breeders often present during the summer months.

Sabine's Gull (La Mouette de Sabine)

Xema sabini (Sabine)

J, F, M, A, M2, J, J2, A3, S5, O, N, D = 12 records

This species occurs mostly in pelagic waters off our coast, and is seen near shore only rarely. Martin and Myres (1969) recorded sightings of this species on fishing grounds off Ucluelet from 17 May through 7 June and in late August 1949. The winter distribution of Sabine's Gull is poorly known, but includes coastal Peru (Godfrey, 1966), thus it is likely that its occurrence in our waters is as a migrant between the arctic breeding areas and wintering grounds to our south. However, Campbell (1970a) reports October, November and December records for southern Vancouver Island, suggesting that the movement south may be a rather leisurely one or even that some birds remain off our shores in winter. Spring records are generally rare for southwestern British Columbia (Campbell et al., 1972;

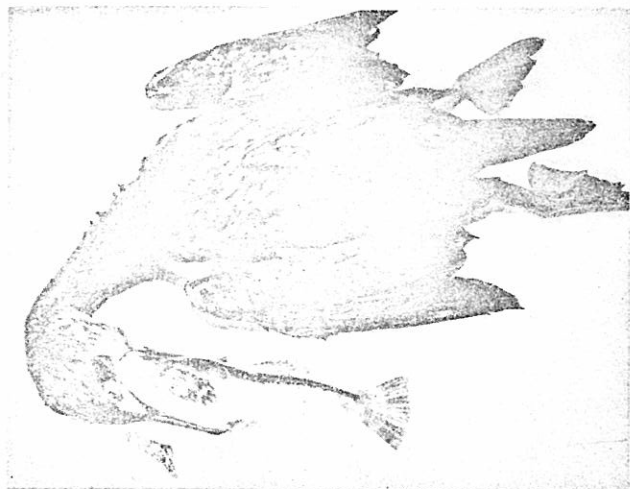
Tatum, 1972), but perhaps less so for our area, as the birds probably follow the outer coast in their northward movement and wander less than at other seasons. Spring sightings reported by Martin and Myres (1969) have already been mentioned. We also have records from locations north of our area, and while we have not included them in our count of local records, we nevertheless feel they are worth mentioning because they show clearly that the species does occur in numbers off the coast of British Columbia in spring: 28 May 1966, 58 birds off Esperanza Inlet (JEVG); 3 June 1970, 39 adults in northern Hecate Strait (JEVG); 10 June 1970, two adults near Dixon Entrance (JEVG); 7 May 1970, one off northern Queen Charlotte Sound and Goose Island Bank (MGS). In addition, Savile (1972a) reported a sighting of about 30 birds, most of which seemed to be adults, on a shoal north of Masset Spit, Queen Charlotte Islands, 6 June 1957, and Richardson (1971) saw a single bird on 12 June 1969 at Grant Bay.

Our own records include just two positive sightings for spring, eight birds seen on 2 May 1970 and four seen on 8 May 1971 by Vancouver Natural History Society members on pelagic trips offshore from Tofino (RA). A single bird seen on fishing grounds off Tofino in early June 1971 by JSJ was probably this species, judging from a verbal description. Most of our local fall sightings have also been made on VNHS pelagic trips: 13 September 1969 (500); 26 September 1970 (90, one collected-UBC 13575); 31 July 1971 (4); 18 September 1971 (2); 29 July 1972 (1 immature). Westerborg (1964) saw at least 40 offshore from Tofino on 31 August 1964.

The species has been seen near shore on only a few occasions, as follows: 25 August 1967, one adult flying low over the water near Cleland Island (Campbell and Stirling, 1967); 12 August 1967, two adults near Sea-lion Rocks (RWC); 18 August 1967, three seen, of which two collected, near Effingham Island (CJG); 10 and 12 September 1971, one immature bird seen at close range on each of these dates,



a



b



c



d



e



f



g

a) Dunlins, abundant on winter shores in Pacific Rim National Park; b) Brandt's Cormorant which suffocated trying to swallow a staghorn sculpin (see Appendix 2); c) Black-legged Albatross, commonly seen in pelagic waters offshore from the park; d) Bonaparte's Gull, one of 13 gull species which have been seen in the park; e) Glaucous-winged Gull nesting in tree; f) dowitchers, among the more commonly seen of the 30 shorebird species which occur on park shores; g) American Wigeon, the most abundant of the park's winter dabbling ducks. (photos: RWC-c; DFH-all others).

probably same bird, Imperial Eagle Channel in strong southeast gales and rain (DFH).

The Sabine's Gull is a rare migrant in waters off PRNP shores.

Common Tern (La Sterne commune)
Sterna hirundo L.

We have just one record in which the observer felt he had positively identified this species (6 July 1969, two birds, Cleland Island, MGS). Unidentified terns, which may have been this or the following species, were seen as follows:

2 July 1969, two, Cleland Island (KRS); 15 June 1970, one, Clayoquot Spit (DFH); 18 June 1970, one, Cleland Island (MGS); 19 July 1970, one, Cleland Island (MGS); 21 July 1972, one immature bird, Sandhill Creek area (AD); 21 August 1972, six, Port San Juan (AD).

Richardson (1971) recorded one Common Tern on 21 September 1968 at Grant Bay, and in 1971 the species was recorded frequently, occasionally in large flocks, in both the Lower Mainland (Campbell et al., 1972) and southern Vancouver Island (Tatum, 1972). It is considered "frequent" and "common" in migration in these two areas respectively. Due to its status in other areas of southwestern British Columbia, we have no good reason to doubt that the species occurs in the PRNP area, but because we do not have any concrete documentation here yet, we prefer to be cautious.

The Common Tern is, as yet, hypothetical for PRNP.

Arctic Tern (La Sterne arctique)
Sterna paradisaea Pontoppidan

J, F, M, A, M, J1, J1, A, S3, O, N, D = 5 records

Our evidence for the local occurrence of this species is better than that for the previous one. On 26 September 1971, an immature specimen was found dead in

Ucluelet Harbour (DFH, JB), and on the following day a sick bird which later died was caught at Florencia Bay (JB). In addition, one bird of this species was identified at Cleland Island on 1 June 1969, and Vancouver Natural History Society members have recorded sightings on local pelagic trips as follows: One on 31 July 1971, and one on 25 September 1971 (BH).

Martin and Myres (1969) listed Arctic Terns as "occasional" on the Tuna Grounds from 12-20 July 1947. Interestingly, however, the species was not seen on northwestern Vancouver Island by Richardson (1971) and it does not appear on the 1971 list compiled by Tatum (1972) for the Victoria area and Campbell et al. (1972) for the Lower Mainland. Perhaps it stays along the open coast in its migration, although perhaps it is being misidentified in the latter mentioned areas, where Common Terns are being reported regularly.

We have no satisfactory field description of our single spring sighting, and at present list the Arctic Tern as a very rare fall bird in the PRNP area.

Caspian Tern (La Sterne caspienne)

Hydroprogne caspia (Pallas)

J, F, M, A, M2, J8, J6, A, S, O, N, D = 16 records

Campbell (1971a) has reviewed 68 recorded sightings of this species in British Columbia, and has shown that the bird's occurrence here has probably been enhanced by the establishment of a breeding colony on the northern Washington coast. Among the 68 records he has dealt with are one from Long Beach, one from Vargas Island, and four from Cleland Island (all in 1970). In addition, Schick (1970) reported the collection of a specimen in outer Barkley Sound, 18 August 1969.

We have accumulated additional local records in 1971 and 1972, and list all of these, by location, here:

Vargas Island, two loafing with gulls, 11 June 1972 (DFH); Clayoquot Spit area, one, 26 May 1971 (DFH); Wickaninnish Island, one, 29 June 1972 (DFH); Long Beach; one, 11 May 1971 (AD); Long Beach, Incinerator Point to Green Point, 15 June (one), 16 June (one), 17 June (three), 19 June (one), 1 July (two), 17 July (one)--all 1972 (AD); Green Point, one, 19 July 1972 (AD); Sea-lion Rocks, one over, 2 July 1972 (DFH, AD); Sandhill Creek area, one each on 9 July and 19 July 1972 (AD); Florencia Bay, three, 16 June 1972 (AD). Sightings have also been made in summer 1973, but have not been recorded except for one seen near Sandhill Creek on 20 July (AD).

As Campbell (1971a) has suggested, this species will probably breed in British Columbia sometime in the future, and naturalists should be on the lookout. Meanwhile, the Caspian Tern is rare in the summer months (non-breeding) in the PRNP area.

Black Tern (La Sterne noire)
Chilidonias niger (L.)

We have no records for our area, but on the basis of sightings made to the north (Richardson, 1971) and to the south (Tatum, 1972) of us on Vancouver Island, we list the Black Tern as hypothetical for PRNP.

**Common Murre (La Marmette commune)
Uria aalge (Pontoppidan)

J3, F1, M4, A5, M36, J57, J67, A44, S34, O10, N5, D2 = 268 records

The local breeding status of this species should be dealt with first. Martin and Myres (1969) have pointed out that there are few suitable nesting places for murrelets between Destruction Island, Washington and Triangle Island off Vancouver

Island's northwest tip. Cleland Island records show that at least two young were produced on an adjacent reef in 1969 (PDF 16) and on 29 July 1970, there were four birds there with eggs of young (MGS). Up to 40 adult murrelets have been seen roosting on this reef during the summer months, and more than half of our May and June records involve this group. Common Murrelets have also been known to breed on Florencia Island where one broken egg was located on a cliff ledge on the southeast side of the island on 15 July 1969 (RWC). Two adults were seen on the cliffs nearby.

Its most important occurrence in littoral waters of PRNP is as a migrant in the fall (especially mid-July through September) at which time it may be seen in large numbers and in all park waters. The following records will serve to document locations and numbers at this time during which, as Campbell (1968) has observed, it is the most abundant alcid here:

Father Charles Channel near Vargas Island, c1000 feeding on apparent concentrations ("fish balls") of sandlance or herring, 11 September 1972 (DFH); Clayoquot Spit area, 350+, 5 August 1971 (DFH); Tofino Inlet, many, in small groups, 10 August 1972 (DFH); pelagic waters offshore from Tofino, 1350+ on 26 September 1970, 100's on 31 July 1971, and 300+ on 29 July 1972 (Vancouver Natural History Society), and 500+ on 31 August 1964 (BW); Schooner Cove area, 500+ one-third of which in juvenile or winter plumage, 10 August 1971 (DFH); North Long Beach--- 10,000 estimated---"these birds were seen with a 20X scope, and they covered an area from Portland Point nearly to Sea-lion Rocks, 25 July 1972 (AD); Box Island, 700+, 21 July 1972 (AD); Sea-lion Rocks, c400, 16 July 1967 (RWC); Florencia Bay, 1000+, 29 July 1972 (DFH); Outer Barkley Sound, many flocks of 60-100, 9 September 1971 (DFH); Great Bear Rock area, 375+, 26 July 1972 (DFH); Loudoun Channel near Hankin Island, c450, 5 August 1972 (DFH); Imperial Eagle Channel, 200 adults and young, 16 August 1969 (CJG); Darling River area, 150+, 13 August 1972 (AD).

We have no single observation of over 100 birds during the period October through April, the nearest to it being a cumulative total of "50-100" seen between Tofino and Vargas Island on 16 October 1970 (DFH). However, it was noted with a sighting of 30 birds in Toquart Bay, 15 October 1971 (DFH), that this was still the most common pelagic bird in Barkley Sound (a condition which usually holds until

the arrival of the diving ducks). On flights along the entire park coast, 24 October and 28 November 1972, Common Murres were seen scattered in small flocks here and there, but the total number actually seen was less than 100 on both occasions (DFH, AD).

A few birds winter in our area, and perhaps there are larger numbers well offshore; "some" were seen near Cleland Island on 12 December 1971 (DFH). However, there is some indication that birds might seek sheltered waters during this season: Millar Channel near Ahoushat, at least five, 6 February 1969 (DFH); Nuchatlitz Inlet, one, 4 November 1969; Bedwell Sound, 12, and channel north of Meares Island, one, 24 January 1970; Tofino Inlet, one, 31 January 1972; Tofino Waterfront, one with oil on wings and breast, 11 December 1970 (all DFH). All of our March and April sightings are of small flocks (one to six birds) among the Broken Group Islands (all DFH).

More information is needed on the local spring occurrence of the Common Murre. Evidence from published observations along the Lower Mainland (Campbell et al., 1972) and southern Vancouver Island (Tatum, 1972) suggest an early movement (March). Such a movement is not evident among our records, and Richardson (1971) recorded the species only in May and June (in spring) in the Browning Inlet region. Among our May and June records, only two were of numbers over 100, and these were both obtained offshore (130 off Tofino, 8 May 1971, VNHS pelagic trip; 500+ in a day's fishing, Big Bank offshore from Ucluelet, 15 May 1969, DFH). We did not record as many as 10 birds in one day in any near-shore areas except Cleland Island during May and June.

For a very scholarly treatment of our knowledge of murres of the world, see Tuck (1960). Meanwhile, the Common Murre defies simplicity in the description of its PRNP area status. It occurs as a rare resident (certainly more commonly as a non-breeding resident), and as a migrant (abundant in fall, perhaps uncommon in spring).

**Pigeon Guillemot (Le Guillemot du Pacifique)
Cephus columba Pallas

J6, F5, M9, A14, M29, J46, J68, A25, S8, O7, N4, D5 = 226 records

Martin and Myres (1969) point out that this is one of the least pelagic of the west coast alcids, almost never occurring far from shore. It is widespread in the park area, having been seen in small numbers along the entire shoreline of all three park units. Some records follow:

Vargas Island area, at least six, 14 November 1968 (DFH); Tofino Inlet, six, 17 June 1969 (DFH); Wickaninnish Island area, 12-15, 5 January 1971 (DFH); Portland Headland, three, 6 August 1971 (NR); Schooner Cove area, three, 21 July 1965 (FB); Box Island area, five, 15 July 1972 (AD); Sea-lion Rocks, two, 30 August 1968 (RWC); Green Point, one, 19 July 1972 (AD); Quisitis Point, 11, 30 June 1972 (AD); Florencia Bay, five, 24 July 1972 (AD); Wya Point area, six, 3 July 1972 (AD); Starlight Reef, one, 24 July 1970 (RWC); Ucluelet Harbour, two, 29 May 1972 (DFH); Chrow Islets area, two, 11 May 1972 (DFH); Hankin Island, three, 26 April 1972 (DFH); Turret Island, one, 18 May 1969 (DFH); Wouwer Island, one, 22 July 1971 (JB); Howell Island, two, 24 July 1971 (DFH, JB); Turtle Island, one, 30 April 1972 (DFH); Onion Island, one, 18 May 1972 (DFH); Gibraltar Island, one, 17 June 1972 (DFH); Effingham Island, one, 19 July 1972 (DFH); Grappler Arm, Bamfield Inlet, one, 20 July 1972 (DFH); Cape Beale, one, 23 July 1972 (DFH); Pachena Bay, nine, 23 July 1972 (DFH); Darling River, two, 13 August 1972 (AD); Klanawa River area, three, 13 August 1972 (AD); Owen Point to Hobbs Creek, six, 23 August 1972 (AD); Port San Juan, three, 20 August 1972 (AD).

It should be emphasized that all of the above records are of birds in the water near the locations named. The occurrence of the birds on land may often (certainly not always) indicate breeding, and these records will be treated separately. Guignet (1971) has listed a number of locations in Barkley Sound where the species is known or suspected to nest. These include Baeria Rocks at the head of Imperial Eagle Channel, two islands in the Deer Group, and two park area islands, Cree Island and Seabird Rocks. The Cree Island data involve observations of about four pairs regularly entering and leaving "burrows" on the steep sides of the island, but no eggs or young have actually been seen there.

DFH and JB circled the island and landed in two places to search for nests (22 July 1971), and tended small mammal traps on the island on 23 and 24 July 1972, but saw no sign of the species during these visits. Nevertheless, it is likely that Guiguet is correct in his assessment of this island as a nesting area, especially since there are apparently no mink there (Hatler, 1972).

Guiguet's visit to Seabird Rocks was on 12 June 1970, at which time he found nests with eggs among the beach drift, and counted 70 to 80 adults perched on rocks around the island. On a visit to Seabird Rocks on 24 July 1972, DFH found a nest with a single egg under a drift stump on the east side of the island and did not search for any others in order to minimize habitat disruption. Complete counts of all birds roosting on the island or in the water nearby were obtained from the highest point on the island (the top of the DOT light), on several occasions during the day, and a maximum count of 84 was obtained. This agrees well with Guiguet's count, and indicates that a realistic breeding population estimate for the island would be 50 pairs or more.

The only other park location at which Pigeon Guillemots are known to nest is Florencia Island. RWC counted 75 plus adult birds there on 2 August 1968, and found a single chick on 15 July 1969. On 28 June 1970, 35 adults were counted and a nest with two eggs was found in a hollow under a cedar root (DFH, RWC). This same nest site was occupied on 2 July 1972, but the two eggs present were cold (DFH). Another nest found in a rock crevice on this date also contained two cold eggs, and it was noted that these had been preyed upon by crows on the following day (AD, DFH). A pair was seen to land among drift logs on the north-east end of the island; they almost certainly had a nest there, but no attempt was made to uncover it (DFH). There were a minimum of 24 adults on the rocks and in the water at the north end of the island and another nine birds at the south

end on 3 July 1972 (DFH, AD). There is ample nesting habitat on this island, and no sign of mink or raccoons has ever been seen there (Hatler, 1972), thus it would seem that a larger population could be supported than is actually the case. At present, however, it is unlikely that more than 20-30 pairs attempt to nest on Florencia Island.

The nest of the Pigeon Guillemot in our area is typically a natural cavity among boulders or drift logs, a crevice in bare rock, or occasionally (as on Florencia Island) a hollow among exposed tree roots. They also probably nest in burrows abandoned by other alcids such as Tufted Puffins, and Bent (1919) indicates that this species occasionally excavates its own burrow in clay banks or other soft substrates. The one or two eggs are usually laid on bare ground within the nest cavity; the birds do not seem to carry nest material to the site, although they may scrape pebbles and loose rock chips into a bit of a platform if these are available.

Bent (1919) lists the incubation period as 21 days. Most of our experience with the species has been gained at Cleland Island, where as many as 200 pairs nest annually (Campbell and Stirling, 1967). Eggs have been found as early as 1 June (1969, MGS), but either some birds do not begin nesting until much later or else renesting occurs throughout the summer. Of six nests examined by Campbell and Stirling (1967) on 24 July 1967, three contained one advanced egg each, and the other three each contained a single small young. On 30 July 1973, five nests contained, respectively: Two eggs, one egg, two small young (less than one week old), one half grown young, and one young near fledging (DFH). A study concerned with the energetics of growth in young guillemots was conducted on an island near Victoria recently (Koelink, 1972), and some data on nesting chronology of the species are available from that source.

There are several other locations along park area shores where Pigeon Guillemots are suspected to nest (one to a few pairs per location). A few birds (up to six) have always been seen on surge channel cliffs near the Fletcher's Beach Pelagic Cormorant colony (south of Wya Point), and some must nest there (DFH). There are potentially suitable cracks and crevices among similar cliffs on rock headlands over the whole of park units II and III and several locations in Phase I; at least some of these probably support nesting guillemots. Pairs of birds have been seen perched on Pinder Rock, Hankin Island, and Great Bear Rock during the summers of 1971 and 1972, and some nesting is suspected at these locations as well (DFH).

The species is present in our area throughout the winter, and most are in gray-white plumage between about October and March. Some autumn through spring records, with notes on plumage follow:

25 September 1970, one grayish; 10 October 1969, one in white winter plumage; 16 October 1970, 25 in winter plumage; 12 November 1971, six white; 18 December 1969, six gray to white; 5 January 1972, one quite dark for time of year; 18 February 1969, five, of which two nearing summer plumage; 19 February 1969, one white, one grayish, one black; 26 February 1970, one white, one gray, two black; 25 March 1969, one white, five black; 4 March 1971, 14+ in all stages of moult; 25 March 1971, two gray; 31 May 1970, one gray; 8 May 1971, one gray; 9 May 1971, nine black (all Clayoquot Sound, all DFH).

The Pigeon Guillemot is an uncommon (locally common) resident of PRNP.

*Marbled Murrelet (L'Alque marbrée)
Brachyramphus marmoratus (Gmelin)

J1, F1, M1, A19, M57, J102, J122, A44, S17, O6, N1, D = 371 records

This bird is still renowned for the fact that no man has yet looked upon its nest in North America, although there is good evidence (Drent and Guiguet, 1961; Harris, 1971; Savile, 1972b) that at least some individuals of the species nest high in trees. If most or all do so, one might logically expect that intensive logging could have a depressive influence on some local populations. Whether or not this is true is completely unknown. Even less seems to be known of the bird's population biology than is known of its nesting; we are aware of no systematic counts which would enable detection of changes in ratio of young birds to adults in fall flocks, or even a change in numbers generally, except in most subjective fashion. Unfortunately, our own duties in this study, requiring attention to all bird species over the whole park area, have precluded intensive study of the Marbled Murrelet, although data obtained on the Barkley Sound over-water transect may provide some useful baseline information (see transect results).

The best published information we know of is that of Guiguet (1971), who documents the occurrence of large numbers of paired birds in June (2-17 June 1970) and adults with young throughout August of several years (Barkley Sound). We can add to this the fact that pairs are present as early as April (21 April 1971, several pairs, Pinkerton Islands; 25 April 1972, one pair, Thiepval Channel; 29 April 1972, seven pairs in Loudoun Channel from Beg Islets to Hankin Island, all DFH) and appear in numbers throughout May (27 May 1971, 75 birds including at least 10-12 pairs, Sechart Channel near Hand Island; 9 May 1972, 8 pairs in Loudoun Channel near Hankin Island and 58 birds including at least 18 pairs in Thiepval Channel near Turtle Island; 11 May 1972, 24 pairs near Hankin Island; 20 May 1972, 268 birds including at least 43 pairs (many more present, but only those within view of boat, with binoculars, were recorded), Ucluelet Harbour mouth to Turtle Island

via Loudoun and Thiepval Channels, all DFH).

In common with Guiguet, we have records of numbers of pairs throughout June and even into July. During the summer of 1972, DFH recorded "group" sizes (including single birds) of all murrelets encountered in park area waters (mostly Barkley Sound). The resulting data will not be analyzed here, but the following list will suffice to show the approximate flock composition, by half months, over June and July and will document the existence of pairs throughout this period:

<u>Time</u> <u>Time Period</u>	<u>No.</u> <u>Groups</u>	<u>Freq. of Group sizes (per cent)</u>			
		<u>1</u>	<u>2</u>	<u>3-9</u>	<u>10-</u>
1-3 June	38	50	32	18	0
13-14 June	50	40	38	20	2
2-3 July	100	39	41	21	0
18-20 July	26	54	42	4	0
27-29 July	30	33	37	30	0

The proportion of pairs is lowest in early June, but changes little after that time, despite the fact that one would expect most actual mated pairs to be broken up (one bird incubating) during some part of this two month period. It would be interesting to know if the groups of three or more birds consist mostly of non-breeders, or include mated pairs and/or birds whose mates are incubating. We can also wonder if we dare assume that birds seen in pairs at this time of year are actually conjugal duos. DFH has observed that pairs seen in April and May often display an apparent dimorphism, one bird darker than the other, but that this is rarely evident thereafter (one such pair recorded on 7 July 1972 in Thiepval Channel, but this the only record after 23 May (DFH). Published literature indicates that no morphological or plumage characteristics are known to exhibit sexual dimorphism in this species.

Adults have been seen carrying fish (presumably to be fed to young birds) from early June to mid-August, but most commonly from late June through July. Martin and Myres (1969) reported 20 June was the first day this was seen in 1947. Some actual records follow: 4 June 1971, a murrelet with two sandlance in its

bill was seen to dive twice, apparently hunting, and it still had at least the two and perhaps three when last seen, Turtle Island area; 19 June 1972, one of 157 murrelets seen during day was carrying fish, Barkley Sound; 25 June 1972, one of 16 with fish, Vargas Island; 26 June 1972, three of "many" with fish, Vargas Island area; 27 June 1971, one with large (c15cm) clupeid, Hand Island; 10 July 1972, one of 32 with fish, Clarke Island area; 19 July 1972, two of 14 with fish, Bamfield area; 29 July 1972, one of eight with fish, Gibraltar Island to Bamfield; 24 July 1970, several with fish in bills, outer Barkley Sound (RWC); 26 July 1972, three of 12 with fish, Benson to Turtle Island; 1 August 1972, one with fish, Father Charles Channel near Vargas Island; 16 August 1970, one with fish, Tofino area (all DFH except one initialed otherwise).

Supposed young birds have been seen as early as 2 July (1967, Long Beach area, RWC), although records nearer the middle of the month seem more the rule. In 1960, CJG saw the first young on the water on 17 July, and in 1968 RWC recorded young near Sea-lion Rocks on 18 July. Strangely, no reference was made to the occurrence of young birds among our 1972 data until 8 August, at which time "several" were seen. This may not have been the earliest sighting.

The distribution of the Marbled Murrelet in park area waters is generally as follows: It is certainly the most abundant seabird in the Broken Group area during May and June and even into July (until the Common Murres arrive). Guiguet (1971) noted on 16 June 1970 that this species was the most abundant seabird in the Deer Group area at that time. No locations need be listed, for the species may be seen in virtually every channel among Barkley Sound's islands at that time, and are there in lesser numbers at least until October. The bird seems to prefer semi-protected waters and its occurrence in outer Clayoquot Sound is similar to that described for Barkley Sound. It is common along the outer coast of Phase I from June to at least early September (Campbell, 1968; also 100 birds, mostly in groups

of twos and threes, seen scattered along near shore from Cox Point to Amphitrite Point, 2-3 July 1972, DFH and AD). There is some evidence that its occurrence along the rocky, exposed coast of Phase III may be limited. During August, a time when sightings of large numbers of birds are common in Barkley Sound (Guiguet, 1971) all of our Phase III sightings were as follows (all AD in 1972; DFH and JB did not record the species along the entire West Coast Trail from 10-22 August 1971):

Pachena Bay, three each on 10 and 11 August; Darling River, one, and points south of Darling River, one, 13 August; Michigan Creek, one, and Pachena Point, one, 14 August; Port San Juan, three on 20 August and two on 21 August; Owen Point area, two, 23 August.

Most of our winter records (November through March) are from protected waters, but these involve relatively few birds and we do not know where the majority of our summer birds go during this time. Our winter records follow:

6 February 1969, at least 10, Millar Channel north of Ahoushat; 5 November 1969, many, Nuchatlitz Inlet area; 24 January 1970, some, Bedwell Sound; 13 November 1970, 40-50, Millar Channel near Obstruction Passage; 27 November 1972, two in Thierval Channel, two in Loudoun Channel near Chrow Islets, and eight near the mouth of Ucluelet Harbour, 28 November 1972, one, Keeha Bay (all DFH); 12 November 1972, some, Tofino Inlet (AD); 5 March 1973, two, between Benson and Clarke Islands (DFH, SRJ).

The Marbled Murrelet is a common summer bird in PRNP, but is rare during the winter months.

Ancient Murrelet (L'Alque à cou blanc)
Synthliboramphus antiquus (Gmelin)

J, F, M, A, M, J, J19, A3, S5, O1, N, D = 28 records

This species breeds abundantly on the Queen Charlotte Islands, and is considered a winter resident and transient along the entire coast of British Columbia (Godfrey, 1966). Martin and Myres (1969) recorded birds offshore from Ucluelet

in May and June 1949, but we have no spring observations in near-shore waters. The species may not occur here often. With the exception of a single observation on 1 August 1973 (two birds near Lovekin Rock, DFH and AD), all of our records are from 1972. This can not be explained by differential observation effort among the various years, as DFH and an assistant who is a competent birdwatcher (JB) spent at least as much time afield, mostly over the same ground, in conducting the park mammal survey in 1971, and no Ancient Murrelets were seen during that year.

In 1972, these birds suddenly appeared in numbers during the second half of July, and a few remained into October. All of our records follow in chronological order:

7 July, one, Florencia Bay (AD); 10 July, one, Alley Rock (DFH); 15 July, three, near Box Island (AD); 16 July, two, Box Island (AD); 17 July, three Florencia Bay (AD); 19 July, one near Effingham Island (DFH) and four near Green Point (AD); 20 July, one in Imperial Eagle Channel (DFH) and one near Sandhill Creek (AD); 21 July, four pairs in Loudoun Channel near Chow Islets (DFH); three in Schooner Cove (AD), and one near Box Island (AD); 23 July, one Cape Beale (DFH); 24 July, three at Pachena Bay and six near Seabird Rocks (DFH), and two in Florencia Bay (AD); 25 July, five, Seabird Rocks to Cape Beale (DFH); 27 July, two, Benson Island to Great Bear Rock (DFH); 29 July, two from Schooner Cove to Sea-lion Rocks and one from there to Amphitrite Point (DFH); 1 August, one near Wickaninnish Island (DFH); 6 August one dead on Long Beach (NR); 7 September, one near Sea-lion Rocks (DFH); 15 September, two near Turtle Island, two near Dempster Island and one near Nettle Island (DFH); 16 September, one, Loudoun Channel near Hankin Island (DFH); 26 October, one, in Thiepval Channel near Turtle Island (DFH).

The species probably occurs offshore from our area during winter, but we have no good evidence for this at present. However, there were January and February records off Victoria in 1971 (Tatum). Richardson (1971) found a dead bird on the beach at Grant Bay on 10 April 1969, but did not see it otherwise. The most realistic status for the Ancient Murrelet as it occurs in the PRNP area is probably rare (perhaps very rare) fall, but rare winter may be more nearly correct if offshore waters are considered.

**Cassin's Auklet (L'Alque de Cassin)
Ptychoramphus aleuticus (Pallas)

J, F, M1, A2, M5, J2, J4, A3, S4, O, N, D = 21 records

This species is much more pelagic in its feeding than are the alcids discussed previously, and it is seen near our shores only rarely. Many of our records were obtained by Vancouver Natural History Society members on trips offshore from Tofino: 13 September 1969 (3), 2 May 1970 (3), 10 May 1970 (2), 26 September 1970 (3), 8 May 1971 (11), 31 July 1971 (100's), 18 September 1971 (2), 25 September 1971 (7). Martin and Myres (1969) recorded scattered pairs and single birds off Ucluelet throughout June of 1949, and found them to increase, after a period of rarity in early August, to the extent that flocks of up to 250 birds were observed in the latter parts of that month and in early September.

Closer to shore, Campbell (1967, 1968) indicated that individuals were occasionally seen flying near Sea-lion Rocks in the summer of 1967 and 1968, but considered them uncommon. All of our park area records follow:

15 July 1967, one immature bird found alive on beach near Lovekin Rock--released in apparent good health (RWC); 30 May 1969, one near Vargas Island (DFH); 13 April 1970, two south of Stubbs Island (DFH); 14 June 1970, one near Plover Reef, Cleland Island area (MGS); 23 July 1970, one near Blunden Island (MGS); 9 August 1971, two near Great Bear Rocks (DFH); 25 April 1972, one flew by several times, Turtle Island area (DFH); 29 May 1972, one near Hankin Island (DFH); 2 March 1973, one bird believed to be this species seen in very poor viewing conditions (DFH, SRJ).

The species is known to breed on Cleland Island, but the extent of the nesting population there has not been determined. An adult with an egg was found in a burrow among a Rhinoceros Auklet colony there on 24 May 1969. This egg had hatched on 9 June, and the chick fledged on 25 July (MGS). Another fully feathered young was found on 17 August 1969. We are aware of no other breeding information from this colony.

Guiguet (1971) felt certain that this species also nests on Seabird Rocks, but he had not obtained concrete evidence that it did so. On 24 July 1972,

DFH located several Cassin's Auklet burrows in a patch of wild rye (Elymus sp.) on the southwest end of the vegetated area on this island. Seventeen burrows were checked, with the following results:

1. Nearly fledged chick with measurements as follows (mm): chord-102, exposed culmen-17, middle toe-30, tarsus-22. Some down on back and around neck, but white ventral feathers and wing feathers all in.
2. One small, dead (partly decayed) chick.
3. Chick near size of number 1 (above) but virtually fully feathered. Documentary photograph obtained (PDF 290).
4. Chick similar to number one.
5. Half-grown chick and one dead egg.
- 6-17. Twelve empty burrows.

There were a few Rhinoceros Auklet burrows and many Leach's Petrel burrows among the Cassin's Auklet "colony" and this makes it difficult to estimate the total colony size. The Elymus patch involved is a rough ellipse about 15m x 50m, and could therefore accommodate up to about 700 pairs at a theoretical density of one burrow per square meter. In reality, there appeared to be holes in at least this density, but many belonged to other species, especially petrels, and as the data given above indicate, two-thirds of the Cassin's burrows proved to be empty. There are probably fewer than 100 pairs of Cassin's Auklets nesting on Seabird Rocks.

We have no winter records, nor did Richardson (1971), Tatum (1972) or Campbell et al. (1972), but Godfrey (1966) has information that it "winters, apparently in very small numbers," off Barkley Sound. A specimen was reportedly taken in that area on 13 January 1937 (Martin, BCPM 6017). This evidence would suggest that the proper status designation for the Cassin's Auklet in the PRNP area is that of a rare resident, although from the standpoint of local observations rare summer might be more accurate.

**Rhinoceros Auklet (L'Alque à bec cornu)
Cerorhinca monocerata (Pallas)

J, F, M, A4, M17, J41, J54, A25, S13, O, N1, D = 155 records

Godfrey (1966) was unaware of any breeding of this species along the west coast of Vancouver Island, but Campbell and Stirling (1967) have since documented the existence of a small colony on Cleland Island, and Guiguet (1971) reported nesting on Seabird Rocks. Subjectively, we are fairly certain that the Cleland colony has expanded each year since its 1967 discovery (RWC, DFH). The original colony was apparently just 75 feet square, and only 47 burrows were counted at that time (Campbell and Stirling, 1967). RHD estimated that 375-450 pairs were breeding on the island in 1969, based on counts of birds resting on water offshore at dusk. DFH noted on 30 July 1973 that "Rhinos" were landing over a wider area than had been the case the previous year, and that burrowing over the entire area was so intensive that the vegetation (mostly Elymus) had virtually disappeared. This had not been the case in previous years.

The most complete series of observations on the nesting chronology of this species in our area was obtained in 1969, but the results are not yet available (K. Summers, unpublished). Eggs have been found as early as 18 May (1969, adults on eggs in three of five borrows checked, MGS). A pipping egg and small (less than one week old) chick were found on 27 June 1970, MGS), and Campbell and Stirling (1967) found four large young in four burrows on 24 July 1967.

At Seabird Rocks, Guiguet (1971) found adults on fully incubated eggs in two burrows, 12 June 1970. DFH examined 10 burrows on 25 July 1972, and found that two contained single, half-grown young, one contained an untended egg, and the other seven were empty. As will be related in the section on seabird colonies, Rhinoceros Auklets landed widely over this island on the evening of 24 July, and were seen walking about among piles of drift logs, on the bare rock areas, and

throughout the vegetated area. Most of the burrows belonging to this species were found under Elymus and Heracleum cover, although some occurred at the edges of (but not far inside) the central patch of Rubus spectabilis (DFH). The total number of nesting pairs is difficult to assess because of the number of empty burrows which were encountered. To minimize damage to the colony, only shallow burrows were examined and these may not have been representative. (Many burrows were explored by "reaching in" and those which clearly required intensive excavation were ignored. Burrows which parallel the surface less than 20-25cm deep can easily be checked by punching holes through to the burrow tunnel from above, at intervals, until the nesting cavity--often 2m or more back from the entrance--can be reached from one of these. After the nest contents have been examined, it is an easy matter to cover these "exploration shafts" and the burrow and contents can be left intact. The 10 burrows reported as examined by DFH were those for which an end, seemingly a nest chamber and not a blind side branch, had been reached.) Judging from the number of birds which arrived on the island on the night of 24 July 1972, an estimate of at least 150 pairs would not be out of line for Seabird Rocks. There may well be more.

There are no other local breeding areas for this species known at present but Florencia Island, with its lack of mammalian predators and its abundance of habitat identical to that occupied by the species on the other islands mentioned, should be watched as a potential site for future colonies. (This is especially true if, as was suggested earlier, present colonies are indeed expanding). Two adult birds were seen resting on the water just offshore from the north end of Florencia on the late evening of 2 July 1972, but none were seen or heard to land on the island that night (DFH, AD), and burrows have never been found there (RWC, DFH, AD).

Rhinoceros Auklets may be seen fairly often in near-shore waters, especially

in Barkley Sound and outer Clayoquot Sound. Following are some location records:

Vargas Island area, NW, 150 in groups of 10-20, 25 June 1972 (DFH); Wickaninnish Island area, 15, 28 June 1969 (DFH); Tofino Inlet near Opitsat, 75+ in groups to 23, all adults, 22 August 1969 and, one immature, 26 August 1969 (DFH); Cox Point to Gowland Rocks (2), Gowland to White Island (2), White Island to Sea-lion Rocks (10), all 2 July 1972 (DFH, AD); Box Island, 38, 16 July 1972 (AD); Incinerator Point area, 180, 5 July 1972 (AD); Green Point, 16, 6 July 1972 (AD); Florencia Bay, three, 31 July 1972 (AD); Starlight Reef, six, 4 July 1972 (DFH); Great Bear Rocks, three, 20 July 1971 (DFH); Alley Rock, one, 9 September 1971 (JB); Ucluelet Harbour mouth, three, 19 June 1972 (DFH); Loudoun Channel near Chow Islets, four, 8 August 1972 (DFH); Clarke Island area, 15, 10 July 1972 (DFH); Turtle Island, one sick juvenile caught--died later, 8 September 1971 (JB); Effingham Island, two, 19 July 1972 (DFH); Barkley Sound, two adults and two young, 6 August 1967 (CJG); Fleming Island, one young-of-the-year, 16 August 1967 (CJG); Cape Beale, 12+ immature birds, 6 August 1969 (CJG); Pachena Bay, three, 4 August 1972 (AD); Michigan Creek, three each on 5 and 14 August 1972 (AD).

Our only sighting between October and March was of one bird seen near Tofino on 12 November 1972 (AD). Godfrey (1966) says that the species is known to winter in small numbers off the British Columbia coast, and Campbell et al. (1972) recorded winter records (November and December) along the Lower Mainland in 1971. Tatum (1972) and Richardson (1971) did not list winter records, and it seems evident that the species does not often approach land during this season. All of our April records were obtained in 1972, and all from Barkley Sound (one bird each on 11, 22, 26 and 29 April, DFH). The 29 April sighting involved a bird without a "horn" on its bill, and this suggests that the birds are acquiring their breeding regalia at about this time.

The Rhinoceros Auklet is an uncommon summer bird in PRNP waters.

**Tufted Puffin (Le Macareux huppe)
Lunda cirrhata (Pallas)

J, F, M, A, M15, J15, J50, A22, S6, O, N, D = 108 records

This showy seabird is seen less often and in smaller numbers than is the previous species. Many of our records, including all but one during the month of

May, are from Cleland Island where a colony of an estimated 100-150 birds is known to breed. Nesting data are few for this hard-biting burrow nester. Adults on eggs have been found in burrows on 12 June 1970 (Guiguet, 1971), 28 June 1969 (MGS), 27 June 1970-five, eggs pipping in two (MGS); 24 July 1972 (DFH), and young birds have been seen in burrows on 24 July 1967-two large young from two burrows (Campbell and Stirling, 1967), 24 July 1972, one small, downy young (DFH), and 31 July 1969, one chick (MGS). An immature bird was found out of its burrow and walking around on 25 August 1967 (Campbell and Stirling 1967). The study by Nettleship (1972) on the reproductive ecology of the Common Puffin is of interest in that the nesting situations of the two species are apparently quite similar.

There is a small colony of Tufted Puffins on Seabird Rocks, nesting mostly among Elymus on the knoll supporting the DOT light. The east-facing side of this knoll has been compacted and caved in, apparently by DOT personnel who service the light, and it supports almost no active burrows. One dead egg was found near the mouth of a burrow at the edge of the "path" through this area on 24 July 1972 (DFH). Guiguet (1971) collected an egg and counted 24 adult birds in the air and on the water near the island on 12 June 1970. On 24 July 1972, DFH saw adults carrying fish land in the colony area, but the maximum number seen around Seabird Rocks at any one time on that and the following day was 13. There may be as few as 20 nesting pairs in the main colony, but this probably could be increased--perhaps doubled--if disturbance around the light were minimized. There are also at least a few puffins nesting among the drift logs on lower parts of the island. DFH found one downy young there on the 24 July visit.

Campbell (1968) reported that at least one pair was found breeding on Florencia Island during that year, and indicates (pers. communication) that this is on the basis of two adults flying near to, and one landing, on the north end of the island. Four adult birds were seen there on 15 July 1969 (RWC), and on 2 July 1972, at least three birds were seen flying near the north side of the island and two

nearly landed on several occasions (DFH, AD). All activity which we have recorded at Florencia Island has been in the same location (see seabird colony section) on the north side of the island. There is an Elymus-covered, 75 degree slope at this location, which is reminiscent of the locations at which puffins have been found breeding on the other islands, but we have found no burrows there. However, there are natural holes among exposed tree roots a short distance up from the Elymus, and it is possible that the birds are using these. It appears that only a very few pairs are involved; the maximum number seen in the area at one time was six birds which flew by the south end of the island on the morning of 3 July 1972 (DFH, AD).

Following are some near-shore location records for our area:

Vargas to Blunden Island, seven, 26 June 1972 (DFH);
 Tofino Inlet near Opitsat, three, 22 August 1969 (DFH);
 Frank Island, one, 29 June 1972 (DFH); Cox Point to
 Gowland Rocks (two), Gowland to White Island (five),
 White Island to Florencia Bay (one), all 2 July 1972
 (DFH, AD); Portland Headland, five, 1 August 1971 (NR);
 Box Island, three, 21 July 1972 (AD); Sea-lion Rocks,
 two, 26 July 1968 (RWC); Quisitis Point, two, 30 June
 1972 (AD); Florencia Bay to Amphitrite Point, 10+, 29
 July 1972 (DFH); "Big Bank", one, 15 May--our only non-
 Cleland May sighting (DFH); George Fraser Islands area,
 one, 4 July 1972 (DFH); Great Bear Rock, two, 9 September
 1971 (IR); Mara Rock, one flying, 24 July 1970 (RWC);
 Batley Island area, three, 25 July 1971 (DFH); Benson Island
 area, one on 21 July 1971 (JB) and four from Benson Island
 to Great Bear Rocks on 26 July 1972 (DFH); Loudoun Channel,
 Chow Islets to Hankin Island, four, 8 July 1972 (DFH);
 Cape Beale area, five, and Pachena Bay, five, both 25 July
 1972 (DFH); Darling River, one, 13 August 1972 (AD).

The above list includes all of our Phase II and Phase III sightings. The species is remarkably uncommon among the Broken Group islands, and is seen there (even in the deep, open channels) primarily during periods of fog or storm. The species may occur along waters of the West Coast Trail more often in early summer, but it is certainly not common there in August. Martin and Myres (1969) observed that puffins do not seem to forage far from their breeding colonies in summer.

Godfrey (1966) indicates that Tufted Puffins winter largely at sea, and this is in agreement with negative evidence for that season among our records and those of Richardson (1971), Tatum (1972) and Campbell et al. (1972), and positive evidence from a weather ship 1000 miles offshore (Gruchy et al., 1972).

The Tufted Puffin is an uncommon summer bird in the PRNP area.

Parakeet Auklet

Cyclorhynchus psittacula (Pallas)

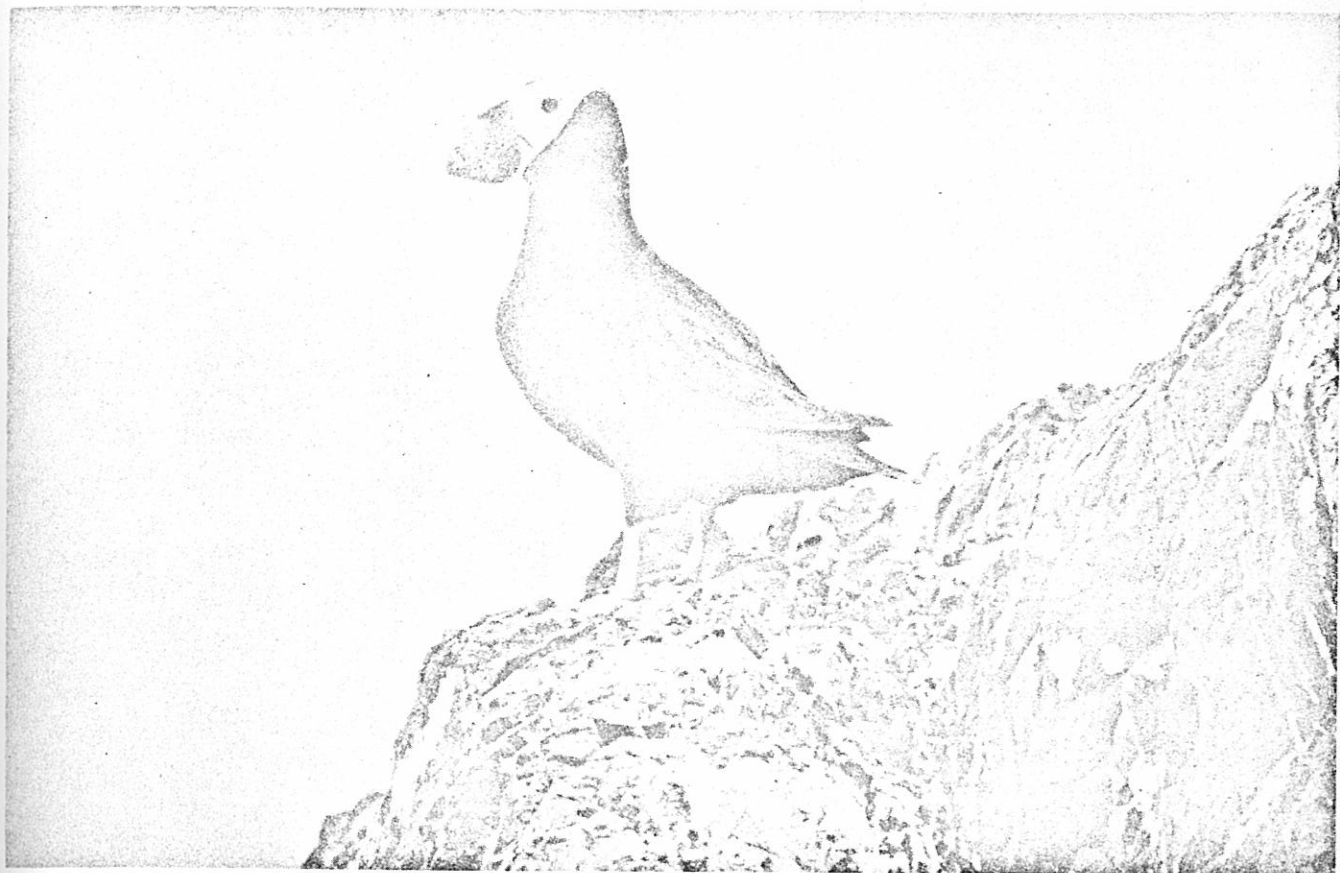
Campbell and Shepard (1973) have recently reported observations of this species off the central west coast of Vancouver Island, and have speculated that it may be a regular winter visitor to the British Columbia coast since it has been recorded in both Washington and Oregon during that season. On this basis, we list it as hypothetical for the PRNP area.

**Band-tailed Pigeon (Le Pigeon du Pacifique)

Columba fasciata Say

J, F, M3, A3, M12, J44, J23, A26, S7, O1, N, D = 119 records

The mellow cooing of Band-tails is common in many park locations from June through August although, as indicated by Campbell (1968) numbers decrease after the middle of August. The species apparently does most of its nesting in tall conifers, and feeds on berries (Rubus, Gaultheria, Vaccinium, Lonicera, Cascara and others) in forest openings over much of the park area. Breeding status is based on the discovery of a half-grown nestling which fell from a tree being cut by loggers north of Tofino, 15 June 1972 (BBC, DFH). Campbell (1967) reported seeing numbers of immature birds in the Long Beach area in July 1967.



Among the unique assets of Pacific Rim National Park are its sea birds, such as the Tufted Puffin (top) and Pigeon Guillemot (bottom).

Band-tailed Pigeons have been heard and/or seen at the following locations:

Vargas Island, six, 20 March 1969 (this earliest spring record, DFH); Cleland Island, one, 11 July 1969 (MGS); Tofino, one, 24 September 1970 (DFH); McLean Point, six, 31 July 1972 (NR); Schooner Cove, three, 6 June 1972 (AD); Box Island, three, 7 June 1967 (RWC); Incinerator Point area, 8-10, 6 July 1971 (DFH); Grice Bay Trail (behind Lovekin's Mansion, two, 7 June 1972 (AD); Green Point area, 18, 18 June 1972 (AD); Sandhill Creek area, one, 21 July 1972 (AD); Goldmine Trail, five, 27 July 1972 (AD); Lost Shoe Creek, 12, 4 June 1972 (AD); Quisitis Headland, six, 5 August 1971 (NR); Florencia Bay, two, 8 June 1972 (AD); Swan Lake, eight, 5 July 1972 (AD); Fletcher's Beach, one, 16 September 1972 (DFH); Kennedy Lake, three, 6 June 1971 (DFH); George Fraser Islands, pair, probably nesting, 3 June 1970 (CJG); Clarke Island, some heard, 9 July 1972 (DFH); Moreton Island, one, 7 June 1972 (DFH); Howell Island, some heard, 22 July 1971 (DFH, JB); Chalk Island, two, 1 June 1971 (DFH); Turret Island, one seen, others heard, 13 June 1971 (DFH); Turtle Island, heard frequently, summers of 1971 and 1972 (DFH); Hand Island, one, 9 July 1972 (DFH); Nettle Island, more than five, 22 June 1972 (DFH); Bamfield, many in flocks, 15 August 1964 (CJG); Keeha Bay meadows, four, 20 September 1971 (DFH); Pachena Bay, one, 3 August 1972 (AD); Black River to Michigan Creek, one, 4 August 1972 (AD); Darling River, two, 13 August 1972 (AD); Carmanah Creek, two, 17 August 1971 (DFH, JB); Sandstone Creek area, two, 25 August 1972 (AD); Thrasher Cove, some, 22 August 1971 (DFH, JB); Hobbs Creek area, six, 23 August 1972 (AD); Port San Juan, nine, 20 August 1972 (AD).

Two of our March sightings were made in 1969 (six at Vargas Island on the 20th and three in Tofino on the 24th, DFH), and the other was in the South Bay area during the last week of the month in 1973 (AD). April sightings were made in 1969, 1970 and 1971 (four, Vargas Island, 15th; two, Port Alberni, 2nd, and, some heard Pinkerton Islands, 21st, all DFH). In most years, regular sightings do not begin until mid to late May. Our single October record is of a bird seen near Tofino during the second week of that month in 1972 (AD).

The species winters in small numbers on southern Vancouver Island (Tatum, 1972) and the Lower Mainland (Campbell et al., 1972), but except for the one sighting indicated, was not recorded from October through mid-March in our area, and was seen only in August, September, June and July in the Browning Inlet area (Richardson, 1971).

The Band-tailed Pigeon is a common summer bird in PRNP.

Rock Dove (Le Pigeon biset)
Columba livia Gmelin

A small band of these pigeons, apparently feral, has been seen in Ucluelet on 13 January (five), 25 January (six) and 2 February (six) 1972 (DFH). These birds apparently roost in one of the large storage buildings owned by the Canadian Fish Company in Port Albion, and five were seen there on 24 January 1972 (DFH). Our only other local record is of a single bird which wintered in Tofino in 1972-1973, where it was regularly fed by Mr. and Mrs. Bill White. The Whites told DFH, who saw the bird in March 1973, that it roosted elsewhere, but flew to their house on most days during that winter.

The Rock Dove is a very rare resident in the PRNP area, and it is very local in its distribution here.

Mourning Dove (La Tourterelle triste)
Zenaida macroura (L.)

J, F, M, Al, Ml, J3, J, A, S3, Ol, Nl, D = 10 records

Following are all of our records:

26 June 1965, one near Ucluelet (FB); 5 September 1967, one on telephone wires near Incinerator Point (RWC); 29 April 1969, 15 September 1969, and 20 September 1970, one bird each date, in Tofino (DFH); 6 June 1970, two, Bamfield (CJG); 2 October 1970, one at Kapoose Creek (DFH); 29 May 1971, one near head of Ucluelet Inlet (JB); 11 November 1972, one near South Bay (SD).

The two September sightings in Tofino were peculiar in that they involved single birds which were seen in the identical spot, on a gravel roadway leading to a boat launching site behind the Gulf Oil station. Note that these two observations were just five days over one year apart.

The Mourning Dove is a breeding resident in the Lower Mainland (Campbell

et al., 1972) and in the Victoria area (Tatum, 1972), but it is a very rare migrant in the PRNP area.

*Screech Owl (Le Petit Duc)
Otus asio (L.)

J7, F1, M, A, M2, J3, J1, A2, S2, O1, N4, D1 = 24 records

Some of the above records are of owls which were not certainly identified, but are included here because this species is clearly the most common small owl in this area. In winter, Screech Owls frequent local highways, especially in the Long Beach area, where they are frequently hit, or almost hit, by automobiles. Mrs. McCormick of Tofino described (to DFH) a small owl killed on the road at Tofino's outskirts on 11 January 1970, and it was almost certainly this species. A dead specimen was found on the Wickaninnish Road on 20 January 1971 (DFH, UBC¹), and on the evening of 25 January 1971, a single driver hit two more in the same area. The driver found one of these and delivered it, alive, to DFH. It recovered and was released. Squashed Screech Owls were found on the road near Lovekin's Mansion (30 November 1971) and near Ucluelet (29 January 1972), and owls that appeared to be this species were seen to fly up from roadside (all in darkness, of course) near Mount Ozzard (Port Albion area, 7 August 1971), Incinerator Point area (30 October 1971), Maggie Lake (11 January 1972), and Wickaninnish Road (22 January 1972, all DFH). In addition, DF and BBC reported that they often saw small owls at night along the highway, especially in the Long Beach area, during the winter of 1971-1972, and an owl killed on the road near Ucluelet in late February 1972 by J. Biggin-Pound was apparently a Screech Owl (verbal description to DFH).

Strangely, we have not heard or seen the species in these areas at other times of year, although N. Buckle (pers. comm.) says that small owls were seen occasionally throughout the year in the Sandhill Creek area. Recently,

¹Uya=not yet accessioned

M. Amrhein, MacMillan Bloedel employee, has reported (pers. comm.) frequent sightings of Screech Owls in alder stands in the Kennedy Lake area (summer 1973).

Most of our summer records are from the Broken Group Islands, where birds have been heard calling on some nights: Turtle Island, two calling on 14 July 1971 (JB), one calling on 3 May 1972 (DFH), and on 4 May, 1 June, and 2 June 1972, birds were calling both on Turtle Island and on adjacent islands, apparently Dodd and perhaps Walsh. The 1 June serenade involved at least three different birds (DFH). On 20 June 1972, a Screech Owl in deep woods on Effingham Island launched into a series of calls, at mid-day, in apparent response to the squawk of a passing Great Blue Heron (DFH). JB found feathers, which he believed were from Screech Owls, on Effingham and Onion Islands in summer 1971.

The species breeds in the Lower Mainland (Campbell et al., 1972) and in the Victoria area (Tatum, 1972) and judging from our summer records, must do so here as well. Richardson (1971) considered it a "permanent resident" of the Browning Inlet area.

The Screech Owl is a rare resident of PRNP.

*Great Horned Owl (Le Grand Duc)
Bubo virginianus (Gmelin)

J, F, M1, A, M, J, J, A3, S, O1, N1, D2 = 8 records

Following are all of our records:

8 August 1967, one, Fleming Island (CJG); 9 August 1967, one "family", Sanford Island (CJG); 25 August 1967, one large owl, presumably this species, flew in front of car near Wickaninnish Inn (Campbell, 1967); 23 March 1968, one, Klanawa River (RWC); 29 December 1971, one sitting on railing at Olson Street wharf, Tofino (JSJ); about 22 December 1971, one at MacKenzie Beach (RM); 11

October 1972, one near park's north boundary (AD); 20 November 1972, one near Malthby Slough (AD).

On the basis of the Sanford Island record, we consider the species a suspected local breeder, but it probably occurs farther inland during summer of most years. Tatum (1972) considers the Great Horned Owl a rare resident of the Victoria area. In the PRNP area it is, at best, a very rare resident.

Snowy Owl (Le Harfang des neiges)
Nyctea scandiaca (L.)

J1, F1, M, A, M, J, J, A, S, O, N4, D = 6 records

These arctic visitors are undoubtedly sporadic in occurrence, with cyclic declines in tundra lemming populations heralding most local appearances (a good off-the-cuff example of John Muir's observation that everything in the universe is somehow attached to everything else). There were apparently numbers of these owls on local beaches during the winter of 1966-1967 (Campbell, 1967), but they have not been common in any year since. Our only records follow:

4 November 1916, a specimen taken near Cape Beale (Ward, BCPM 2728); January, 1952, one photographed (PDF 57) on Long Beach (PW); mid-November 1971, one seen by tourists at Florencia Bay and one seen at Schooner Cove by DF; 18 November 1971, one found floating (dead, but fresh) in Barkley Sound by R. Palm of Tofino (UBC nya); February 1972, one seen on top of Radar Hill by unidentified tourist (verbal description to DFH).

The Snowy Owl is a very rare winter species in the PRNP area.

*Pygmy Owl (La Chouette naine)
Glaucidium gnoma Wagler

J, F, M, A1, M2, J, J, A, S, O, N1, D = 4 records

A Pygmy Owl was seen about two miles east of Tofino on 3 May 1931 (IMcTC), and a few weeks later (28 May 1931) a male specimen was taken in the Tofino area (Racey, UBC 5603). Our only other records are of a bird which sat for some time in a small tree by a window at the Pineridge residence area on 29 November 1971 (DF and BBC, satisfactory verbal description, calling attention to black patch on back of neck, was received), and one which was seen being harassed by a hummingbird in the Port Renfrew area, 19 April 1972 (RWC). The species is resident in the Victoria area (Tatum, 1972) and was considered so on northwestern Vancouver Island by Richardson (1971), who saw it there in October and February.

Our best guess is that it is also a resident, though very rare, in the PRNP area.

Short-eared Owl (Le Hibou des marais)
Asio flammeus (Pontoppidan)

On 15 October 1972, RP found a bird of this species lying dead along the Goldmine Trail. It had apparently been shot. DFH examined the specimen some days later and confirmed identification. RWC recalls seeing a Short-eared Owl in the estuarine meadow area of Grice Bay in 1969, but the exact details of this sighting have been lost. Certainly such open habitat is typical for the species. The Short-eared Owl was seen in October and November in the Browning Inlet area (Richardson, 1971), is seen in fall and winter in the Victoria area (Tatum, 1972), and is resident in the Lower Mainland (Campbell et al., 1972).

In the PRNP area, it appears to be a very rare fall bird.

*Saw-whet Owl (La Petite Nyctale)
Aegolius acadicus (Gmelin)

J, F, M, A, M, J, J, A, Sl, O, N4, D = 5 records

Like the Screech Owl, this species shows up along local roads in late fall and winter, and three of our five records are of birds found dead: 8 September 1972, one in juvenal plumage found near Pineridge Corner (DFH, UBC nya); 13 and 14 November 1972, single dead specimens, Long Beach area and Ucluelet area respectively (AD). On 5 November 1968, at dusk, a single bird landed on a post in a Vargas Island meadow and was observed at close range for several minutes (DFH), and on 16 November 1971, one was seen roosting on a low, roadside cedar near Incinerator Point and was photographed (DFH, PDF 191). RP reported that he caught a Saw-whet Owl, by hand, near the head of Ucluelet Inlet, and released it after showing it to his children, but no date is available for this incident.

M. Amrhein (pers. comm.) is fairly sure he has seen at least one bird of this species in summer 1973, among alder stands in the Kennedy Lake area, thus it is possible that some local breeding occurs. Our immature specimen is also suggestive, although it is possible that it had flown in after fledging elsewhere. Nesting has been recorded for the Lower Mainland (Campbell et al., 1972), but apparently not for the Victoria area (Tatum, 1972).

The Saw-whet Owl is probably a rare resident of PRNP.

**Common Nighthawk (L'Engoulevent commun)
Chordeiles minor (Forster)

J, F, M, A, M, J16, J5, A5, S, O, N, D = 26 records

The earliest sighting among our records is 7 June (1972, two in Lost Shoe Creek area, NR), and the latest is 28 August (1972, four near Highway 4 Jct., DFH), but there are no other records before 15 June or after 8 August, thus it

appears that the species' usual stay in our area is quite short. A bird on eggs was seen on a gravel area near Kennedy Lake on 18 June and 4 July 1972 (AD). The open areas created by logging, and abandoned gravel logging roads (ideal for nesting), have probably enhanced this area as nighthawk habitat.

Following are some locations at which the species has been seen:

Cleland Island, one flew over, calling, 19 June 1969 (MGS); Incinerator Point area, one on 15 June and one on 26 June 1972 (AD); Long Beach (south end), two, 28 July 1968 (RWC); Sandhill Creek, two, 5 August 1971 (DFH); Lost Shoe Creek area, frequent, up to six birds seen, summer 1972 (NR) and, one, 18 June 1972 (AD); Swan Lake, several sightings-16 June (one, 18 June (two), 19 June (12), 21 June (six), 23 June (one), 14 July (five), all 1972 (AD); Goldmine Trail, one, 1 July 1972 (AD); Ucluelet, one, 18 June 1971 (MEH); Turtle Island, one each on 16 June (DFH, RWC) and 17 June (JB) 1972; Pachena Bay, one each on 3, 6 and 8 August 1972 (AD).

The Common Nighthawk is a rare summer species in PRNP, but is perhaps locally common summer in some adjacent areas (e.g., Kennedy Lake).

Black Swift (Le Martinet noir)
Cypseloides niger (Gmelin)

J, F, M, A, M, J6, J3, A14, S, O, N, D = 23 records

All six of our June records and two of our July records were obtained in Phase I in 1972, and our only other July sighting was in 1971 (17th, one over Turtle Island, JB). August sightings were obtained in all six years from 1967 through 1972. Whether the relative regularity of August sightings is due to an influx of migrants or the debut of locally raised young at that time is not known. There was no mention of 1971 breeding records for the Lower Mainland (Campbell et al., 1972) or the Victoria area (Tatum, 1972), although the breeding range map in Godfrey (1966) suggests that breeding occurs throughout the southern half of British Columbia. Godfrey indicates that few nests of this species have actually been seen, but that the usual nesting situation is a crevice on a steep mountain cliff. Both

Beebe (1959) and Grant (1966) record nests of this species being located on ledges near waterfalls where the spray actually reaches the nest. The nearest habitat of this type in our area is near the head of Clayoquot Arm, Kennedy Lake, and among some of the rugged mountains at the heads of deep water inlets north of Tofino, e.g., Bedwell Sound and Herbert Inlet. However, some of the sandstone cliffs and canyons along the West Coast Trail might also be suitable. At the present time we will not assume, but will suspect, local breeding; naturalists visiting some of the above mentioned areas should keep alert for this species. In future it would also be worthwhile recording weather data when swifts are seen, Udvardy (1954) concluded that "the appearance of swifts coincided with a cyclone passage".

Some park area locations follow:

Green Point area, three, 9 July 1972 (AD); Sandhill Creek, one, 14 August 1968 (RWC); Wickaninnish Road, four, 12 June 1972 (AD); Grice Bay Trail, one, 23 June 1972 (AD); Lost Shoe Creek area, six each on 11 and 23 June 1972 (NR), two on 16 June and four on 22 June (both AD); Goldmine Trail, one, 27 July 1972 (AD); Turtle Island, three over, 17 July 1971 (JB); Edward King Island, 12, 8-9 August 1970 (CJG); Bamfield, 11, 16 August 1969 (CJG); Pachena Bay, two, 9 August 1972 (AD); Darling River, one, 12 August 1972 (AD); Tsusiat Falls area, two, 9 August 1972 (AD); Darling River, one, 12 August 1972 (AD); Tsusiat Falls area, two on 15 August 1971 (JB) and six on 14 August 1972 (AD); Port San Juan, two, 20 August 1972 (AD).

The Black Swift is a rare summer species (perhaps just uncommon during late summer) in the PRNP area.

**Vaux's Swift (Le Martinet de l'Ouest)
Chaetura vauxi (Townsend)

J, F, M, A, M3, J4, J2, A9, S1, O, N, D = 19 records

This species is known to nest in hollow trees (Godfrey, 1966) and RWC has seen it entering and leaving trees in the Kennedy Lake area in 1968 and 1969. This plus a record of a specimen with a brood patch collected east of Bamfield, 3 August 1967 (CJG), gives us more confidence in our "suspected nesting" designation

than we had for the previous species.

First spring sightings in the years 1970-1972 were 17, 29 and 15 May respectively (all in Kennedy Lake area, all DFH). Our only September record is of 12 birds seen in the same area on 26 September 1971 (BH). In 1971, the species was recorded from about mid-May to mid-September in both the Victoria area (Tatum, 1972) and the Lower Mainland (Campbell et al., 1972). As was the case for Black Swifts, we have seen Vaux's Swifts most frequently in August. Some location records follow:

Green Point area, two, 28 August 1967 (RWC); Sandhill Creek area, three, 22 August 1968 (RWC); Wickaninnish Road, one, 16 June 1972 (AD); Goldmine Trail, two on 22 June, three on 16 July and one on 27 July 1972 (AD); Lost Shoe Creek road, two, 27 July 1972 (AD); Swan Lake, one, 19 June 1972 (DFH); Edward King Island, three, 8-9 August 1970 (CJG); Bamfield, nine, 13 June 1970 (CJG); Black River area, two, 14 August 1972 (AD); Logan Creek, two, 19 August 1971 (JB, DFH).

The Vaux's Swift is a rare summer species in the PRNP area.

Anna's Hummingbird (Le Colibri d'Anna)
Calypte anna (Lesson)

During the period 18-20 June 1973, Dr. J.G. Nelson, B. Beatty and D. Mann reportedly observed a female of this species on a nest at Pachena Bay. This nest was located about six feet above the ground near the end of a Sitka Spruce branch. Documentary evidence has not yet been received, but Anna's Hummingbird was positively identified in winter 1971 in both the Vancouver area (Campbell et al., 1972) and the Victoria area (Tatum, 1972). The above nesting record, if it can be verified, would be a first for the province. For now, we must consider Anna's Hummingbird hypothetical for PRNP.

**Rufous Hummingbird (Le Colibri roux)
Selasphorus rufus (Gmelin)

J, F, M4, A27, M35, J56, J56, A87, S1, O, N, D = 227 records

This species usually arrives in our area within a day or two of the first blooms of salmonberry, usually late March or early April. First spring records for the past seven years have been, 1968-24 March, one male at Pachena Point (RWC); 1969, 6 April, two males on Kennedy Lake road (DFH); 1970-27 March, one in Tofino (MEH); 1971, 14 April, two over Tofino Inlet (DFH); 1972-6 April, one male at McLean Point (DFH); 1973, 27 March, one near Maltby Slough (AD). With spunky territorial males challenging all comers, this is probably the most conspicuous small bird in the PRNP area from about mid-April to late June. Males are not often seen after the end of June, but numbers of hummers are still apparent through July and these undoubtedly include many locally raised young.

JW has seen many nests in his 11 years of experience among the Broken Group Islands, but has not recorded dates and locations. On 1 June 1972, a nest with two newly hatched young was found on the northernmost of the Brabant Islands (AH). Recent fledglings have been seen on numerous occasions in the park area. On 14 July 1970, one of these was found "shivering" on a fence in Tofino. Mr. and Mrs. G. Lilieu adopted the bird and fed it with an eyedropper for a few days until it regained its strength.

Last sightings in most years are in August in this area, as was the case in the Browning Inlet area in 1968 (Richardson, 1971). Dates of our latest fall records for the past five years were as follows: 1967-17 August, one, Green Point area (RWC); 1968-11 August, one, Green Point area (RWC); 1969-27 August, one, Cleland Island (MGS); 1970-19 September, one, Tofino--this our latest record (DFH); 1971-14 August, one, Darling Creek (DFH, JB); 1972-23 August, one, Port San Juan (AD). In Victoria (Tatum, 1972) and the Lower Mainland (Campbell et al., 1972) where

cultivated garden flowers abound, the species was recorded in October in 1971.

There is no need to list locations for this species, for it is sufficient to say that it has been seen (and probably breeds) on every vegetated island and islet in Barkley Sound, and in the appropriate season could undoubtedly be seen around every clump of Rubus, and often elsewhere, in the park area.

Note: The two popular field guides commonly referred to (Peterson, 1961; Robbins et al., 1966) describe (or portray) a courtship flight pattern for this species which we have not seen. At the same time, the pattern described by both sources for Allen's Hummingbird (Selasphorus sasin) is precisely the pattern which each of us has seen local Rufous Hummingbirds perform on numerous occasions. The reason for this discrepancy is not known, but one result is that we have received several local reports of Allen's Hummingbirds. There have been no confirmed reports of S. sasin in Canada.

The Rufous Hummingbird is a common (even very common) summer species in PRNP.

**Belted Kingfisher (Le Martin-pêcheur)
Megaceryle alcyon (L.)

J8, F5, M7, A4, M7, J18, J29, A45, S11, O8, N8, D4 = 154 records

Campbell (1968) speculated nesting in the clay banks of Florencia Bay, but we have not confirmed this even though it is evident that birds are seen more regularly there than at most other Long Beach locations. In 1969, RWC found the bird nesting in a dirt bank near the mouth of the Kennedy River, and on 24 May 1971, DFH observed a minimum of five adult birds at the Tofino gravel pit and at least one pair was nesting. These birds were seen to enter and leave a hole near the top of the gravel cliff on several occasions on this and following days. An adult with two recently fledged (flying poorly) young were seen on Vargas Island on 1 August 1972 (DFH).

The species is most conspicuous in July and August, probably as numbers

of young birds enter the population, and they may be seen and heard nearly everywhere along park shores at that time. During winter they are most likely to be found along protected waters. During the 25 weeks from 8 October 1972 through 31 March 1973, kingfishers were listed as present in all but one in the Tofino Inlet area (AD). During early summer the birds are apparently quite localized, probably not moving far from their nests, and it is evident that nesting is restricted to certain areas. DFH spent almost all of May, June and July of 1971 and 1972 in the Broken Group islands, with a base camp at Turtle Island, and did not see the species anywhere in the Turtle Group (Turtle, Willis, Dodd, Walsh, Chalk Islands) until July in both years (7 July and 5 July respectively). After these first records were obtained, sightings there were regular at least through August in both years.

With this in mind, following are areas in which the species has been seen in May and June: Vargas Island, one, 30 May 1969, 8 May 1971, and 11 June 1972 (DFH); Tofino, one, 14 May and 28 June 1969 (DFH); McLean Point, one, 7 June 1972 (AD); Box Island, one, 26 June 1968 (RWC); Florencia Bay, one, nine records from 4 June through 30 June 1972 (AD); Swan Lake, one on 3 May 1971 (DFH), one on 8 June and one female on 21 June 1972 (AD); Ucluelet Inlet, two, 12 June 1972 (DFH); Toquart Bay, one, 24 June 1971 (JB), Gibraltar Island lagoon, two, 29 June 1971 (DFH).

The species has been seen at other locations during other parts of the year, and some of these may be documented as follows:

Portland Point, three, 31 July 1971 (NR); Sandhill Creek, two, 13 July 1972 (AD); Hand Island area, one, 9 August 1969 (DFH); Wiebe Island, one female on a cliff, 12 July 1971 (JB); Wouwer Island, two, 25 July 1971 (DFH); Clarke Island, one, 27 July 1972 (DFH); Effingham Island, two, 17 August 1967 (CJG); Bamfield, two, 27 July 1970 (RWC); Pachena Bay, one, 7 August 1972 (AD); Keeha Meadows, one, 20 September 1971 (DFH); Michigan Creek, one, 5 August 1972 (AD); Darling River, one, 12 August 1972 (AD); Klanawa River, two each on 23 March 1968 (RWC) and 25 August 1972 (NR); Cheewhat River (one) Carmanah Creek (two) Walbran Creek (one heard) all 17 August 1971 (DFH, JB); Camper Bay area, one, 25 August 1972 (AD); Port San Juan, two, 23 August 1972 (AD).

The Belted Kingfisher is an uncommon resident of PRNP.

**Common Flicker (Le Pic commun)
Colaptes auratus (L.)

J10, F3, M7, A5, M6, J19, J16, A7, S13, O9, N8, D4 = 107 records

Most of our flickers are of the red-shafted race (C.a.cafer). One pure yellow-shafted bird (C.a.auratus) was seen in Tofino on 4 October 1972 (AD), and another (probably the same bird) was seen two miles east of Tofino on 6 October 1972 (DFH). A hybrid between the two (male with black mustache and underwings more orange than red) was observed near the head of Ucluelet Inlet on 13 April 1972 (DFH).

The species breeds in the Vancouver area (Campbell et al., 1972), and is considered a common resident in the Victoria area (Tatum, 1972). Richardson (1971) indicates that flickers were absent from mid-May to Mid-July in the Browning Inlet area, and thereby implies that he did not consider the species to be a breeder there. Our own information on nesting is sparse. M. Miles found an apparent nest tree on Vargas Island in summer 1968, and reported it to DFH. Both observers saw flickers entering and leaving the "nest hole", which was about 15m up in a precariously tilting, dead snag. No notes were taken and all other details have faded away. Not even the month can be recalled, but DFH has the vague feeling that it was too late in the summer for young to have been present. In late June 1969 adults were watched entering a nest hole with food in a cedar snag near Kennedy Lake. Young were heard but the tree could not be climbed to check nest contents.

Tatum (1972) thought that flickers might be even more common in winter months, in his area, than they are in summer. The same seems to be true here, although this may be an illusion. During periods of extreme cold, especially when there is snow cover, these birds move out to the fringe of coastal forest and occasionally even onto local beaches, where the moderating influence of the sea probably keeps food organisms closer to the surface (both in the trees and in the ground). Beach logs often harbour insect larvae and these probably serve as an

added attraction. Common Flickers were recorded as present on 20 of 25 weeks (8 October-31 March 1972-73) in the Tofino area (AD), and all of our observations involving more than three birds were made in fall and winter (maximum-8-10 on Vargas Island, 1 November 1968, DFH).

Some location records for the PRNP area follow:

Schooner Cove, three, 23 July 1965 (FB); Incinerator Point, one, 23 July 1967 (RWC); Green Point area, one, 6 June 1968 (RWC); McLean Point, one, 18 October 1972 (SHR); Long Beach campground, one, 23 June 1972 (AD); Sandhill Creek area, one, 14 July 1972 (AD); Quisitis Headland, two, 5 August 1971 (NR); Goldmine Trail, one, 1 July 1972 (AD); Lost Shoe Creek, two, 18 June 1972 (AD); Swan Lake, one, 14 May 1971 (DFH); Bauke Island, one, 25 July 1971 (DFH); Effingham Island, two, 14 September 1971 (JB); Clarke Island, one, 16 September 1971 (JB); Dodd Island, one, 24 September 1971 (JB); Turtle Island, one, 4 March 1973 (DFH); Nettle Island, one, 22 June 1972 (DFH); Bamfield, two, 16 September 1971 (DFH); Pachena Point, one, 13 August 1971 (DFH, JB); Hobbs Creek, one, 25 August 1972 (AD); San Juan River, one, 21 August 1972 (AD).

The Common Flicker is an uncommon resident (more frequently seen in winter) in PRNP.

*Pileated Woodpecker (Le Grand Pic)
Dryocopus pileatus (L.)

J1, F3, M2, A1, M1, J, J3, A11, S1, O1, N, D = 24 records

All of our records are:

Maltby Slough area, single birds seen last week of October, first week of January, second and third weeks of February, first and last weeks of March 1972-73 (AD); Long Beach Campground, one, 1 August 1967 (RWC); Green Point area, two, 6 August 1968 (RWC); Goldmine Trail, one, 17 July 1972 (AD); Kennedy Lake area, 21 September 1969 (DFH); Toquart Bay, one, 27 May 1971 (DFH); Effingham Island, one, 11 July 1968 (RWC); Edward King Island, one, 8-9 August 1970 (CJG); Bamfield, one, on 21 July 1972 (DFH), and one each on 21 August 1964, 5 and 8 August 1965, 7 August 1968 and 2 August 1969 (CJG); Pachena Bay area, two, 14 August 1972 (AD); Pachena Bay to Black River, two pairs or one pair twice, 4 August 1972 (AD); Pachena Point area, one, 6 August 1972 (AD); Port Renfrew area, one, 19 April 1972 (RWC).

It appears that the species is more common in the Phase III area than

elsewhere in the park, as most of our observations are from there despite the fact that we have spent the least time observing there. It apparently breeds both in the Vancouver area (Campbell et al., 1972) and is listed as a common resident (breeding implied) in the Victoria area (Tatum, 1972). These facts plus our summer records (despite the absence of June sightings) lead us to suspect that it does here as well. A bird need not nest far from the beaten path to avoid observation in these woods.

The Pileated Woodpecker is a rare resident in the PRNP area.

*Yellow-bellied Sapsucker (Le Pic maculé)
Sphyrapicus varius (L.)

J5, F, M, A, M, J1, J, A5, S1, O4, N1, D2 = 19 records

This species is seen primarily in fall and winter in our area, as was also the case for the Browning Inlet area in 1968-69 (Richardson, 1971). Like the flicker, it is most commonly encountered along beach fringing forest when cold weather, with snow, prevails. In such conditions on 28 January 1969, 10-12 birds were seen on Frank Island (Chesterman Beach) and another had been killed by a mink in the same area (DFH). We also have winter records from Vargas Island and the Ucluelet area, and AD saw four birds near Maltby Slough on both 3 and 5 October 1972. Sapsuckers are especially attracted to fruit trees, and the prospective observer would be well advised to visit some of the old orchards in our area, in winter. We have no records from the islands, and do not even have notes indicating the presence of sapsucker-worked trees there. Numerous trees, with the characteristic parallel rows of holes drilled by these birds, were seen along the West Coast Trail in August 1971 (DFH), but no birds were seen.

Our only "summer" records are of single birds seen below the Long Beach campground in the Green Point area, 10 June 1967, 13 and 17 August 1967, and 2 and 18 August 1968 (RWC). It has been recorded as nesting in the Lower Mainland

(Campbell et al., 1972) and southern Vancouver Island (Tatum, 1972), and we can suspect that it does so here, but perhaps farther inland.

The Yellow-bellied Sapsucker is possibly a rare resident of the PRNP area, but it is most commonly seen in the fall.

**Hairy Woodpecker (Le Pic chevelu)
Dendrocopus villosus (L.)

J3, F2, M3, A4, M8, J22, J10, A7, S2, O1, N4, D = 66 records

Our only record suggestive of local breeding is an observation of a bird in juvenal plumage at Swan Lake on 5 July 1972 (AD). However, this plus the regularity of spring and summer sightings leaves us with some confidence that the bird does breed here. Hairy Woodpeckers are considered to be regular residents of the Browning Inlet area (Richardson, 1971), southern Vancouver Island (Tatum, 1972) and the Lower Mainland (Campbell et al., 1972), so this conclusion is not a particularly risky one.

These birds were recorded 13 times between 3 May and 31 July 1972 (one to three birds per sighting), in logged areas near McLean Point and Lost Shoe Creek (NR), and this observer felt that they might prefer disturbed areas (See Godfrey, 1966). While it is true that such areas may provide good feeding, especially if much logging debris has been left behind to attract the insect larvae which woodpeckers exist upon, it should be remembered that at least small patches of good, mature tree cover are not far from logging scars in either of the areas mentioned, and the birds almost certainly require these for nesting, some feeding, and for protection from the weather. In addition, birds are much more easily seen in open, logged areas than is the case in deep woods.

Following are locations at which this bird, certainly our most commonly encountered woodpecker, has been seen:

Vargas Island, one male taking large "grubs" from drift logs, 27 March 1970 (DFH); Tofino, one, 3 May 1931 (IMcTC); Chesterman Beach, one pair, 25 April 1969 (DFH); Maltby Slough area, seen on 15 of 25 weeks between 8 October 1972-31 March 1973 (AD); Incinerator Point, one, 6 June 1968 (RWC); Long Beach Campground, two, 10 July 1965 (FB); Green Point, one, 22 June 1972 (AD); Lost Shoe Creek, two, 18 June 1972 (AD); Kennedy Lake area, five, 24 June 1971 (JB); Ucluelet Inlet, one, 10 May 1971 (DFH); Turtle Island, one hammered on tree almost continuously for c30 minutes, 25 April 1972 (DFH); Dodd Island, one, 18 June 1970 (CJG); Walsh Island, two, 24 May 1973 (DFH); Mence Island, one female, 10 August 1969 (DFH); Gibraltar Island, one, 29 June 1971 (DFH); Effingham Island, one on 18 August 1967 (CJG) and one on 14 September 1971 (JB); Pachena Bay, one, 4 August 1972 (AD); Logan Creek, one, 19 August 1971 (DFH, JB); Camper Bay area, one, 21 August 1971 (DFH).

The Hairy Woodpecker is an uncommon resident of the PRNP area.

Downy Woodpecker (Le Pic mineur)
Dendrocopos pubescens (L.)

J, F, M2, A1, M, J2, J, A, S, O, N, D = 5 records

This is a common resident of southern Vancouver Island (Tatum, 1972), and is called a "common transient" in the Lower Mainland, though two breeding records were reported for 1971 (Campbell et al., 1972). We haven't sufficient information about this species in our area to say anything with confidence, except that it occurs here. An adult male was seen in the Green Point area on 2 June 1968 (RWC), and one of unknown sex was seen in much the same place on 20 March 1971 (MEH). NR saw a pair (male and female) near Lost Shoe Creek on 7 June 1972, and commented that these were the only birds of this species he had seen in the area in two summers of bird-watching in the park area. Our other sightings were of single birds in Tofino (8 April 1970, DFH) and near Incinerator Point (4 March 1973, AD).

Godfrey (1966) indicates that Downy Woodpeckers prefer deciduous woodlands, and this is probably why they are not often seen in most of the park area. They are probably more common, and probably breed, among alder stands in areas such as Kennedy Lake. Our complete absence of fall and winter records seems unusual for,

as we have shown earlier, most of the woodpeckers are more conspicuous during this season.

The Downy Woodpecker is very rare in the PRNP area; whether it is resident or migratory will have to be decided at some future time.

Ash-throated Flycatcher (Le moucherolle à gorge cendrée)
Myiarchus cinerascens (Lawrence)

J, F, M, A, M, J, J, A, S, O, N2, D = 2 records

DFH watched a bird of this species for several minutes at Vargas Island, 14 November 1971, and exactly one year later (14 November 1972), AD saw one near Ucluelet. On-the-spot field descriptions were prepared for both sightings, and are on file at the B.C. Provincial Museum. This is certainly among the most easily identified of the flycatchers. There were four records of the species in the Lower Mainland in September 1971 (Campbell et al., 1972, as well as summer records for Alice Lake and Shuswap Lake in the same year (BCPM files). The species has been recorded in the Province on eleven occasions (all fall records except those two mentioned previously) since 1953, mostly from the southwestern portion.

The Ash-throated Flycatcher is a very rare fall species in our area.

*Traill's Flycatcher (Le Moucherolle des aulnes)
Empidonax traillii (Audubon)

J, F, M, A, M, J2, J2, A, S, O, N, D = 4 records

Our records are all from the summer of 1972, when we were conducting our most intensive bird survey work in the area, and all are based on the peculiar, sneezy song of the species: Single birds heard along the Goldmine Trail on 18 June

and 1 July, and another heard near Sandhill Creek on 19 July (all AD). On 22 June DFH heard a bird which he thought was this species at the old homestead site on Nettle Island. The species is listed as "common summer" in the Victoria area (Tatum, 1972) and "frequent summer" in the Lower Mainland (Campbell et al., 1972) but the paucity of our records, considering the time we have spent outdoors, indicates that it is nowhere near as common here. The fact that it may be heard singing in summer in our area suggests that it breeds here.

The Traill's Flycatcher is a rare summer bird in the PRNP area.

Hammond's Flycatcher (Le Moucherolle de Hammond)
Empidonax hammondii (Xantus)

A single bird of this species was reported on Cleland Island on 15 May 1969 (MGS), but we have insufficient details to evaluate this record. The species occurs, in summer, in both the Lower Mainland (Campbell et al., 1972) and the Victoria area (Tatum, 1972), and it probably appears in PRNP at least occasionally. At the present time, however, we must consider the Hammond's Flycatcher hypothetical here.

*Western Flycatcher (Le Moucherolle du Pacifique)
Empidonax difficilis Baird

J, F, M, A, M5, J45, J23, A10, S1, O, N, D = 84 records

This is our most commonly encountered Empidonax; it is more often heard than seen, and even its song is not conspicuous, but the following list of locations indicates that it occurs widely throughout the park area and mostly in forested areas:

Cleland Island, one, 11 May 1970 (MGS); Tofino, one collected (Racey, UBC 5391), 12 May 1931; Chesterman Beach, several heard, 10 June 1968 (RWC); Mallard Lake, two, 7 June 1972 (AD); McLean Point Road, six, 16 June 1972 (AD); Airport Road, one, 7 June 1972 (AD); Schooner Cove, three, 24 June 1972 (AD); Grice Bay Trail, four, 23 June 1972 (AD); Green Point area, one, 26 June 1967 (RWC); Rain Forest Trail, six singing, 26 July 1972 (AD); Florencia Island, one, 3 July 1972 (AD, DFH); Swan Lake, two, 24 July 1972 (AD);

Willowbrae Trail, five, 29 June 1972 (AD); Kennedy Lake area, five, 19 June 1972 (AD); Ucluelet, two, 24 June 1972 (DFH); Dodd Island, one, 20 May 1971 (JB); Turtle Island, three, 8 June 1971 (JB) and one on 6 July 1972 (DFH); Gibraltar Island, one, 29 June 1971 (DFH); Broken Group, one, 11 August 1969 (CJG); Bamfield, one, 18 June 1970 (CJG); Pachena Bay, two, 3 August 1972 (AD); Black River area, three, 4 August 1972 (AD); Michigan Creek, one, 6 August 1972 (AD); Camper Bay, one, 23 August 1972 (AD); Sandstone Creek area, two, 24 August 1972 (AD); San Juan River, one, 23 August 1972 (AD).

Our earliest spring record is 10 May (1970, Tofino, RWC) and our latest fall sighting was 10 September (1972, Vargas Island, DFH). Richardson (1971) recorded it from mid-May through early August in the Browning Inlet area, and Vancouver and Victoria observers saw it from 2 May to 19 September and 25 April to 28 September, respectively, in 1971 (Campbell et al., 1972; Tatum, 1972).

The Western Flycatcher is a common summer bird in the PRNP area.

Western Wood Pewee (Le Pioui de l'Ouest)
Contopus sordidulus Sclater

J, F, M, A, Ml, Jl, Jl, A, S, O, N, D = 3 records

This is a "frequent summer" bird in the Lower Mainland (Campbell et al., 1972), but is an "uncommon summer visitor" around Victoria (Tatum, 1972). In our area, DFH watched one, at close range, for several minutes (21 May 1970) as it hawked insects from low in an elder bush in Tofino. A bird was heard at the same location on Turtle Island on 12 and 13 June 1971 (JB), but was never heard or seen thereafter. We did not contact the species at all during intensive field work in 1972, but on 17 July 1973 one was heard calling and singing regularly near Sandhill Creek (AD). Efforts to locate it on subsequent days were in vain.

The Western Wood Pewee is very rare summer in PRNP.

*Olive-sided Flycatcher (Le Moucherolle à côtés olive)
Nuttallornis borealis (Swainson)

J, F, M, A, M2, J15, J9, A1, S, O, N, D = 27 records

This is probably the most "cooperative" of our flycatchers, being easily recognizable on sight and both conspicuous and distinctive in voice. Its summer stay is apparently a short one; Tatum (1972), indicates that in most years it arrives in May, and his last record for 1971 was 8 August. Our only August sighting was made on the first day of that month in 1972 (Long Beach area, one, NR).

Godfrey (1966) describes some of the habitats occupied by this species, including burntlands with standing dead trees, bogs, lakeshores with water-killed trees, and logged areas, and indicates that it will often be seen perched high in dead trees in these areas. Eleven of our records between 8 June and 24 July 1972, all of single birds, were obtained at Swan Lake (AD, DFH), an area which fits in well with the above description. Other locations of sightings include:

Tofino, one collected, 21 May 1931 (Racey, UBC 5422); Sandhill Creek, one, 13 July 1972 (AD); Goldmine Trail, one, 1 July 1972 (AD); Lost Shoe Creek area, three singing, 18 June 1972 (AD); Kennedy Lake, two, 19 June 1972 (AD); Clayoquot Arm, one, 1 July 1972 (DFH); Turtle Island, one, 16 June 1971 (RWC, BMC); Walsh Island, one, 29 May 1973 (DFH); Lyall Point, one, 11 July 1968 (RWC); Bamfield, one, 6 June 1970 (CJG).

The Olive-sided Flycatcher is an uncommon summer bird in the PRNP area.

Horned Lark (L'Alouette cornue)
Eremophila alpestris (L.)

A single individual was seen on Chesterman Beach on 15 September 1972 (AD). This species occurs as a rare resident in both the Vancouver area (Campbell et al., 1972) and southern Vancouver Island (Tatum, 1972). Irving (1953) reported, "...two of us are morally certain we saw this bird on the beaches (Carmanah Point area), but there is no written record."

The Horned Lark appears to be a very rare migrant in the PRNP area.

**Violet-green Swallow (L'Hirondelle à face blanche)
Tachycineta thalassina (Swainson)

J, F, M, A3, M14, J7, J4, A3, S, O, N, D = 31 records

This species seems to occur rather locally in this area, with sightings in Tofino, Ucluelet, Bamfield and around the Long Beach airport, especially during the spring migration, but not many around ocean frontage. Most of the immediate park area, having few fresh water surfaces of any consequence and therefore little production of insects with aquatic larvae, does not seem to be good swallow habitat. Nevertheless, a few Violet-Green Swallows do stay to breed. DFH saw a bird carrying nesting material up under the eaves of a building at the airport on 12 May 1972, and NR found a nest in a dead tree at Lost Shoe Creek on 4 May 1972.

Some other locations other than those mentioned previously are: Cleland Island, four, 12 May 1970 (MGS); Vargas Island, one, 8 May 1971 (DFH); Stone Island (Tofino Inlet), two, 7 July 1971 (DFH); Pineridge Corner, one, 1 May 1971 (DFH); Sandhill Creek, two, 4 June 1968 (RWC); Swan Lake, one, 29 May 1972 (DFH); Kennedy Lake, several, 24 June 1971 (JB); Bamfield, one each on 18 August 1967 and 19 August 1968, and several on 16 August 1969 (CJG). These Bamfield sightings have been our only August records. The species has not been seen among the Broken Group Islands.

Our earliest spring sighting is 12 April (two in Ucluelet, 1972, DFH), while first sightings, 1969-1972, were between 27 April and 1 May (all Tofino area, DFH). As indicated above, there have been no August sightings in the vicinity of Phase I, and the latest July sighting is 7 July 1972, when two birds were seen in Tofino Inlet. This suggests that if the rare local breeders are successful, they and their progeny do not stay long, although perhaps the species is localized to the extent that we have been overlooking it during the late summer period.

The Violet-green Swallow is a rare summer species and an uncommon migrant in PRNP.

*Tree Swallow (L'Hirondelle bicolore)
Iridoprocne bicolor (Vieillot)

J, F, M, A4, M5, J22, J5, A4, S, O, N, D = 40 records

This swallow appears to be a more regular denizen of local summer skies than is the previous one, as evidenced by our peak of sightings in June. It also occurs more widely, and may be seen occasionally over ocean beaches. It arrives, in spring, at about the same time as the Violet-green Swallow (our earliest record is of several birds at Kennedy Lake on 6 April 1969, DFH) and, like that species, has not often been seen here after the end of June. We do have a few later records, however: 10 July 1972, one, Sandhill Creek area (AD); 24 July 1972, seven, Swan Lake (AD); 4 August 1968, two, Green Point (RWC); 5 August 1973, one, Bedwell River (SRJ); 12-18 August 1967, at least two seen regularly, Incinerator Point (RWC). The Bedwell River sighting is of particular interest in that it involved a single bird seen repeatedly entering and leaving a hole high in a dead tree. This may represent late nesting however swallows often search nesting sites, both new and old, during the premigratory (post fledging) period, therefore we have left this species with a single asterisk to designate breeding status (i.e., suspected).

The species has not been seen among the Broken Group Islands, and has not been recorded along the West Coast Trail but must certainly occur there. Following are some Phase I locations not mentioned previously:

Tofino, one, 10 May 1970 (RWC); McLean Point, two, 8 May 1972 (DFH); Wickaninnish Inn, two, 10 June 1972 (AD); Goldmine Trail, five, 1 July 1972 (AD); Lost Shoe Creek, two, 18 June 1972 (AD); Florencia Bay, one 19 June 1972 (AD); Swan Lake, 19, 29 June 1972 (AD); Clayoquot Arm, Kennedy Lake, some, 30 June 1972 (DFH).

The Tree Swallow is an uncommon (locally common, e.g., Swan Lake) summer bird in the PRNP area.

**Rough-winged Swallow (L'Hirondelle à ailes hérissées)
Stelgidopteryx ruficollis (Vieillot)

J, F, M, A4, M8, J23, J10, A2, S, O, N, D = 47 records

This species certainly nests in our area, although our documentation for this is not as strong as is our convictions. NR reported nesting in the dirt banks along Lost Shoe Creek in 1972, but provided no further details. DFH saw six birds flying around the Tofino gravel quarry on 11 June 1972, and one of these entered a hole high on the bank there, but stayed only briefly. Campbell (1967, 1968) speculated nesting in dirt banks in the Esowista Reserve area and DFH concurred in the speculation, but no confirmation has been received. The species is also suspected to nest in banks along the gravel pits near the Highway No. 4 junction. Godfrey (1966) suggests that the Rough-winged Swallow is not fussy about the habitats in which it feeds, but during the breeding season remains in those areas which have suitable nesting places.

The species appears to arrive somewhat later than the previous two (earliest record is 21 April 1972, six at Swan Lake, DFH), but it may also remain longer in the fall. Campbell (1967) found it common in the Incinerator Point area from 1 July through 5 August in 1967. However, we have recorded it on only three occasions after mid-July in subsequent years: 23 July 1970, one, Tofino (RWC); 27 July 1972, one, Goldmine Trail (AD); 19 August 1971, six, Logan Creek (JB). The species was seen from early April through mid-August in the Victoria area (Tatum, 1972) and early April through September in the Lower Mainland (Campbell et al., 1972). The "swallow season" is apparently much longer in these areas than is ours, as both Tree and Violet-green Swallows occurred from about mid-March through September in both during 1971.

We have not seen Rough-winged Swallows in the Broken Group, and the Logan Creek record given above is our only Phase III sighting; the species probably nests

in canyons such as that at Logan Creek and Cullite Creek in that area. Following are some Phase I area locations which have not already been mentioned:

Tofino, four, 15 May 1970 (RWC); Mallard Lake, three, 7 June 1972 (AD); Radar Hill, two, 13 June 1972 (AD); Green Point area, two, 9 July 1972 (AD); Sandhill Creek about eight, 12 May 1972 (DFH); Florencia Bay, eight sightings of two or three birds, 4-9 July 1972 (AD); Swan Lake, seven sightings (one to eight birds), 21 April-5 July 1972 (AD, DFH); Kennedy Lake, two, 17 May 1970 (DFH), Highway 4 Jct., several (DFH, JGE).

The Rough-winged Swallow is a locally common (e.g., Swan Lake and Florencia Bay) summer bird in the PRNP area.

**Barn Swallow (L'Hirondelle des granges)
Hirundo rustics L.

J, F, M, A2, M10, J21, J21, A3, S, O, N, D = 57 records

The beauty and precision of the flight of this species was illustrated most dramatically on the morning of 2 June 1971, at Toquart Bay. There, an adult bird dropped a fluffy white covert feather, presumably from a gull, at a height of about 10m above the water, flew off in a figure of eight, and sailed back to snatch up the feather again just a few centimeters above the water. It repeated this performance three times with no perceptible change of flight speed, then carried the feather into its nest in a nearby concrete tunnel (DFH).

This species is the only swallow we have seen in the Broken Group. On 23 June 1970, RWC saw five young-of-the-year on Cooper Island, and DFH saw one bird flying across Loudoun Channel, northward, near Hankin Island (16 May 1972), and another at Turtle Island on 7 June 1972. A pair of these birds began building a nest under the eaves of a cabin at Turtle Island several years ago, but did not complete it (JW). Our only records from the Phase III area are a report of "numbers building nests" in Bamfield on 6 June 1970 (CJG), an observation of three

juveniles in Bamfield on 24 July 1970 (RWC), and a sighting of one bird at Port San Juan on 21 August 1972 (AD).

Barn Swallows are seen in the Victoria and Vancouver areas from about early April through mid-September (Tatum, 1972; Campbell et al., 1972), but like the other swallow species, arrive later and leave earlier in our area. Our earliest sighting was 21 April 1971, a few at Kennedy Lake (DFH), and our only other April sighting was in 1969 (27th, one near the Highway 4 Junction, JGE). The Port San Juan sighting listed above (21 August) is our latest fall record, and our only other August sightings were of birds seen both at Long Beach and at Kennedy Lake on the 17th, 1969 (RWC). Regular visits to Swan Lake and Kennedy Lake throughout the months of April and August would perhaps yield better phenological data on all of our swallows than we have been able to obtain while moving extensively over the park area; that is, earlier and later dates could probably be obtained, although our data extend over four years and they certainly are accurate in their portrayal of the general patterns of seasonal occurrences of these birds.

Some locations of Phase I sightings of the Barn Swallow follow:

Cleland Island, two, 24 May 1970 (MGS); Tofino, one, 13 July 1972 (DFH); Long Beach airport, six, 7 June 1972 (AD); Grice Bay Trail, two, 7 June 1972 (AD); Incinerator Point, two to four seen regularly throughout July 1967 (Campbell, 1967); Green Point to Incinerator Point, 10 sightings of one to six birds, 13 June-21 July 1972 (AD); Wickaninnish Inn, one, 10 June 1972 (AD); Swan Lake, eight sightings of one or two birds, 8 May-7 July 1972 (AD, DFH); Ucluelet, one, 7 June 1972 (DFH).

The Barn Swallow is an uncommon (locally common, e.g., Swan Lake, north Long Beach) summer species in the PRNP area.

Cliff Swallow (L'Hirondelle à front blanc)
Petrochelidon pyrrhonota (Vieillot)

J, F, M, A, M1, J1, J, A, S2, O, N, D = 4 records

All of our records follow: 6 September 1967, one adult near Incinerator Point (RWC); 2 September 1968, two over beach near Green Point (RWC); 14 June 1970, one at Cleland Island (MGS); 15 May 1971, one pair near the head of Ucluelet Inlet (DFH).

The Cliff Swallow is a common summer bird in both the Victoria (Tatum, 1972) and Vancouver (Campbell et al., 1972) areas, but is a very rare migrant in PRNP.

Gray Jay (Le Geai gris)
Perisoreus canadensis (L.)

Although this species is resident on Vancouver Island it is seldom seen because it inhabits higher elevations in mountainous areas. Some years, however, Gray Jays are reported in lowlands, especially during the winter months (BCPM files). Munro and Cowan (1947) list specimen records for Vancouver Island as follows: Mount Arrowsmith, 17 August 1927; Great Central Lake; Goldstream Summit near Victoria, November 1935; Campbell Lake, 5 December 1942.

There are no records for the PRNP area. Two records from northern Vancouver Island however are of interest here: Tsitika River drainage, 3 July 1971, two juveniles (AEAH) and Claude Elliot Lake area, 25 July 1971, two, (AEAH). The elevation for both sightings was about 1000 feet. Gray Jays have been seen near the Sproat Lake summit (August, 1969 - RWC) to the west of the park.

The Gray Jay is considered hypothetical for the PRNP area, based on records surrounding the area.

**Steller's Jay (Le Geai de Steller)
Cyanocitta stelleri (Gmelin)

J6, F4, M9, A9, M17, J30, J25, A27, S8, O13, N5, D6 = 159 records

The flash of blue so often glimpsed along the highway in Phase I, and the incessant clamour starting at dawn in the Long Beach Campground are both avian phenomena attributable to this species. Note that it is often incorrectly called "Blue Jay," a name which is properly applicable only to a species whose Canadian range begins way back east in Alberta. It is very unlikely that any other Canadian national park has a density of Steller's Jays to match that at Pacific Rim.

We have not seen any nests of this bird, but have seen flying young-of-the-year on numerous occasions (see Campbell, 1967, 1968), and this plus the continuous residency of the species throughout the year are considered suitably indicative of local breeding. Steller's Jay is widespread over the park area, except that it apparently does not occur in the Broken Group Islands. It is self-advertising enough so that it should have been detected if it were there. Strangely enough, birds have been seen on the Alma Russell Islands (22 June 1972, DFH) and on Lyall Point (11 July 1968, RWC), the nearest mainland areas to the inside edge of the Broken Group. It seems evident that the absence of Steller's Jays in the islands is due to some habitat deficiency and not to an inability of the birds to get there.

Some Phase I and Phase III locations follow:

Vargas Island, one, 20 March 1969; Tofino, three, 21 April 1972 (DFH); Maltby Slough area, seen in all 25 weeks of the period 8 October 1972-31 March 1973 (AD); Mallard Lake, two, 7 June 1972 (AD); Radar Hill, two, 13 June 1972 (AD); McLean Point, one, 5 May 1971 (DFH); Airport road, one, 7 June 1972 (AD); Grice Bay Trail, three, 26 July 1972 (AD); Incinerator Point area, one, 12 June 1972 (AD); Green Point area, four, 18 June 1972 (AD); Sandhill Creek area, one, 24 April 1972 (DFH); Rain Forest Trail, one, 1 July 1972 (AD); Quisitis Headland, one, 2 August 1971 (NR); Florencia Bay, one, 30 June 1972 (AD); Goldmine Trail, two, 16 July 1972 (AD); Lost Shoe Creek, two, 8 June 1972 (AD); Swan Lake, two, 29 May

1972 (DFH); Kennedy Lake, one, 17 December 1971 (DFH); Ucluelet Inlet, six, 27 March 1972 (DFH); Bamfield, one, 21 June 1970 (RWC); Keeha Meadows, some, 20 September 1971 (DFH); Pachena Bay, three, 3 August 1972 (AD); Pachena Beach to Black River, 27, 6 August 1972 (AD); Black River to Michigan Creek, six, 6 August 1972 (AD); Darling River, one, 14 August 1971 (DFH, JB); Klanawa River, one, 23 March 1968 (RWC); Tsusiat Falls area, one, 15 August 1971 (DFH, JB); Camper Bay, one on 21 August 1971 (DFH, JB) and three on 24 August 1972 (AD); Owen Point area, one, 25 August 1972 (AD); Hobbs Creek to San Juan River, 10, 23 August 1972 (AD).

The Steller's Jay is a common resident, especially locally (e.g., Long Beach Campground), in the PRNP area.

**Common Raven (Le Grand Corbeau)
Corvus corax L.

J4, F5, M6, A5, M13, J20, J21, A21, S4, O8, N11, D8 = 127 records

This species, distributed in small numbers over the whole park area including the Broken Group islands, will often be detected as the focus of mob attacks by crows. IMcTC found a nest with two to three young at Chesterman Beach on 15 May 1931, and J. Guthrie (pers. comm) reported finding a nest with three young (Kennedy Lake area, 1950's, no date) in a large fir he had felled. These are the only local nest accounts we have, but young birds have occasionally been seen. On 6 July 1971, a group of four seen over Tofino Inlet included two which clearly had not yet gained full aerial proficiency (DFH).

Some ravens frequent the local highway where they scavenge road-killed animals, others may occasionally be seen in campsites vying with crows and jays for tourist tidbits, while most cruise along beaches playing on the fortunes of the tides. Both carrion and intertidal organisms are used. On 30 April 1971, one was seen plucking mussels (Mytilus sp.) from a rock in Tofino Inlet. We have not recorded ravens breaking open bivalves by dropping them on the rocks, as crows and gulls do., but perhaps they do so.

Some locations of sightings follow:

Vargas Island, one, 9 January 1971 (DFH); Tofino, one, 20 July 1970 (DFH); Tofino Gravel Quarry, one, 11 June 1972 (DFH); Maltby Slough area, seen in all 25 weeks during the period 8 October 1972-31 March 1973 (AD); Mallard Lake, two playing on air currents, 1 November 1971 (DFH); Radar Hill Beaches, one, 13 June 1972 (AD); Portland Headland, two, 12 August 1971 (NR); Airport road, one, 7 June 1972 (AD); Grice Bay Trail, one, 23 June 1972 (AD); Green Point area, two, 1 July 1972 (AD); Long Beach campground area, seven, 8 August 1967 (RWC); Sandhill Creek, two, 10 July 1972 (AD); Quisitis Headland, seven, 13 August 1972 (NR); Florencia Bay, one, 9 July 1972 (AD); Florencia Island, one, 2 August 1968 (RWC); Lost Shoe Creek, one, 22 June 1972 (AD); Swan Lake, one, 7 October 1972 (DFH); Ucluelet Dump, one, 3 April 1972 (DFH); Turtle Island, four, 16 June 1971 (RWC, DFH); Willis Island, one, 27 May 1972 (DFH); Effingham Island, one, 9 July 1972 (DFH); Pachena Bay, one, 3 August 1972 (AD); Darling River, two, 12 August 1972 (AD); Logan Creek, two, 19 August 1971 (DFH, JB); Sandstone Creek area, one, 24 August 1972 (AD); Owen Point, one, 25 August 1972 (AD); Port San Juan, two, 20 August 1972 (AD).

The Common Raven is an uncommon resident of PRNP.

**Northern Crow (La Corneille du Nord-Ouest)

Corvus caurinus Baird

J5, F4, M10, A13, M35, J54, J56, A49, S15, O11, N11, D10 = 275 records

If the term ubiquitous applies to any species, it is this one. We have seen or heard it on all of the Barkley Sound Islands we have visited (including an evening roosting flock of up to 500 birds in the George Fraser Islands on 23 July 1970, RWC), and have recorded it from virtually every conceivable location along Phase I and Phase III. No further listing of locations is necessary.

We have seen nests, eggs, and nestling young only on Cleland Island where the vegetation does not exceed 3m in height; however, the species nests in forested areas throughout the park, and we have seen recently fledged young at many locations (e.g., Florencia Island, 28 June 1970, RWC and DFH). Young are frequently heard

calling from tall conifers inland on many islands of the Broken Group.

Of anecdotal interest about this species is the number of ways it has devised to keep itself fed. Even the most casual observer in the Tofino-Ucluelet area will be aware of crows scrounging in refuse cans, stealing school children's lunches and the family dog's bones, "examining" bags of groceries in the back of pickup trucks and fishing boats, and (at 5 a.m.) dropping mollusks on rooftops to break open their shells. We have also seen crows eating berries (21 June 1970 at Bamfield, RWC), standing expectantly around a feeding raccoon and darting in for an occasional tidbit (Lemmens Inlet, 25 February 1969, DFH), probing Long Beach sands for worms (RWC), snatching a young merganser (2 June 1972, Turtle Island, JB); and preying on the eggs of Glaucous-winged Gulls (20 July 1971, Great Bear Rock, DFH). During the summer, there are almost always a few crows on the seabird islands, even those which are unvegetated such as the above-mentioned G.B.R. and Sea-lion Rocks, and there they await opportunities to take eggs and probably very small young gulls. In addition, J. Hudnall (pers. comm.) saw them among the Brandt's Cormorant colony on Sea-lion Rocks on several occasions during summer 1973, and he believed they were eating eggs.

Most of the food of the Northwestern Crow probably comes from the intertidal zone, however. Some have been seen feeding on crabs exposed on mudflats at low tide, especially small Cancer gracilis (1 July 1970, about 20 birds exploiting a concentration of this crab on Vargas Island, DFH), and on one occasion a large, soft (moulting) Cancer productus (9 July 1972, Hand Island, DFH). Some of their crab meat is obtained with the aid of other animals; on 7 June 1971, a mink emerged from the water at Turtle Island with a large C. productus, and a pair of crows followed him, close overhead, until he stopped to eat in a hollow under a drift log. They sat patiently on the log until he had finished. The mink left the crab's large chelipeds intact, apparently because he was unable to bite into them, and each crow picked up one of these, carried them into the air a short distance, and dropped them to the rocks below where they were easily broken open.

On 17 May 1972, two crows were observed as they hunted along a floating boom log moored at Turtle Island. Their hunting involved the systematic removal of a growth of algae on the side of the log at and below the waterline. The algae was pulled aside with the bill and small organisms thus exposed were plucked off. These birds caught several small mussels (Mytilus edulis), which they easily opened with their bills, some kind of small tubeworm, some polychaete worms, and one small fish which may have been a gunnel (Pholidae). Though they were reaching under water, at no time did they go deeper than the base of the bill (DFH).

The Northwestern Crow is an abundant resident of PRNP.

**Chestnut-backed Chickadee (La Mésange à dos marron)
Parus rufescens Townsend

J3, F4, M6, A1, M1, J8, J7, A5, S4, O4, N4, D3 = 50 records

This, the only chickadee on Vancouver Island, is widely distributed in forests, especially Sitka Spruce banks along the beach edge, in all phases of PRNP. Although it is common throughout the year, most observers take this tiny bundle of energy for granted, hence the low number of observations. The only evidence of breeding for the park is of an adult watched feeding young in a hole in a spruce snag at the Long Beach campground, 28 June 1969 (RWC), and of a pair of adults feeding three young near Wickaninnish Inn on 20 June 1972 (AD).

In work patterned after that of MacArthur (1958), winter flocks of this species and the Black-capped Chickadee were observed in the Vancouver area in an attempt to discover how they avoid direct competition in the area of sympatry (Smith, 1967). This author showed that though the two species could be seen feeding in the same area, often in mixed flocks, they showed distinct differences in selection of feeding sites. As this author suggested, it would be interesting to know if Chestnut-backed Chickadees retain the same feeding habits on Vancouver Island, where they occur alone. A study designed to obtain this information could easily

be undertaken by PRNP naturalists.

Our chickadees are seen mainly in small numbers during spring and summer, but they gather into flocks in the fall and these persist throughout the winter. The largest flock recorded was 39 seen near the San Juan River on 23 August 1972 (AD). In PRNP, the species is perhaps most common in the virgin forest areas along the West Coast Trail. Following are some location records:

Vargas Island, 10+, 6 August 1969 (DFH); Tofino, four, 13 September 1969 (RWC); Maltby Slough area, present on 19 of 25 weeks during the period 8 October 1972-31 March 1973 (AD); McLean Point Road, three, 6 July 1972 (AD); Radar Hill, two, 13 June 1972 (AD); Portland Headland, three, 13 August 1971 (NR); Schooner Cove, two, 25 July 1972 (AD); Incinerator Point area, six, 13 June 1972 (AD); Grice Bay Trail, two, 7 July 1972 (AD); Sandhill Creek, two, 10 July 1972 (AD); Rain Forest Trail, three, 1 July 1972 (AD); Quisitis Headland, three, 28 July 1971 (NR); Florencia Bay, two, 19 June 1972 (AD); Lost Shoe Creek, one, 18 June 1972 (AD); Willowbrae Trail, two, 29 June 1972 (AD); Ucluelet Dump, some, 14 December 1971 (DFH); George Fraser Islands, three, 24 July 1970 (RWC); Benson Island, four, 5 March 1973 (DFH); Turtle Island, 14, 5 June 1971 (DFH); Chalk Island, six, 2 March 1973 (DFH); Mence Island, four, 6 July 1972 (DFH); Brabant Islands, about six, 20 August 1970 (DFH); Toquart Bay, six, 24 June 1971 (JB); Pachena Bay, 16, 3 August 1972 (AD); Black River area, 25, 4 August 1972 (AD); Pachena Point, one, 24 March 1968 (RWC); Michigan Creek, 15, 6 August 1972 (AD); Darling River, three, 13 August 1972 (AD); Klanawa River, 35, 14 August 1972 (AD); Tsusiat Falls area, 21, 14 August 1972 (AD); Sandstone Creek to Camper Bay, 27, 24 August 1972 (AD); Owen Point, 11, 25 August 1972 (AD); Hobbs Creek area, 15, 25 August 1972 (AD).

The Chestnut-backed Chickadee is a common resident of PRNP.

Common Bushtit (*La mésange buissonnière*)

Psaltriparus minimus (Townsend)

J, F, M, A, M, J1, J, A3, S, O, N, D1 = 5 records

The range of this western bird just extends into southwestern British Columbia where it is a frequent resident near Vancouver (Campbell et al., 1972) and Victoria (Tatum, 1972). There are only five records for the west coast:

5 August 1965, family flock, Sarita River (CJG); 18 and 23 August, twelve, Bamfield (CJG); 15 June 1969, two Green Point area (RWC); 28 December 1972, at least six, Goldmine Trail (AD).

Godfrey (1966) points out that this species has arrived on Vancouver Island relatively recently. The first nest found in the Victoria area was in 1945, and apparently numbers can now be found there. Perhaps it will become more common in our area, especially in logged areas, in the future but at the present time, the Common Bushtit is very rare in PRNP. Whether it can be considered resident or migrant can not be determined at this time.

*Red-breasted Nuthatch (La Sittelle à poitrine rousse)
Sitta canadensis L.

J1, F1, M1, A, M2, J2, J2, A2, S9, O4, N1, D = 25 records

Although recorded in most months over the years, the occurrence of this colorful tree forager is unpredictable in any given year. It is resident in other southwestern British Columbia areas, listed as "frequent" in Vancouver (Campbell et al., 1972) and "common" in Victoria (Tatum, 1972). Richardson (1971) also considered it resident on northwestern Vancouver Island, where he saw it from March through mid-June and August through November.

Most records from our area are in the fall, when small numbers gather with flocks of chickadees and migrating warblers. Summer records are rare, but at least some breeding is suspected. On 13 June 1969, an adult bird was seen entering a hole in a spruce snag (probably feeding young), in the Long Beach campground vicinity (RWC). A single bird was seen on Stubbs Island (8 July 1960, CJG), and in 1973 spring-early summer records were obtained in the Broken Group as follows; 27 May 1973, one each on Dodd and Turtle Island; 4 June 1973, at least two heard on Turtle Island; 10 July 1973, one heard on Chalk Island (all DFH). If birds had occurred in other summers, they would certainly have been recorded since their

nasal "yank, yank" call is conspicuous and unmistakable.

In 1972, despite the fact that our most intensive field work was performed that summer, the Red-breasted Nuthatch was not recorded until 9 August (one at Ucluelet Inlet, DFH). From the end of August through September, birds were detected (mostly by ear) frequently (e.g., three, two, and two birds respectively on Chalk Island, Benson Island, and Clarke Island, all on 14 September, DFH). Our only records in 1971 were in September (16th, one at Clarke Island; 29th, one at Ucluelet Inlet, both JB). It is probable that local feeding conditions were unusually favorable during the autumn of 1972, and this resulted also in the carryover of sightings into the summer of 1973 (see above: also, the species was listed as present during 8 of 25 weeks (8 October 1972-31 March 1973) in the Maltby Slough area, with sightings in all months except December (AD):

The Red-breasted Nuthatch appears to be an uncommon (and irregular) resident and perhaps common fall species in the PRNP area.

*Brown Creeper (Le Grimpereau brun)
Certhia familiaris L.

J, F, M, A, M1, J1, J4, A9, S1, O2, N1, D3 = 23 records

This bird of the deep woods is very inconspicuous and is easily overlooked. Our distribution of records, with sightings only from May through December, more likely results from our failure to see it, rather than from its absence, during the first four months of the year. The species is a common resident in the Lower Mainland (Campbell et al., 1972) and southern Vancouver Island (Tatum, 1972) and on northwestern Vancouver Island, Richardson (1971), with sightings in January, April, May, and October, considered it an "occasional resident"

Some local records follow:

Vargas Island, two, 24 September 1970 (DFH); Wickaninnish Island, one, 5 October 1969 (DFH); Stubbs Island, one, 8 July 1960 (CJG);

Tofino, one collected, 20 May 1931 (Racey, UBC 5089); Mackenzie Beach, one killed at picture window, 27 December 1969 (DFH); Long Beach campground, one, 31 August 1964 (BW); Rain Forest Trail, three, 10 July 1972 (AD); Willowbrae Trail, one, 27 July 1972 (AD); Bamfield, one, 21 June 1970 (RWC); Pachena Bay area, two, 3 August 1972 (AD); Black River area, two, 4 August 1972 (AD); Michigan Creek area, one, 14 August 1972 (AD); Klanawa River to Tsusiat Falls, two, 14 August 1972 (AD); Camper Bay, one, 24 August 1972 (AD).

Naturalists are encouraged to record all observations of this species, as much remains to be learned of its status on the west coast of Vancouver Island. Meanwhile, the Brown Creeper appears to be a rare resident of PRNP.

*American Dipper (Le Cincle américain)
Cinclus mexicanus Swainson

J, F, M, A, M1, J, J, A6, S, O1, N2, D = 10 records

This tame, nondescript bird is seen most typically along fast mountain streams. In PRNP this kind of habitat occurs primarily in Phase III, and all but one of our park sightings are from there: Exception-one bird at Sandhill Creek on 13 November 1972 (MAT); other park records-Michigan Creek, one each on 5 and 12 August 1972 (AD); Tsusiat Falls, one, 25 August 1972 (NR); Tsacowis Falls, one, 24 August 1972 (NR); Carmanah Creek, one, 17 August 1971 (DFH, JB); Camper Bay, one, 20 August 1972 (DFH). DFH has also seen birds during short visits to the Toquart River (two, 28 May 1971), Atleo River (at least two, 29 October 1970), and the Megin River (two, 14 November 1970), and sightings could likely be made at these and other local streams throughout the year.

We have no sure breeding records, but one of the birds at Toquart River was seen to fly in behind a falls, high on a cliff, and it was suspected to have had a nest there (DFH). Naturalists who explore some of the streams along the West Coast Trail will probably find nests in the future. The American Dipper is a "rare resident" in other southwestern British Columbia localities (Campbell et al.,

1972; Tatum, 1972). In PRNP it is uncommon locally (Phase III) and rare generally, and is certainly a resident.

**Winter Wren (Le Troglodyte des forêts)
Troglodytes troglodytes (L.)

J9, F4, M8, A3, M26, J42, J29, A35, S13, O15, N10, D9 = 203 records

This resident forest bird may be heard, and often seen (especially in winter), in all three park units. It actually sings throughout the year, although it is most vociferous in May and June. The song is very complex, and has been known to last for up to 70 seconds without a perceptible pause for breath.

Within the park this tiny, lusty-voiced songster is widely distributed in coniferous areas including those on islands. A few even occur on the treeless (but shrub-covered) Cleland Island (MGS). Little is known of the nesting habits of the Winter Wren, probably because its nest is so difficult to find. A piece of moss, a crack in bark, a tunnel among roots, an old woodpecker cavity or any one of many other forest niches may be used as a nesting site.

A nest containing young was seen on Cleland Island on 2 June 1969 (details of nest not provided), but this had been destroyed by a predator on 9 June (MGS). No other nests have been reported, but DFH has been close to them on Turret Island (14 June 1971) and Turtle Island (2 June 1972), judging from the behaviour of pairs of adults at those locations. Fledglings have been seen on several occasions: late July 1967, several downy young; Long Beach campground (RWC); early August 1968, two downy young, Long Beach (RWC); 2 August 1968, three young, Florencia Island (RWC); 7 July 1970, two fledglings, Wickaninnish Island (DFH); 10 June 1971, "family", Jaques Island (AH); 13 June 1972, about three fledglings, Schooner Cove (AD).

It appears that nest-building and egg-laying commence in May, and the last broods to hatch are probably fledged by mid-August. The incubation period

for this species is poorly known, therefore naturalists who observe birds building nests should watch closely.

Winter wrens are seen much more often in fall and winter than in summer, as they move out to the forest fringe and feed among the beach drift: 30 October 1968, six, Vargas Island (DFH); 4 December 1968, 8-10 in two miles of beach, Vargas Island (DFH); 24 January 1969, five in one mile of beach, Vargas Island (DFH). At this time these birds flit and dart about under beach logs, apparently in pursuit of amphipods, and acting more like mice than birds.

Locations at which Winter Wrens have been seen, other than those mentioned, follow:

Bartlett Island, some, 16 December 1968 (DFH); Tofino, two, 25 September 1971 (RWC); Maltby Slough area, listed as present in 24 of 25 weeks, 8 October 1972-31 March 1973 (AD); Radar Beaches, one, 13 June 1972 (AD); McLean Point, two, 19 October 1972 (SHR); Box Island, many, 27 September 1971 (JB); Incinerator Point area, four, 13 June 1972 (AD); Grice Bay Trail, three, 23 June 1972 (AD); Green Point area, two, 18 June 1972 (AD); Sandhill Creek, one, 10 July 1972 (AD); Rain Forest Trail, two, 1 July 1972 (AD); Quisitis Headland, one, 28 July 1972 (NR); Florencia Bay, two, 8 June 1972 (AD); Lost Shoe Creek, five, 2 May 1972 (NR); Goldmine Trail, two, 16 July 1972 (AD); Swan Lake, one, 27 October 1972 (DFH); Kennedy Lake, some, 21 September 1969 (DFH); Willowbrae Trail, four, 10 July 1972 (AD); Ucluelet Dump, two, 2 January 1972 (DFH); Benson Island, one singing, 5 March 1973 (DFH, SRJ); Clarke Island, four along trail, 14 September 1972 (DFH); Dodd Island, two, 22 June 1970 (RWC); Chalk Island, four, 25 October 1972 (DFH); Brabant Islands, several, 20 August 1970 (DFH); Effingham Island, at least five, 20 June 1972 (DFH); Austin Island, one, 25 July 1971 (DFH); Clutus Point, one, 23 July 1972 (DFH); Pachena Beach, four, 3 August 1972 (AD); Pachena Beach to Black River, four, 4 August 1972 (AD); Pachena Point, one, 24 March 1968 (RWC); Black River to Michigan Creek, six, 6 August 1972 (AD); Darling River, some, 14 August 1971 (DFH, JB); Klanawa River to Tsusiat Falls, two, 14 August 1972 (AD); Clo-oose, one, 17 August 1971 (DFH, JB); Camper Bay, some, 20 August 1971 (DFH); Owen Point area, four, 14 August 1972 (AD); Hobbs Creek to San Juan River, 15, 23 August 1972 (AD).

The Winter Wren is a common resident of PRNP.

Long-billed Marsh Wren (Le Troglodyte des marais)
Telmatodytes palustris (Wilson)

We have only one record for our area, that of an immature bird caught in a small mammal snap trap, 6 November 1971, in the Grice Bay Meadows behind Lovekin's mansion (DFH). This specimen was deposited in the collections at the University of B.C. (UBC 13767).

This wren is considered a "frequent resident" near Vancouver (Campbell et al., 1972) and an "uncommon resident" on southern Vancouver Island (Tatum, 1972), and Richardson (1971) did not see it in the Browning Inlet area. Long-billed Marsh Wrens prefer shallow water areas with tall emergent plants such as cattails and bulrushes (Godfrey, 1966) and the paucity of this kind of habitat on the west coast of Vancouver Island is surely the reason for the near absence of these birds there. Future observers in Phase III locations such as Keeha Meadows and the Cheewhat River system may obtain other park records. For now, however, we must consider the Long-billed Marsh Wren as very rare in PRNP.

Northern Mockingbird (Le Moqueur polyglotte)
Mimus polyglottos (L.)

J, F, M, A, M8, J3, J5, A, S, O, N1, D = 17 records

Most of our records are from Cleland Island where single birds were present from 22 to 30 May 1969 (KS) and 13 June to 19 July 1970 (MGS). In early May 1970, RWC saw a bird just east of Tofino, and on 22 May of that year DFH saw one duck into a blackberry tangle in Tofino. On 6 November 1970, a fine specimen was watched at close range as it caught flies among a pile of discarded sea urchin tests (Tofino, DFH). Our only observation from within park boundaries was made on 5 July 1971, a single bird in the south Long Beach area (DF).

The bird is "casual" in occurrence on the southwest mainland coast of B.C. (Campbell et al., 1972) and Victoria area (Tatum, 1972) and was found nesting in the latter location in July 1967 (Lemon, 1968). Of the thirty or so records for the Province, (Campbell and Taylor, ms) nearly all are from coastal situations, perhaps indicating that birds dispersing northward from California may do so along this barrier.

The Northern Mockingbird is very rare in the PRNP area. It appears to be neither resident nor truly migrant, and we must await further sightings before its status can be defined further.

**American Robin (Le Merle américain)
Turdus migratorius L.

J4, F4, M24, A32, M28, J63, J37, A31, S10, O8, N5, D3 = 252 records

This familiar bird is the least secretive of our thrushes, preferring open areas rather than the deep forest occupied by its local relatives. It is commonly seen along roadways and in forest clearings and edges throughout the park area, and it regularly prowls on local beaches where it may be seen extracting marine worms from intertidal mud and sand.

Though we have records for all months of the year, the bird is not regularly seen in winter. Spring migration is evident by about mid-March in most years (10 March 1969, about five and some calling, Vargas Island; 16 March 1970, four, Vargas Island; 14 March 1971, lots, Green Point area; 10 March 1972, several small flocks showing up now, Tofino, all DFH), and peak numbers usually appear in April (15 April 1969, 75+ in one small meadow, Vargas Island; 5-12 April 1971, lots, Tofino area; 21 April 1971, 25, Hand Island; 21 April 1972, common along road from Ucluelet to Tofino, all DFH). In other areas of southwestern British Columbia,

spring migration may occur as early as mid-February (Campbell et al., 1972) and carry through to mid-April (Tatum, 1972).

Surprisingly little information on breeding has been gathered for the PRNP area, although we are certain Robins nest commonly both in settled areas and in trees at forest edges. Males have been heard singing from 4 March (1973, Turtle Island, DFH) through 26 July (1972, Grice Bay, AD). Our breeding records follow: 7 August 1967, nest with two infertile eggs, Green Point area (RWC); 10 June 1968, adult carrying nesting material, Long Beach (RWC); 9 August 1969, several fledged young seen (DFH); 21 June 1970, adult feeding fledged young, Bamfield (RWC); June 1971, nest with two young on branch of apple tree, orchard near Ucluelet (MEH); fall 1971, old nest constructed exclusively of hair from a discarded moose hide found in shed near Ucluelet (DFH); summer 1972, nests found in logged areas at Lost Shoe Creek--no details provided (NR); 10 August 1973, pair of adults stuffing two recently fledged young with raspberries, Tofino (DFH).

The fall movement southward commences in August (14 August 1970, "lots", East Vargas Island, DFH) but most birds pass through in September (13 September, 1970, 30, Tofino, RWC; 19 September 1970, 100's, Kennedy Lake, DFH). The timing of fall migration locally is consistent with that reported by Richardson (1971) for the northwest coast of Vancouver Island and Campbell et al. (1972) for the Lower Mainland.

The American Robin has been seen widely throughout the park area, including the following locations:

Chesterman Beach, lots, 28 April 1971 (DFH); Maltby Slough area, present in 22 of 25 weeks between 8 October 1972-31 March 1973 (AD); Radar Hill, two, 13 June 1972 (AD); Portland Point, two, 6 June 1972 (AD); Schooner Cove, six, 13 June 1972 (AD); McLean Point Road, 14, 21 June 1972 (AD); Incinerator Point area, seven, 12 June 1972 (AD); Grice Bay Trail, nine, 24 April 1972 (DFH); Green Point, four, 18 June 1972 (AD); Sandhill Creek, two, 24 April 1972 (DFH); south Long Beach, 12, 10 June 1972 (AD); Quisitis Headland, three, 31 July 1971 (NR); Florencia Bay, four, 8 June 1972 (AD); Florencia Island, one, 15 July 1969 (RWC, ECC); Goldmine Trail, six, 1 July 1972 (AD);

Lost Shoe Creek, six, 18 June 1972 (AD); Swan Lake, four, 29 May 1972 (DFH); Kennedy Lake area, seven, 18 July 1972 (AD); Willowbrae Trail, two, 10 July 1972 (AD); Benson Island, two, 23 June 1972 (DFH); Clarke Island, two, 9 July 1972 (DFH); Turtle Island, four, 8 April 1972 (DFH); Dodd Island, at least two, 22 May 1972 (DFH); Chalk Island, three, 19 May 1972 (DFH); Mence Island, one, 2 July 1971 (DFH); Prideaux Island, one, 20 July 1972 (DFH); Nettle Island, four, 22 June 1972 (DFH); Bamfield, one, 24 March 1968 (RWC); Pachena Bay, one, 3 August 1972 (AD); Logan Creek, two, 19 August 1971 (DFH, JB); Sandstone Creek to Camper Bay, one, 24 August 1972 (AD); Thrasher Cove, one, 21 August 1971 (DFH, JB); Hobbs Creek to San Juan River, seven, 25 August 1972 (AD).

The American Robin is a common resident (uncommon in winter) in the PRNP area.

**Varied Thrush (Le Merle à collier)
Ixoreus naevius (Gmelin)

J17, F4, M11, A12, M15, J21, J11, A6, S4, O9, N7, D10 = 127 records

Because of its purely western distribution, many naturalists have proposed this forest-loving thrush as a candidate for the official bird of British Columbia. It is found during all months of the year in coniferous woods throughout the PRNP area, but is most conspicuous during winter when it often feeds on local beaches. This is particularly true during times of snow, at which times surprisingly large numbers may appear: 11 December 1968, 45+ in a few miles of shoreline, Vargas Island; 24 January 1969, c25 in two miles of beach, Vargas Island; 9 January 1971, snow in woods and birds suddenly common, Tofino; 12 January 1971, c40, Vargas Island beaches (all DFH).

After May it is very difficult to find this bird, as it moves into the damp woods to nest. Also, no doubt some birds move considerably farther inland and perhaps farther north as well, so that the summer population in the immediate vicinity of the coast is almost certainly smaller than in winter. Sightings in this season usually involve a fleeting glimpse of the bird as it darts up from the forest floor, where it usually feeds, to the densely branched conifer cover

it prefers. The monotone song of this species may be heard from local woods as early as February (24th, 1970, at least two singing mornings and evenings now, Wickaninnish Island, DFH). The Varied Thrush is probably the most regularly heard avian singer through March and April, and it can be heard throughout the early summer, though less often in July than in the preceding months.

The bulky, moss nest of this bird, often deep in the forest, is not often found. RWC located one containing three young in the Long Beach Campground, 5 June 1969, and DFH saw three old nests at the edge of logged areas in the Bedwell River valley, January 1970. A pair of adults feeding three recently fledged young were seen on Vargas Island in summer 1968 (no notes, DFH).

The following list of locations at which the birds has been detected is much shorter than would be the case if it were not so secretive:

Tofino, one collected, 27 May 1931 (Racey, UBC 7506); Chesterman Beach, one, 8 May 1931 (IMcTC); Maltby Slough area, present 20 of 25 weeks in period 8 October 1972 through 31 March 1973 (AD); McLean Point Road, two, 2 May 1972 (NR); Grice Bay Trail, about five singing, 24 April 1972 (DFH); Incinerator Point area, two, 25 July 1972 (AD); Green Point area, one, 10 July 1968 (RWC); Sandhill Creek, one, 22 July 1972 (AD); Rain Forest Trail, one, 10 July 1972 (AD); Kennedy Lake, five, 22 April 1972 (DFH); Willowbrae Trail, two, 16 June 1972 (AD); Ucluelet Inlet, six, 14 December 1971 (DFH); Broken Group, one heard, 12 June 1970 (CJG); Turtle Island Group, birds singing from Turtle, Walsh, Willis and Dodd Islands, 25 May 1972 (DFH); Clarke Island, two, 16 September 1971 (JB); Effingham Island, two, 14 September 1971 (JB); Bamfield, one, 15 June 1970 (CJG); Pachena Bay, one, 3 August 1972 (AD); Michigan Creek, one, 5 August 1972 (AD); Pachena Point, two, 12 August 1972 (AD); Hobbs Creek to San Juan River, one, 25 August 1972 (AD); Port Renfrew, one, 19 April 1972 (RWC).

The Varied Thrush is a common resident (uncommon in summer) in PRNP.

*Hermit Thrush (La Grive solitaire)

Catharus guttatus (Pallas)

J12, F1, M, All, M11, J12, J2, A5, S, O1, N2, D7 = 64 records

This, another deep forest species, has been recorded in all months except March and September. Its song is the most ethereal that can be heard in PRNP, its melodic phrase sliding down the scale as it progresses (in contrast to that of the Swainson's Thrush which "sprials" upward).

The numbers of sightings for December and January are due, as with the previous species, to the fact that the species is forced out to the sea edge during periods of snow. Unlike the Varied Thrush, however, the Hermit Thrush has always been seen on rocky shores rather than sand and mud beaches during this season. At other times during winter and spring it may be seen foraging on the forest floor and occasionally in semi-open areas, but in summer it is rarely seen at all. Detection during summer is primarily by ear, but the song comes from deep within the woods; when the Swainson's Thrushes begin singing (often from near the forest edge) in late May, they all but drown out the voices of the Hermits.

The nest of this species, usually built on the ground, is difficult to find. We have seen none in our area, and have not recorded sightings of fledglings. That is, we have no evidence of local nesting, yet we strongly suspect that it occurs. Naturalists should keep alert for an opportunity to confirm this suspicion. Following are some locations for this bird:

Vargas Island, about twelve along three miles of rocky shore, 24 January 1969 (DFH); Stubbs Island, one, 8 July 1960 (CJG); Tofino, one collected, 19 May 1931 (IMcTC); Maltby Slough area, present in 11 of 25 weeks (at least once in each month except March) during the period 8 October 1972-31 March 1973 (AD); Radar Hill, several heard, 11 June 1968 (BW); McLean Point Road, four, 28 April 1972 (NR); Grice Bay Trail, two, 24 April 1972 (DFH); Sandhill Creek area, 24 April 1972 (DFH); Lost Shoe Creek, 16 December 1972 (DFH); Kennedy Lake, one, 29 November 1971 (DFH); Willowbrae Trail, one singing, 29 June 1972 (AD); Ucluelet Inlet, one, 25 December 1971 (DFH); Gilbert Island, one singing, 25 June 1971 (JB); Cooper Island, one singing, 25 June 1971 (DFH, JB); Turtle Island, at least two singing, 21 May 1972 (DFH); Dodd Island, one, 19 May 1972 (DFH); Chalk Island, one, 2 May 1972 (DFH); Willis Island, one, 26 May 1972 (DFH); Turret Island, one,

13 June 1971 (DFH); Effingham Island, two singing, 20 June 1972 (DFH); Swiss Boy Island, one collected, 30 August 1969 (Schick, BCPM 11656); Edward King Island, one, 12 August 1969 (CJG); Bamfield, one, 12 August 1965 (CJG); Thrasher Cove area, one, 22 August 1971 (DFH, JB).

Richardson (1971) considered this thrush to be an "occasional summer and winter resident" on northwestern Vancouver Island, while to the south at Victoria it is a "common migrant and uncommon winter visitor" (Tatum, 1972). At Vancouver, the bird is listed by Campbell et al., 1972) as "frequent summer, rare winter", the summer records all coming from mountainous areas.

The Hermit Thrush is seldom seen during the summer months, but is generally an uncommon resident in the PRNP area.

**Swainson's Thrush (La Grive à dos olive)
Catharus ustulatus (Nuttall)

J, F, M, A, M16, J65, J54, A22, S2, O, N, D = 159 records

This is the summer thrush of PRNP, usually arriving in late May and departing in late August. Spring arrival dates for several years are: 1931-27 May one male (collected), Tofino (Racey, UBC 4500); 1969-29 May, one, East Vargas Island; 1970-22 May, one, Tofino; 1971-27 May, one, Toquart Bay; 1972-24 May, one, Walsh Isl. (all DFH). Although most birds have left by the end of August there are two late departure dates: 1969-21 September, "lots", Kennedy Lake (DFH), and 1971-21 September, one, Mence Island (JB). Summer residence for Swainson's Thrushes reported by other people for southwestern British Columbia are 2 May to 22 September 1970 (Vancouver-Campbell, Shepard and Drent, 1972); 2 May to 19 September 1971 (Vancouver-Campbell et al., 1972); 9 May to 12 September 1971 (Victoria - Tatum, 1972); and 20 May to 25 August, 1971 (Grant Bay region-Richardson, 1971).

Usually the first birds to arrive are detected by their peculiar whistled call. Singing starts shortly after arrival and continues throughout July. This species, like other thrushes, is secretive in its nesting habits and as a result we have few breeding records: 23 June 1970, nest with four eggs, Cooper Island, (RWC):

27 July 1967, adult feeding two fledged young, Long Beach (RWC); 29 July 1973, near fledged nestling, probably killed by a cat, found in Tofino (MEH).

Following are some locations at which Swainson's Thrushes have been seen and/or heard in the PRNP area:

Stubbs Island, one, 8 July 1960 (CJG); Radar Hill, one, 13 June 1972 (AD); McLean Point Road, 17, 6 July 1972 (AD); Grice Bay Trail, 10, 15 July 1972 (AD); Portland Point, one, 31 July 1971 (NR); Schooner Cove, two, 6 June 1972 (AD); Box Island, two, 21 July 1972 (AD); Incinerator Point, one, 10 June 1968 (RWC); Green Point area, one, 18 June 1972 (AD); Sandhill Creek, two, 10 July 1972 (AD); Rain Forest Trail, three, 1 July 1972 (AD); Quisitis Headland, three, 31 July 1971 (NR); Florencia Bay, three, 16 June 1972 (AD); Florencia Island, one, 2 August 1968 (RWC); Goldmine Trail, eight, 16 July 1972 (AD); Lost Shoe Creek, six singing, 18 June 1972 (AD); Swan Lake, one, 18 June 1972 (DFH); Kennedy Lake area, 25, 19 June 1972 (AD); Ucluelet, two, 11 June 1972 (DFH); Benson Island, one, 26 July 1972 (DFH); Clarke Island, three, 9 July 1972 (DFH); Turtle Island Group, birds singing on Dodd, Willis, Walsh and Turtle Islands, 25 May 1972 (DFH); Hand Island, seven, 9 July 1972 (DFH); Brabant Islands, one juvenile caught in mouse trap, 30 June 1971 (DFH); Nettle Island, 11, 22 June 1972 (DFH); Mullins Island, 29 June 1971 (JB); Wiebe Island, some singing, 29 June 1971 (DFH); Marchant Island, one, 7 June 1972 (DFH); Effingham Island, three, 29 June 1972 (DFH); Bamfield, several, 7 August 1969 (CJG); Pachena Bay, six, 3 August 1972 (AD); Black River, one, 4 August 1972 (AD); Michigan Creek, three, 5 August 1972 (AD); Klanawa River area, one, 14 August 1972 (AD); Camper Bay area, one, 24 August 1972 (AD); Hobbs Creek to San Juan River, one, 25 August 1972 (AD).

The Swainson's Thrush is a common summer species in the PRNP area.

Mountain Bluebird (Le Merle Bleu des montagnes)
Sialia currucoides (Bechstein)

A bird seen in mid-December 1971 at Mackenzie Beach, described to DFH by Robert Mackenzie (pers. comm.) as a "medium-sized gray bird with a bright blue patch at the base of its tail", must have been this species. Also, two Mountain Bluebirds were seen among the drift logs in Schooner Cove on 23 November 1972 (DF). This observer is quite familiar with the species after years of experience as a naturalist in the mountain national parks, especially Yoho, in eastern British Columbia.

The species is rare in southwestern British Columbia, and in 1971 was seen only in April (sightings of up to seven birds) in the Vancouver area (Campbell et al., 1972). A single bird seen on 10 and 11 April 1971 near Victoria constituted only the fourth record (all years) for the area, and the species is listed as "vagrant" there (Tatum, 1972). Richardson (1971) saw one on 28 April 1969 in the Grant Bay area. Our observations are the only known winter records of this species along the British Columbia coast. Future observers should procure photographs and/or supply detailed field descriptions of this species.

At present, the Mountain Bluebird appears to be accidental (perhaps just very rare) in the PRNP area.

**Golden-crowned Kinglet (Le Roitelet à couronne dorée)
Regulus satrapa Lichtenstein

J6, F4, M7, A2, M4, J22, J12, A25, S7, O11, N4, D4 = 110 records

This species is common in all months in coniferous habitat throughout PRNP but is by no means conspicuous. Flocks of up to 10 or 12 birds may be regularly encountered throughout the year, usually high in forest canopies, while larger flocks are reported in the fall (16 September 1971, 40, Clarke Island, JB). This species was recorded as present during 23 of 25 weeks during the period 8 October 1972 through 31 March 1973 (Maltby Slough, Tofino area, AD), thus indicating the extent of its local residence in winter. It is considered a "common resident" in other southwestern British Columbia areas (Campbell et al., 1972; Tatum, 1972; Richardson, 1971).

We list the Golden-crowned Kinglet as a breeding species in PRNP on the basis of fledged young: 3 June 1973, juvenile female collected, Tofino (Racey, UBC 8478); early June 1969, adult female feeding three young, Long Beach (RWC); 20 June 1972, two adults with two young, Wickaninnish Inn (AD); 20 July 1972, 10-12 including several immature birds, Nettle Island (DFH). Some locations at which the

bird has been seen follow:

Vargas Island, one, 5 May 1969 (DFH); Bartlett Island, 10, 16 December 1968 (DFH); Radar Hill, two, 13 June 1972 (AD); Schooner Cove, at least one, 24 June 1972 (AD); north Long Beach, two, 19 July 1972 (AD); Green Point area, five, 16 October 1972 (SHR); McLean Point, one, 1 June 1972 (AD); Grice Bay Trail, two, 23 June 1972 (AD); Rain Forest Trail, three, 17 July 1972 (AD); Florencia Bay, four, 8 June 1972 (AD); Kennedy Lake, one, 11 January 1970 (DFH); Willowbrae Trail, five, 8 June 1972 (AD); Ucluelet Dump, 10-12, 14 December 1971 (DFH); Amphitrite Point area, 8-10, 24 June 1972 (DFH); George Fraser Islands, one, pair, 4 June 1970 (CJG); Wouwer Island, some, 24 July 1971 (DFH); Benson Island, some, 5 March 1973 (SRJ, DFH); Chalk Island, three, 7 July 1972 (DFH); Bamfield several, 21 June 1970 (RWC); Pachena Bay, two, 3 August 1972 (AD); Pachena to Black River, seven, 4 August 1972 (AD); Pachena Point, two, 24 March 1968 (RWC); Michigan Creek, two, 6 August 1972 (AD); Darling River, one, 13 August 1972 (AD); Klanawa River to Tsusiat Falls, three, 14 August 1972 (AD); Sandstone Creek to Camper Bay, ten, 24 August 1972 (AD); Owen Point to Hobbs Creek (three) and Hobbs Creek to San Juan River (ten), 25 August 1972 (AD).

The Golden-crowned Kinglet is a common resident of PRNP.

Ruby-crowned Kinglet (le Roitelet à couronne rubis)
Regulus calendula (L.)

J1, F1, M6, A11, M, J1, J, A1, S2, O4, N4, D3 = 34 records

Unlike its relative, the Ruby-crowned Kinglet has a well defined spring passage period, usually from late March to late April, in the PRNP area: 1969-21 March to 7 April; 1970-27 March; 1971-25 March to 21 April; 1972-25 March to 27 April (all DFH). This northward movement lasts from about mid-March through mid-May in the Vancouver area (Campbell et al., 1972) while Richardson (1971) recorded spring passage from 25 March through mid-April 1969 on northwestern Vancouver Island.

Some of our apparently north-bound birds can be heard singing (3 April 1972, 15-20 of which several singing, Ucluelet Dump, DFH; 22 April 1972, at least six of which at least two singing, alder stand near Kennedy Lake, DFH). They are not heard later in the summer, however, and we have no evidence of nesting in the park area. We have just one summer observation, in fact, and this was of two birds near Amphitrite

point on 11 June 1972 (DFH, IMcTC). Godfrey (1966) includes all of Vancouver Island within the theoretical breeding range of the bird, so naturalists should include details of summer sightings.

We have not been aware of any strong migratory movement in our area in the fall, but individuals have appeared as early as August (14th, 1970, Vargas Island, DFH). First fall sightings were on 24 September in both 1971 and 1972 (respectively, one on Vargas Island, DFH and one at Tofino Inlet, AD). The bird may be seen throughout the winter (present in 13 of 25 weeks, and, at least once in each month except January, during the period 8 October 1972-31 March 1973, Maltby Slough area, AD).

We have not recorded the species along the West Coast Trail, but this is undoubtedly because we have not been there at an appropriate time: RWC saw six at Botany Bay (south of Port Renfrew) on 19 April 1972. Much the same is true for the Broken Group; we do have one sighting from the Pinkerton Islands, two birds seen on 21 April 1971 (DFH). Some Phase I locations not mentioned previously follow:

Vargas Island, four, 5 December 1968 (DFH); Tofino, one, 21 April 1972 (DFH); McLean Point Road, three, 23 April 1972 (DFH); Grice Bay Trail, one, 24 April 1972 (DFH); north Long Beach, seven, 24 October 1972 (SHR); Ucluelet Inlet, one, 16 October 1971 (DFH).

The Ruby-crowned Kinglet is an uncommon winter, common spring bird in PRNP.

Water Pipit (Le Pipit commun)

Anthus spinoletta (L.)

J, F, M, A4, M1, J, J, A, S5, O7, N, D = 17 records

Although the breeding range of this species includes all of Vancouver Island (Godfrey, 1966) the Water Pipit is an alpine nester and occurs only as a migrant in the lowlands. Spring migration is less pronounced than is the fall movement along other areas of the B.C. coast, and our records from PRNP also show

this. The spring passage period here has been recorded from 15 April to 1 May. Early arrival dates are: Vargas Island, 25, 15 April 1969 (DFH); Vargas Island, 10, 29 April 1970 (DFH); Long Beach, 1, 1 May 1970 (DFH). Fall migration has been recorded from 12 September through 17 October. Early arrival dates are: Wickaninnish Island, one, 5 October 1969 (DFH); Bamfield Road, one, 16 September 1971 (DFH); Chesterman Beach, nine, 12 September 1972 (AD). The largest migrant flock reported was in the fall: Green Point, 40, 16 October 1972 (SHR). During migration Water Pipits follow beaches and can be seen and identified among beach logs and rocky headlands by their habit of bobbing their tails up and down when they walk.

In 1971 Richardson (1971) recorded this migrant on northwestern Vancouver Island in the first week of May and from late September through October. Further south, in the same year, Water Pipits were recorded from 12 April to 16 May in spring and 12 September to 11 November in fall (Victoria, Tatum 1972) and from 9 April to 22 May and 9 September to 14 November in the Vancouver area (Campbell et al., 1972).

Our locations lists for this species is short, with no sightings as yet from Barkley Sound, and the Bamfield Road sighting listed above is the only one from the Phase III vicinity. Other locations not already mentioned are:

Sandhill Creek, one, 29 September 1971 (JB); Florencia Bay, one, 28 September 1971 (JB); Goldmine Trail, four, 27 September 1972 (AD); Kennedy Lake area, 25, 26 September 1971 (BH).

The Water Pipit is an uncommon migrant in the PRNP area.

**Cedar Waxwing (Le Jaseur des cédres)
Bombycilla cedrorum Vieillot

J1, F, M, A, M1, J34, J18, A11, S2, O2, N1, D = 70 records

This handsome bird summers in the PRNP area, where it may often be seen in patches of second growth forest and deciduous shrubbery, especially that paralleling the highway in Phase I. The bird arrives late, usually in early June. Several early spring arrival dates are: 6 June 1968, 10, Long Beach (RWC); 14 June 1969,

two, Kennedy Lake (DFH); 31 May 1972, three, Lost Shoe Creek (NR).

There are only three breeding records for the park. Two were listed in the summer naturalist reports for Wickaninnish Provincial Park (Campbell, 1967; 1968): 26 June 1967, nest with five eggs, Long Beach campsite, and 10 August 1968, adult feeding three fledglings, Long Beach. Also, AD saw adults feeding fledged young at Lost Shoe Creek on 18 June 1972. Our records do not clearly indicate a fall departure period, therefore the following sightings of latest dates is given for each year of records: 1964-2 September, several, Long Beach campsite (BW); 1968-30 August, two, Long Beach (RWC); 1969-27 August, two, Long Beach (RWC); 1971-25 September, three, Chesterman Beach (BH); 1972-12 November, some, Tofino (AD).

Noteworthy is the fact that Richardson (1971) did not see Cedar Waxwings on the northwestern tip of Vancouver Island in 1968-1969, although on the southern end of Vancouver Island this species is a common resident (Tatum, 1972). There is one winter record for the park: 28 January 1972, at least six eating mountain ash berries, Tofino (AD).

We have at least one sighting from each of the three park units. Some locations follow:

Tofino, two, 26 June 1970 (DFH); Chesterman Beach, three, 25 September 1971 (BH); Schooner Cove, five, 13 June 1972 (AD); north Long Beach, two, 21 June 1972 (AD); Green Point, two, 6 July 1972 (AD); McLean Point Road, one, 24 June 1972 (AD); Sandhill Creek, two, 9 July 1972 (AD); Quisitis Headland, two, 14 August 1971 (NR); Florencia Bay, five, 6 June 1972 (AD); Goldmine Trail, one, 1 July 1972 (AD); Lost Shoe Creek, 11 sightings (one to seven birds), 31 May-1 August 1972 (NR, AD); Swan Lake, 12 sightings (one to fifteen birds), 8 June-24 July 1972 (AD), and six birds on 7 October 1972 (DFH); Clayoquot Arm, Kennedy Lake, 10+, 30 June 1972 (DFH); Toquart Bay Road, seven, 24 June 1971 (JB); Turtle Island, two, 21 June 1971 (JB); Nettle Island, three, 31 July 1971 (JB), and one, 20 July 1972 (DFH); Bamfield, six, 20 August 1964 (CJG); Pachena Bay, one, 4 August 1972 (AD); Michigan Creek, some, 13 August 1971 (JB); Camper Bay, two, 20 August 1971 (DFH, JB); Port San Juan, two, 21 August 1972 (AD).

The Cedar Waxwing is common in summer and very rare in winter in the PRNP

area.

Northern Shrike (La Pie-grièche boréale)
Lanius excubitor L.

J, F, M1, A, M, J, J1, A, S1, O1, N, D1 = 5 records

All of our records are: 11 July 1960, one, Vargas Island (CJG); 25 March 1971, one, Vargas Island (DFH); 29 October 1971, one, Indian Island (DFH); 29 September 1972, one, Pineridge Corner (AD); 31 December 1972, one, Maltby Slough area (AD). Note that no two of these records is from the same month, but present evidence suggests that this species occurs in our area mostly in winter.

In 1971, the northern Shrike was an "uncommon winter visitor" on southern Vancouver Island (Tatum, 1972), although it was considered a "frequent resident" in the Lower Mainland (Campbell et al., 1972), but with apparently no records for the period between 20 May and 1 October. An observation of two nicely feathered adults on the Sproat Lake switchbacks of the old Port Alberni Highway, 17 May 1971 (DFH), suggests the possibility of nesting in mountainous areas inland from us, but we have no evidence of breeding within PRNP boundaries.

The Northern Shrike appears to be a rare winter species in the PRNP area.

**Common Starling (L'Étourneau sansonnet)
Sturnus vulgaris L.

J7, F5, M7, A9, M16, J35, J14, A18, S3, O6, N5, D4 = 129 records

This European species, introduced in New York City in 1890, spread rapidly westward across the continent, and was first recorded in British Columbia in the mid-1940's (Godfrey, 1966). Guiguet (1961) indicates that it was first seen on Vancouver Island (Victoria) in winter 1951-52, and Campbell (1968a) reported that the first record from the west coast of the island was early May 1967. It is a most adaptable and competitive bird, and as is often the case with exotic species, it has come to be regarded as a pest in many areas. Campbell, Shepard and Drent (1972) have reported roosting flocks of up to 200,000 birds in the Vancouver area in the

fall, and have estimated that 70,000 or more regularly winter in that city. Some interesting aspects of physiological ecology and natural history of the bird in the Lower Mainland have recently been reported upon by Johnson (1972).

On our coast, starlings are widely distributed, but are usually seen only in small numbers. The largest flock seen was 110 at Port San Juan on 21 August 1972 (AD). Flocks of up to 100 birds can be seen daily in fall and winter along the waterfronts in both Tofino and Ucluelet, and flocks, usually of smaller numbers (10-25), may be seen in these villages and at several other park area locations throughout the rest of the year. In the Broken Group Islands, starlings feed largely among the intertidal zone, catching isopods, small shore crabs, and a variety of other organisms which they may occasionally be seen carrying to young in high tree-hole nests. However, the observer there usually has only a distant view of the comings and goings of these island birds, because they are exceedingly wary and wild. In Tofino, where starlings are more accustomed to people, DFH watched 25 starlings demonstrate their adaptability while feeding among a flock of Black Turnstones (28 November 1972). All of the starlings were feeding in precisely the same manner as were the turnstones, turning over small stones with their bills and catching the organisms beneath.

Campbell (1967;1968) reported the presence of nests in the Long Beach campground area, and we have seen birds carrying food to young on many occasions. A pair of birds on Turtle Island raised at least two broods in summer 1972, (seen feeding large young in nest on 21 May, DFH) and had at least started on a third by early August (JW). On 2 July 1972, an adult pair with seven recently fledged young was observed on the timbered islet south of Portland Point (DFH).

Some locations for this species in the PRNP area follow:

Cleland Island, four, 12 June 1970 (MGS); Tofino Inlet, some, 7 March 1972 (DFH); McLean Point Road, one, 7 June 1972 (AD); Grice Bay Trail, 11, 24 April 1972 (DFH); Schooner Cove, two, 6 June 1972 (AD); Box Island, two, 20 July 1972 (AD); north Long Beach, five, 13 June 1972 (AD); Green Point area,

50+, 2 September 1968 (RWC); south Long Beach, three, 15 June 1972 (AD); Quisitis Headland, seven, 1 August 1971 (NR); Florencia Island, one adult with three young, 2 August 1968 (RWC); Swan Lake, one, 21 June 1972 (AD); Ucluelet, 25 25 January 1972 (DFH); Cooper Island, one, 23 June 1970 (RWC); Lovett Island, one, 22 May 1972 (DFH); Willis Island, one entering hole in tree, 3 June 1971 (DFH); Dodd Island, three, 22 June 1970 (RWC); Tiny Group Islands, six, 9 July 1969 (DFH); Hand Island, 15, 9 August 1969 (DFH); Brabant Islands, large flock, 20 August 1970 (DFH); Nettle Island, one, 20 July 1972 (DFH); Dempster Island, one, 17 June 1972 (DFH); Onion Island, three, 18 May 1972 (DFH); Wiebe Island, some, 29 July 1971 (DFH); Cree Island, at least two, 23 July 1971 (DFH); Bamfield, adult feeding young 50 feet up in cedar snag, 21 June 1970 (RWC); Klanawa River, one, 23 March 1968 (RWC); Camper Bay area, 23 23 August 1972 (AD); Owen Point to Hobbs Creek, 10, 25 August 1972 (AD); San Juan River, 60, 21 August 1972 (AD).

The Common Starling is a common resident of PRNP.

*Hutton's Vireo (Le Viréo de Hutton)

Vireo huttoni Cassin

J, Fl, Ml, A, M, J3, J4, A2, Sl, O, N, D = 12 records

Described by Godfrey (1966) as "nondescript", this little bird is not often seen in our area. Except for a sighting on Willis Island, one bird on 16 July 1971 (JB), all of our sightings have been by AD in the following locations:

Maltby Slough area, one, 28 March 1973; McLean Point Road, 7 June (two), 19 July (two singing), 29 September 1972 (one), and 3 February 1973 (one); Grice Bay Trail, one, 7 July 1972; Kennedy Lake area, one, 19 June 1972; Willowbrae Trail, one each on 29 June and 17 July 1972; Klanawa River area, one, 14 August 1972; San Juan River, one, 23 August 1972.

This species was seen in a forested area near Browning Inlet in July and September 1968 (Richardson, 1971), and was considered an "occasional summer resident" there. It is a "rare resident" in the Lower Mainland (Campbell et al., 1972) and an "uncommon resident" in the Victoria area (Tatum, 1972). It is probably present throughout the year in our area, and the fact that it was seen several times in the same locations (e.g. McLean Point Road) in summer 1972 suggests that it nests locally.

The Hutton's Vireo is a rare resident of the PRNP area.

Solitary Vireo (Le Viréo à tête bleue)
Vireo solitarius (Wilson)

Single birds were heard singing at the Goldmine Trail on 16 July 1972 and along the Willowbrae Trail on the following day, but were not seen (AD), and were not seen or heard again. The observer is familiar with the song of this bird from experience elsewhere, and describes it as "short whistled phrases with pauses in between, the phrases consisting of two or three syllables either rising or falling at the end."

The Solitary Vireo is "common summer" in Victoria and "frequent summer" in Vancouver (Tatum, 1972; Campbell et al., 1972), but until further evidence is obtained must be considered hypothetical for the PRNP area.

Red-eyed Vireo (Le Viréo aux yeux rouges)
Vireo olivaceus (L.)

We have just two records: 11 August 1969, one (almost positive identification), Edward King Island (CJG); 15 May 1970, one, Tofino (RWC). This bird is "frequent summer" in the Lower Mainland, where it was recorded nesting in 1971 (Campbell et al., 1972), but is a "rare summer visitor" in the Victoria area (Tatum, 1972).

We do not have documented evidence for these sightings therefore we consider the Red-eyed Vireo hypothetical in PRNP.

*Warbling Vireo (Le Viréo mélodieux)
Vireo gilvus (Vieillot)

J, F, M, A, M, J1, J6, A5, S1, O, N, D = 13 records

This is a summer bird in the Lower Mainland (Campbell et al., 1972) and southern Vancouver Island (Tatum, 1972), and is present (common in the former and uncommon in the latter) from about late April through September in these areas.

As Godfrey (1966) indicates, it is largely a bird of deciduous forestlands, and for this reason it is not often seen in the largely coniferous woods of PRNP. All of our local sightings follow:

McLean Point Road, one each in alder stand on 19 July (AD), 31 July, 1 and 6 August 1972 (NR); Florencia Bay, one, 12 September 1972 (AD); Kennedy Lake, six, 18 July 1972 (AD); Clayoquot Arm of Kennedy Lake, four with one seen catching insects and carrying them away, probably to young (DFH); Toquart Bay area, one, 3 July 1971 (DFH); Edward King Island, one, 11 August 1969 (CJG); Sanford Island, one, 7 June 1970 (CJG); Klanawa River to Tsusiat Falls, one, 14 August 1972 (AD); Hobbs Creek to San Juan River, one, 23 August 1972 (AD).

The Warbling Vireo is rare summer in the PRNP area.

**Orange-crowned Warbler (La Fauvette verdatre)
Vermivora celata (Say)

J, F, M1, A17, M15, J63, J24, A2, S4, O, N, D = 126 records

This is certainly the most commonly seen of our wood warblers, occurring in shrub areas throughout the park. It arrives in mid-April in most years, although a sighting in the Tofino area was made on 31 March 1973 (AD). April is also the main month of arrival in other areas of southwestern British Columbia (Campbell et al., 1972; Tatum, 1972; Richardson, 1971). Our first records during four consecutive years were: 1969-22 April, one, Vargas Island (IMcTC); 1970-17 April, one, Hand Island (DFH); 1971-15 April, one, Green Point area (MEH); 1972-19 April, one, Ucluelet Inlet (DFH). Our latest fall sighting is 24 September (1972, Tofino Inlet, AD).

A nest with four eggs was found on Turtle Island, 24 May 1972 (DFH). This nest, a moss cup lined largely with deer hair, was about 2m above the ground in the crotch formed by a clump of Vaccinium against the trunk of a cedar. Three young had hatched by 2 June, but the nest was empty on 8 June, apparently a result of predation. A very young fledgling was caught by hand and examined near the Ucluelet

Dump on 17 July 1971 (DFH), and adults have been seen carrying nesting material and food on numerous occasions.

We have only a single record for the West Coast Trail area, a single bird seen at Pachena Bay on 7 August 1972 (AD), but visits there in June would undoubtedly result in sightings at many other locations. Some Phase I and Phase II locations follow:

Cleland Island, one singing, 29 June 1969 (MGS); Tofino, "lots", 14-15 May 1970 (DFH); Chesterman Beach, four, 27 April 1971 (DFH); Radar Hill (two) and Radar Beaches (three), 13 June 1972 (AD); Portland Point, one, 13 June 1972 (AD); Schooner Cove, eight, 6 June 1972 (AD); McLean Point Road, nine, 27 April 1972 (DFH); Grice Bay Trail, five, 23 June 1972 (AD); Incinerator Point, one, 28 April 1972 (DFH); north Long Beach, four, 7 June 1972 (AD); Green Point, three, 18 June 1972 (AD); Sandhill Creek, three, 10 July 1972 (AD); Rain Forest Trail, one, 18 June 1972 (AD); South Long Beach, four, 15 June 1972 (AD); Quisitis Headland, one, 10 June 1972 (AD); Florencia Bay, four, 19 June 1972 (AD); Florencia Island, two fledglings, 15 July 1968 (RWC); Goldmine Trail, 11, 1 July 1972 (AD); Lost Shoe Creek, four, 2 May 1972 (NR); Swan Lake, three, 21 June 1972 (AD); Kennedy Lake, six, 19 June 1972 (AD); Willowbrae Trail, one, 8 June 1972 (AD); Ucluelet Inlet, six, 7 May 1972 (DFH); George Fraser Islands, several flocking, 23 July 1970 (RWC); Clarke Island, 8-10, 16 September 1971 (JB); Benson Island, two, 23 June 1972 (DFH); Turtle Island, four, 14 June 1971 (DFH); Tiny Group, one, 2 June 1972 (DFH); Hand Island, six, 9 July 1972 (DFH); Nettle Island, three, 22 June 1972 (DFH);

The Orange-crowned Warbler is a common summer species in the PRNP area.

Nashville Warbler (La Fauvette à joues grises)
Vermivora ruficapilla (Wilson)

A single bird was seen near Maltby Slough on 23 September 1972 (AD). In 1971 there was a sighting in Victoria (Tatum, 1972), where the species is considered a "rare migrant." Campbell, Shepard and Drent (1972) listed the species as "rare transient" for Vancouver. Godfrey (1966) indicates that it occurs as a breeding species over much of southern British Columbia. Though we are quite certain of our sighting, we have no documentary evidence available and must for now consider the Nashville Warbler hypothetical for PRNP.

*Yellow Warbler (La Fauvette jaune)
Dendroica petechia (L.)

J, F, M, A1, M, J6, J2, A5, S5, O1, N, D = 21 records

We have not seen this bird often enough to establish migration dates for our area, but in 1971 it was seen between 1 May and 9 September in Victoria (Tatum, 1972) and from 1 May to 26 September in Vancouver (Campbell et al., 1972). Our only record before June was of a nice pair (male and female) seen at McLean Point on 27 April 1972 (DFH). Our latest record, also from 1972, was of two birds in Tofino on 1 October (AD).

We have no concrete evidence for local breeding, but Vancouver Island is considered within the theoretical breeding range of the species (Godfrey, 1966), and on 16 June 1971 a female was seen catching insects and carrying them away (DFH). We therefore suspect that at least some local nesting takes place, and naturalists should keep alert for an opportunity to confirm this suspicion.

Some locations other than those mentioned are:

Cleland Island, two, 28 August 1969 (MGS); Vargas Island, two, 1 June 1969 (DFH); Airport Road, one, 7 June 1972 (AD); Tofino Inlet, 12+, 24 September 1972 (AD); Incinerator Point, one male, 1 September 1968 (RWC); Green Point, one male, 30 August 1967 (RWC); Kennedy Lake, two on 24 June 1971 (JB); two on 19 June and one singing on 18 July 1972 (AD), and one at the head of Clayoquot Arm on 1 July 1972 (DFH); Clarke Island, one probably this species (JB); Bamfield, one each on 5 and 16 August 1965 (CJG).

The Yellow Warbler is common in summer in both Vancouver and Victoria (Campbell et al., 1972; Tatum, 1972), and the above records suggest that it may also occur fairly commonly in some of the areas adjacent (inland) to PRNP. But, for the park area generally it appears to be an uncommon migrant and a rare summer species.

*Yellow-rumped Warbler (La Fauvette à croupion jaune)
Dendroica coronata (L.)

J, F, M2, A10, M4, J3, J8, A3, S1, O, N, D = 31 records

Of our records, only four are of the subspecies formerly known as the Myrtle Warbler, and these are all from the month of April: 1969-29th, one at Long Beach; 1970-22nd, two at Tofino; 1972, 15-20 with at least two of the race D. c. auduboni in an alder stand at McLean Point on the 23rd, and two there on the 27th (all DFH). This white-throated subspecies occurs in our area only as a migrant, as is the case also for other south coastal British Columbia areas (Campbell et al., 1972; Tatum, 1972).

According to the above-mentioned references, the yellow-throated subspecies is rarely seen in the Lower Mainland in summer, but is seen more commonly and is believed to breed on southern Vancouver Island. It is common in migration in both areas, and some winter records for both have been obtained. Migrants arrive in late March and in April in these areas. Among our records, the earliest sighting for each of several years was: 1968-24 March, one, Bamfield (RWC); 1969-7 April, two, Vargas Island (DFH); 1971-16 April, one, Ucluelet Inlet (RP); 1972-23 April, at least two, McLean Point (DFH); 27 March, one, Maltby Slough area (AD). Our latest fall record, and the only one from September, was of a single bird seen flying far at sea (off Tofino) on the 12th of that month in 1970 (RWC).

Birds were contacted through June and July 1972 in the McLean Point vicinity: 7 June (one), 16 June (one), 24 June (four), 6 July (three singing), and 14 July (one), and we suspect some breeding occurred there. Also, an adult with one young bird was seen at Swan Lake on 7 July 1972 (all AD). Most of our other summer sightings are from late summer, and may involve migrants: 4 July 1968, one near Green Point (RWC); 25 July 1966, "several pairs in (Wickaninnish Provincial) park," (FB); 25 July (two), 18 August (one), Long Beach Campground area (RWC). We have not yet recorded the bird in Barkley Sound, and our records from the Phase III area come from areas outside park boundaries, on either end of the West Coast Trail: 24 March 1968, one

male, Bamfield (RWC); 19 April 1972, two, Botany Bay (RWC).

The Yellow-rumped Warbler is a locally uncommon (airport bog) summer species and an uncommon migrant in PRNP.

**Townsend's Warbler (La Fauvette de Townsend)
Dendroica townsendi (Townsend)

J, F, M, A4, M8, J50, J19, A4, S2, O, N, D = 87 records

This beautifully marked little bird is probably as abundant in our area as is the Orange-crowned Warbler, but it is much less conspicuous than that species because it spends much of its time high in the forest canopy where it is detected, mainly, by observers with a keen ear. It is found most often in the sea-fringing stands of Sitka spruce which may be found over much of the park shoreline.

The species is common in summer in both the Lower Mainland (Campbell et al., 1972) and southern Vancouver Island (Tatum, 1972), and was recorded from 3 May to 25 September in the former during 1971. In our area migrating flocks appear in mid-April: 1970-22 April, 35-45, Tofino (DFH); 1971-14 April, one flock, Green Point area (MEH); 1972-14 to 18 April, several flocks, Ucluelet Dump (MEH).

Mrs. M. (Peg) Whittington (pers. comm.) recorded spring arrival of this species in 1945 on 18 April (Green Point area). Our latest fall sighting was of two birds in Tofino on 13 September 1969 (RWC), but sightings after July are not common.

We suspect breeding on the basis of fledged young seen with adults on two occasions (four adults and two young on Grice Bay Trail, 7 July 1972; two adults and several young on Willowbrae Trail, 27 July 1972, both AD). Also, the fact that the bird is present throughout the summer is suggestive.

As with several other species we have discussed, the Townsend's Warbler has not been recorded often in the Phase III area (one record of three birds in the Hobbs Creek area, 24 August 1972, AD), but this is certainly because we have not been

there during an appropriate time of year. Records from Phases I and II follow:

Vargas Island, 12, 14 August 1970 (DFH); Tofino Inlet, one, 6 July 1971 (DFH); Mallard Lake, one, 7 June 1972 (AD); Radar Beaches, eight, 13 June 1972 (AD); Portland Point, two, 6 June 1972 (AD); Schooner Cove, eight, 6 June 1972 (AD); McLean Point, one, 10 May 1972 (NR); Grice Bay Trail, eight, 7 June 1972 (AD); north Long Beach, nine, 12 June 1972 (AD); Green Point area, "numbers", 2 September 1968 (RWC); Rain Forest Trail, one, 18 June 1972 (AD); south Long Beach, five, 15 June 1972 (AD); Quisitis Point, one, 10 June 1972 (AD); Florencia Bay, four, 8 June 1972 (AD); Lost Shoe Creek, one, 18 June 1972 (AD); Willowbrae Trail, 10, 29 June 1972 (AD); Ucluelet Inlet, one chased by a hummingbird, 2 June 1972 (MEH); Amphitrite Point area, one pair, 11 June 1972 (DFH, IMcTC); Benson Island, two, 23 June 1972 (DFH); Turtle Island, one, 2 June 1971 (JB); Dodd Island, two, 22 June 1970 (RWC); Nettle Island, one, 22 June 1972 (DFH); Lyall Point, two, 18 July 1968 (RWC).

The Townsend's Warbler is a common summer species in the PRNP area.

Blackpoll Warbler (La Fauvette rayée)
Dendroica striata (Forster)

A bird of this species was seen well, at close range, near McLean Point, 25 September 1972 (AD). We have no detailed field description or other documentary evidence, and this species is not mentioned among the 1971 birds of Vancouver or Victoria (Campbell et al., 1972; Tatum, 1972). We must therefore consider the Blackpoll Warbler hypothetical for PRNP. Naturalists should watch for it during migration.

MacGillivray's Warbler (La Fauvette des buissons)
Oporonis tolmiei (Townsend)

J, F, M, A, M6, J17, J4, A2, S1, O, N, D = 30 records

Godfrey (1966) indicates that this warbler prefers open, brushy areas, including logged sites, and this agrees well with our observations. It was recorded in Lost Shoe Creek logging slashes on 13 occasions (one to three birds) between 19 May

and 1 August 1972 (NR). AD also recorded it there three times during that period, and also in the following Phase I locations:

Radar Hill, one, 11 June 1972; McLean Point Road, one, 14 July 1972; Schooner Cove Road, one, 24 June 1972; north Long Beach, one, 11 June 1972; Goldmine Trail, one, 16 July 1972; Swan Lake, one, 19 June 1972; Kennedy Lake, five, 18 July 1972. These records throughout the summer suggest local breeding, but we have no other evidence for this.

We haven't sufficient sightings to establish periods of arrival and departure, but in 1971 the bird, a "common summer visitor", was recorded between 24 April and 3 October in the Victoria area (Tatum, 1972). Respective dates for Vancouver, where the species is considered "frequent summer, casual winter", were 2 May through 19 September during that year (Campbell et al., 1972). Our earliest sighting is 16 May 1972 (McLean Point area, NR), and our latest is 24 September 1972, two along Tofino Inlet (AD).

The MacGillivray's Warbler is an uncommon summer species in PRNP.

*Common Yellowthroat (La Fauvette masquée)
Geothlypis trichas (L.)

J, F, M, A, M1, J9, J4, A3, S2, O, N, D = 19 records

This colorful, lusty-voiced singer is very local in its PRNP distribution. Ten of our 19 records were from the pine bog areas adjacent to the McLean Point Road (AD, DFH), while most of the others were also from areas characterized by wetness of ground: Kennedy Lake area, one each on 17 August 1969 (RWC), 16 June 1971 (JB), and 19 June 1972 (AD); Schooner Cove Road, one, 24 June 1972 (AD); Cullite Creek, one immature in bog nearby, 20 August 1971 (JB); Keeha Meadows, one immature bird, 20 September 1971 (DFH).

Our earliest spring sighting was of a single bird at Lost Shoe Creek on 2 May

1972 (NR), and our latest fall record is of two birds in the McLean Point Road area on 25 September 1972 (AD). The species is "common summer" in both Vancouver and Victoria (Campbell et al., 1972; Tatum, 1972), with records from mid-April through early October in 1971. The bird sings commonly in those few areas at which it occurs, and it probably breeds locally.

The Common Yellowthroat is a locally common (generally rare) summer species in the PRNP area.

**Wilson's Warbler (La Fauvette à calotte noire)
Wilsonia pusilla (Wilson)

J, F, M, A2, M10, J39, J19, A11, S2, O, N, D = 83 records

This bright little warbler frequents shrub patches along our local roads, streams, and occasionally along the beaches. The species is listed as "common summer" in both the Lower Mainland and southern Vancouver Island, where it arrives in late April or early May and departs in late September or early October (Campbell et al., 1972; Tatum, 1972). On northwestern Vancouver Island, Richardson (1971) first saw the species on 30 April and last recorded it on 17 September during his year's stay there (1968-69).

We have recorded some earlier arrivals in our area (17 April 1970, one, Mence Island; 12 April 1971, one, Tofino, both DFH). First sighting in 1972 was of two birds at Schooner Cove on 3 May (NR). Our latest fall sighting over the years was of a single bird along the Goldmine Trail on 27 September 1972 (AD). Adults of this species were seen feeding a fledgling cowbird in July 1973 (Sandhill Creek, AD) and this indicates that they nested. Also, the presence of singing males throughout the summer is evidence strongly suggesting local breeding. Campbell (1968) reported that at least one pair occupied territory near his cabin in the Green Point area from 3 June through July in 1968.

We have records from all along our coast, including all three park units, as follows:

Vargas Island, one, 14 August 1970 (DFH); Beck Island, one male, 28 July 1969 (DF); Tofino, one collected, 5 May 1931 (Cowan, UBC 6561); Mallard Lake Trail, one, 7 June 1972 (AD); Radar Hill, Radar Beach, Portland Point (one each) and Schooner Cove (three), all 13 June 1972 (AD); McLean Point Road, four, 7 June 1972 (AD); Long Beach Airport Road, two, 7 June 1972 (AD); Grice Bay Trail, one, 26 July 1972 (AD); north Long Beach, seven males singing, 13 June 1972 (AD); Sandhill Creek, one, 9 July 1972 (AD); Rain Forest Trail, one, 18 June 1972 (AD); Florencia Bay, three, 8 June 1972 (AD); Florencia Island, one, 3 July 1972 (AD, DFH); Goldmine Trail, one, 16 July 1972 (AD); Swan Lake, one, 16 June 1972 (AD); Kennedy Lake area, one, 21 September 1969 (DFH); Willowbrae Trail, two, 8 June 1972 (AD); Ucluelet Inlet, one, 12 May 1972 (DFH); Amphitrite Point area, two singing, 24 June 1972 (DFH); Dodd Island, two on 22 June 1970 (RWC) and one on 22 May 1972 (DFH); Brabant Islands, one female, 10 August 1969 (DFH); Hand Island, one, 9 August 1972 (DFH); Edward King Island, one, 11 August 1969 (CJG); Bamfield, one male, 24 July 1970 (RWC); Pachena Bay, three, 3 August 1972 (AD); Camper Bay area, one, 24 August 1972 (AD); Hobbs Creek to San Juan River, two, 23 August 1972 (AD).

The Wilson's Warbler is a common summer species in the PRNP area.

American Redstart (La Fauvette flamboyante)
Setophaga ruticilla (L.)

A female or immature male of this species was seen about four miles north of Ucluelet on 14 November 1972 (AD). A detailed field description, now on file at the British Columbia Provincial Museum, was prepared on the spot, and photographs were obtained (PDF 292).

The American Redstart is accidental on the 1972 Checklist of Vancouver Birds (Campbell and Shepard, 1972a) and must certainly be considered the same for the PRNP area.

Western Meadowlark (La Sturnelle de l'Ouest)

Sturnella neglecta Audubon

J, Fl, Ml, A, Ml, J, J, A, S, O6, N3, D = 12 records

All of our sightings are: Vargas Island, one on 8 November 1968 and another in mid-November 1970 (DFH); Tofino area, one, on 15 May 1970 (RWC), one on 19 October 1971 (DFH), and at least one sighting in each of four weeks in October 1972, and another during the third week of February 1973 (AD); Long Beach airport, one, 13 March 1973 (DFH); Highway 4 Jct., at least two, 19 October 1971 (DFH).

Richardson (1971) saw a meadowlark on 8 November 1968 in the Browning Inlet area, and the species is "common migrant and uncommon resident" on southern Vancouver Island (Tatum, 1972). It is clearly just passing through our forested area, and it tends to choose open areas while it is here, e.g., meadows, airport runways, and back yard lawns.

The Western Meadowlark is a rare migrant through the PRNP area.

Yellow-headed Blackbird (Le Carouge à tête jaune)

Xanthocephalus xanthocephalus (Bonaparte)

A single male bird was observed on 6 May 1972 (MEH) and on the following day (DF) in Ucluelet. At about the same time, Mrs. H. Sadler (pers. comm.) saw one in Tofino, and this was probably the same bird. In addition, a single male was seen in Bamfield on 12 August 1965 (CJG). The species has been seen just seven times in the Victoria area since records have been kept there (Tatum, 1972), and all sightings on Vancouver Island are considered unusual. The Yellow-headed Blackbird is accidental in the PRNP area.

Red-winged Blackbird (Le Carouge à épaulettes)
Agelaius phoeniceus (L.)

J, F, M1, A1, M, J1, J3, A1, S, O2, N, D = 9 records

Our west coast records, in chronological order, follow:

16 July 1960, one, Stubbs Island (CJG); 20 March 1961, one, Green Point area (Mrs. P. Whittington, pers. comm.); 8 August 1961, one collected in Clayoquot Sound (B. Morly, BCPM 10749); 11 July 1968, one juvenile male, Lyall Point (RWC); 20 July 1970, two juveniles (MGS); 4 October 1970, three adult males and four females or immature birds, Ououkinsch River estuary (DFH); 5 April 1972, two females, Ucluelet Inlet (DFH); 5 July 1972, one female, Swan Lake (AD); 5 October 1972, six including at least two adult males, Maltby Slough (DFH, AD).

The species is an "abundant resident" in the Victoria area (Tatum, 1972), but we know of no breeding colonies on the west coast of Vancouver Island. Richardson (1971) saw eight immature birds on 29 August 1968, but saw no other red-wings during his year's stay on the northwestern end of the island. We suspect that eventually a few breeding birds will be found in our area, probably along some of our small local lakes. The Cheewhat area, especially, should be watched, as the habitat there looks more like that which normally supports blackbirds than do any other park areas.

The Red-winged Blackbird is a rare migrant in the PRNP area.

Northern Oriole (L'Oriole Nord)
Icterus galbula (L.)

Irving (1953) reports that a female of this species (subspecies formerly known as Bullock's Oriole) hit the Carmanah Lighthouse on 26 August 1952. The specimen is now housed in the B.C. Provincial Museum (BCPM 10057).

The Northern Oriole is accidental in PRNP.

Brewer's Blackbird (Le Mainate à tête pourprée)
Euphagus cyanocephalus (Wagler)

J, F, M2, A, M1, J, J, A, S, O1, N1, D = 5 records

Since the bird is a "common resident" in the Lower Mainland (Campbell et al., 1972) and an "abundant resident" on southern Vancouver Island (Tatum, 1972), its comparative absence from our area, even as a migrant, is surprising. Clearly the species does not find our wet forestlands suitable. Our only sightings follow:

24 March 1968, one female, Darling River (RWC); 14 March 1969, one adult pair, Tofino (DFH); 15 May 1970, twenty, Tofino (RWC); 24 October 1972, one, north Long Beach (SHR); 15 November 1972, one, Tofino (AD).

The Brewer's Blackbird is a very rare migrant in the PRNP area.

**Brown-headed Cowbird (Le Vacher)
Molothrus ater (Boddaert)

J, F, M, A4, M14, J6, J2, A21, S1, O1, N, D = 49 records

Adult birds appear in late April, and are seen rather commonly from then until about the third week in May. Our first spring sightings have been remarkably similar during recent years (April 24th, three in Tofino; 26th, one at McLean Point; 26th, two females at Echachis Island; 27th, two males at Long Beach, for 1969-1972 respectively, all DFH). Most sightings are of pairs and small flocks (up to 10 birds) during this season, but a few larger groups have been documented. A flock of 50 was seen in Tofino on 9 May 1971, and another of c200 appeared in the Ucluelet Dump on 6 May 1972 (both DFH).

Sightings are not common during the mid-summer period (June and July), and all eight of the records we have accumulated during that time have involved single birds. Frequency of sightings and flock size both increase in August as locally raised juveniles make their debut and migrants, mostly juveniles, begin to move through.

Our only sightings after August were of one adult male in Tofino on 24 September 1970, and a flock of 20 birds near the Esowista Reserve area on 26 October 1971 (both DFH). Small numbers winter in Vancouver (Campbell et al., 1972) and Victoria (Tatum, 1972), but in 1971 most birds had left the former area by 5 September and the last fall record in the latter was 2 October. Richardson (1971) saw the species only during the last week of July and in August and May on northwestern Vancouver Island.

Nests of the Red-eyed Vireo, Swainson's Thrush, and Yellow-headed Blackbird (Vancouver) and Orange-crowned Warbler, MacGillivray's Warbler, Common Yellowthroat, Rufous-sided Towhee, White-crowned Sparrow and Song Sparrow (Victoria) were known to have been parasitized by this species in 1971 (Campbell et al., 1972; Tatum, 1972). Note that many of these species are also available here. The only specifically identified foster parents among our records were a "very busy" female Townsend's Warbler, which was seen feeding two fledgling cowbirds (Blunden Island, 3 August 1961, CJG) and a pair of Wilson's Warblers feeding one near Sandhill Creek in July 1973 (AD). The Townsend's Warbler record is of special interest in that in the definitive work on cowbird nest parasitism (Friedmann, 1963) this species was not mentioned. Our earliest record of an immature bird was 10 June 1968, a single sitting on a telephone wire near Incinerator Point (RWC). It is quite likely that this bird was also a local product.

We have obtained no records from the Broken Group Islands, but see no reason why they should not occur there occasionally, at least on migration. We have 14 records from Cleland Island (MGS, DFH) which is farther offshore and smaller than most islands in Barkley Sound. Following are locations not mentioned previously:

Schooner Cove, one male, 29 August 1967 (RWC); Long Beach Airport, one, 12 May 1972 (DFH); Green Point, one adult male, 24 June 1968 (RWC); Highway 4 Jct., one, 19 June 1972 (AD); Wya Point area, six, 5 May 1971 (DFH); Ucluelet, 8-10, 19 May 1972 (DFH); Pachena Bay, 13, 3 August 1972 (AD); Darling River, one, 14 August 1972 (AD).

The Brown-headed Cowbird is an uncommon summer bird (perhaps common during migration) in the PRNP area.

Western Tanager (Le Tangara à tête rouge)
Pirange ludoviciana (Wilson)

J, F, M, A, Ml, J, Jl, A, S, O, N, D = 2 records

An adult male was seen along Highway 4 east of the junction on 23 July 1970 (RWC), and an adult pair was observed frequently throughout 16 May 1971 in an orchard near the head of Ucluelet Inlet (DFH). Richardson (1971) saw the species only on 25 August 1968 during his year's stay on Northwestern Vancouver Island, and Tatum (1972) lists the bird as an "uncommon summer visitor" in the Victoria area. Irving (1953) reported that he saw the bird occasionally during migration at the Carmanah Lighthouse.

The Western Tanager is a very rare migrant in the PRNP area.

Black-headed Grosbeak (Le Gros-bec à tête noire)
Pheucticus melanocephalus (Swainson)

CJG, a reliable observer, reported hearing a male of this species singing on Sanford Island (near Bamfield), on 9 August 1967, and Irving (1953) saw a pair near Carmanah Lighthouse on 24 August 1951. The species is "uncommon summer" in the Victoria area (Tatum, 1972), and Godfrey (1966) indicates that its known breeding range on Vancouver Island comprises approximately the southern one-third of the island. The fact that the above records were obtained from the southern-most of our park units is consistent with this fact, and the birds involved were probably post-breeding wanderers from the south. They perhaps do not cross Barkley Sound, although they may eventually go around. BBC reported observations of the bird in Port Alberni during winter 1972.

With the information we have, we can only consider the Black-headed Grosbeak a very rare fall bird in the PRNP area.

Evening Grosbeak (Le Gros-bec errant)
Hesperiphona vespertina (Cooper)

J, F, M, A, M, J, J, Al, S, Ol, Nl, D = 3 records

An adult female of this species was seen in the Green Point area, feeding on fruits of the black twinberry, on both 30 and 31 August 1967 (RWC). The only sightings since that time have been of five seen in the Incinerator Point area on 24 October 1972 (SHR), and one near Ucluelet on 14 November of that year (AD). The species occurs rather commonly in other areas of southwestern British Columbia (Campbell et al., 1972; Tatum, 1972), and is described as "irruptive" by the latter author. Local feeding conditions might enhance its local occurrence in some years, but the Evening Grosbeak generally appears to be a very rare fall species in the PRNP area.

*Purple Finch (Le Roselin pourpré)
Carpodacus purpureus (Gmelin)

J, F, M2, A3, M6, J8, J7, A, S, Ol, N, D1 = 28 records

This bird is most conspicuous to the ear. Those seen are usually well up near the tops of trees, and that can be a considerable distance in some of the natural areas of PRNP. The species occurs throughout the year in both the Lower Mainland (Campbell et al., 1972) and southern Vancouver Island (Tatum, 1972), and our two fall and winter sightings suggest that the same is true here. We have not recorded the species in Phase III, however, it probably occurs there; following are some sighting locations:

Vargas Island, two, 15 October 1970 (DFH); Tofino, often heard singing in spring, eg., 12 April 1971 (DFH); Wickaninnish Island, female seen and male heard singing, 25 April 1971 (DFH); Maltby Slough area, one, 17 December 1972 (AD); McLean Point area, birds heard and/or seen on 8, 16, 28 May, 1, 7, 13, 30 June, 14, 19, and 21 July (NR, AD, DFH); Grice Bay Trail, one, 15 July 1972 (AD); Incinerator Point area, three, 19 July 1972 (AD); Sandhill Creek, one, 20 July 1972 (AD); Kennedy Lake, three, 19 June 1972 (AD);

Ucluelet, at least two, 11 June 1972 (DFH); Turtle Island, one heard, 5 June 1971 (DFH).

The Purple Finch is an uncommon (locally common, e.g., McLean Point alder woods) resident of the PRNP area.

Pine Grosbeak (Le Gros-bec des pins)

Pinicola enucleator (L.)

J1, F, M1, A, M, J, J, A, S, O, N1, D = 3 records

One bird of this species was reported seen near the Ucluelet home of BBr during the winter of 1970. Snow was present at the time. Our other sightings are of c15 birds (of which none were adult males) near the Kennedy Lake swim beach on 29 November 1971, (DFH), one male eating mountain ash berries near the head of Ucluelet Inlet on 27 January 1972 (MEH), and one bird seen at McLean Point on 4 March 1972 (NR).

Pine Grosbeaks are "rare residents" in the Lower Mainland (Campbell et al., 1972), and apparently were not seen in 1971 in the Victoria area (no listing in Tatum, 1972). It probably occurs mostly in mountain areas on Vancouver Island, and comes down to our area only when weather forces it to.

The Pine Grosbeak is a very rare winter bird in PRNP.

**Pine Siskin (Le Chardonneret des pins)

Spinus pinus (Wilson)

J1, F4, M1, A, M4, J10, J14, A15, S3, O3, N, D = 55 records

Campbell (1968) recorded an incidence of nesting in a spruce tree near Incinerator Point. The number of our summer records suggests that the species breeds here rather commonly. It is likely that this seed-eater, in common with some others such as the Red Crossbill, is more abundant locally in those years during which

conifer cone crops are heavy and, conversely, it may appear only rarely in years when cone crops fail.

Following are park area locations at which it has been seen:

Vargas Island, two, 10 September 1972 (DFH); Tofino, 100+, 7 May 1970 (DFH); Maltby Slough area, present during eight of 25 weeks during the period 8 October 1972-31 March 1973 (AD); Portland Point, two, 6 June 1972 (AD); Long Beach campground area, c20, 24 June 1972 (NR); Grice Bay Trail, 14, 7 June 1972 (AD); Rain Forest Trail, four, 1 July 1972 (AD); Sandhill Creek area, one, 10 July 1972 (AD); Florencia Bay, one, 7 July 1972 (AD); Goldmine Trail, one, 1 July 1972 (AD); Swan Lake, two, 6 June 1972 (AD); Kennedy Lake, six, 18 July 1972 (AD); Willowbrae Trail, two, 27 July 1972 (AD); Chalk Island, one, 28 October 1972 (DFH); Bamfield, several, 12 June 1970 (CJG); Pachena Bay, one, 4 August 1972 (AD); Michigan Creek, two, 6 August 1972 (AD); Klanawa River, two, 14 August 1972 (AD); Port San Juan, one, 21 August 1972 (AD).

The Pine Siskin is an uncommon resident (common in late summer 1973) in the PRNP area.

*American Goldfinch (Le Chardonneret jaune)
Spinus tristis (L.)

J, F, M, A, M24, J32, J20, A3, S3, O, N, D = 82 records

This gaudy little bird is most commonly seen in open disturbed areas, such as roadside ditches, where grass and "weeds" such as thistle provide its food. The goldfinch is resident in the Vancouver and Victoria areas (Campbell et al., 1972; Tatum, 1972), but occurs primarily in summer in the PRNP area. First arrivals are in early to mid-May: 1970-14 May, 15-20 in Tofino; 1971-5 May, two in Ucluelet area; 1972-7 May, 20-25 near head of Ucluelet Inlet (all DFH). Individuals, pairs and small flocks are seen and heard pretty much throughout the early summer, and almost certainly breed here. DFH saw a female carrying nesting material near Ucluelet on 4 July 1972.

Sightings after the end of July are not at all common. Several birds were seen in the Long Beach area 31 August to 2 September 1964 (BW), and in 1967 RWC reported sightings on 7 August (two), 3 September (six), and 6 September (four) from the same area. However, during the years 1968-1972 our only record after July is of

a single bird seen at Pachena Bay on 4 August 1972 (AD). The bird's occurrence here may be sporadic, and the duration of stay is probably related to the seasonal duration of food plants. The relatively dry month of July, in most years, may essentially terminate seed production.

Our only West Coast Trail record is that from Pachena Bay mentioned earlier. In the Broken Group we have records only from Clarke Island, where there were three on 25 May 1971 and several on 26 May 1972 (DFH). Some Phase I area locations follow:

Cleland Island, one pair, 23 May 1970 (MGS); Vargas Island, 8-10, 10 June 1969 (DFH); Wickaninnish Island, one pair, 18 July 1969 (DFH); Chesterman Beach, five, 8 May 1931 (IMcTC); McLean Point Road, one male, 7 June 1972 (AD); Portland Point, one, 6 June 1972 (AD); Schooner Cove, one, 25 July 1972 (AD); Incinerator Point area, three, 12 June 1972 (AD); Long Beach airport, six, 8 May 1972 (DFH); south Long Beach, 13, 15 June 1972 (AD); Florencia Bay, two, 30 June 1972 (AD); Goldmine Trail, one, 16 July 1972 (AD); Lost Shoe Creek road, four, 18 June 1972 (AD); Swan Lake, one male, 19 June 1972 (DFH); Kennedy Lake, one, 18 July 1972 (AD); Ucluelet, 15, 15 May 1972 (DFH).

The American Goldfinch is uncommon summer (though common during spring migration) in the PRNP area.

*Red Crossbill (Le Bec-croisé rouge)
Loxia curvirostra L.

J4, F5, M3, A, M, J12, J12, A19, S4, O3, N5, D3 = 70 records

As we suggested earlier in our account of the Pine Siskin, some of our seed-eating birds are probably rather sporadic in annual abundance, their numbers being directly related to the extent of local seed production in any given year. The Red Crossbill is such a bird (see Godfrey, 1966), and 1972 and 1973 have apparently been good years, as sightings have been common. While the previous sentence was being written (15 August 1973, Tofino) a flock passed overhead, chip-chipping in characteristic fashion.

Crossbills are most often heard first, and then may be seen feeding in and flying between the very tops of tall conifers. Campbell (1967, 1968) found them present within Wickaninnish Provincial Park boundaries throughout two summers, and other observers have reported spring and summer sightings. That they also occur throughout the winter is shown by the fact that they were listed as present on 21 of the 25 weeks between 8 October 1972 and 31 March 1973 in the Tofino area (AD). Sightings from all three park units have been recorded, and a list of these follows:

Vargas Island, 15, 12 September 1972 (DFH); Wickaninnish Island, flock, 22 February 1970 (DFH); Lemmens Inlet, nine, 11 August 1972 (DFH); Radar Beach trail, 10, 13 June 1972 (AD); McLean Point, c15, 24 July 1972 (NR); Grice Bay Trail, one singing, 26 July 1972 (AD); Portland Point, 30, 6 June 1972 (AD); Green Point area, c60, 6 June 1972 (AD); Wickaninnish Inn, flock of c150, 1 July 1966 (FB); Rain Forest Trail, flock, 18 June 1972 (AD); Florencia Island, 30+, 2 August 1968 (RWC); Goldmine Trail, 10, 27 July 1972 (AD); Swan Lake, 20, 14 July 1972 (AD); Willowbrae Trail, two calling, 17 July 1972 (AD); Dodd Island, c15, 18 June 1972 (DFH); Turtle Island, several small flocks, 15 September 1972 (DFH); Cooper Island, six, 23 June 1970 (RWC); Lyall Point, four, 11 July 1968 (RWC); Diana Island, 8-12, 28 August 1970 (CJG); Bamfield, 15, 14 August 1964 (CJG); Keeha Bay, 30-40, 12 June 1970 (CJG); Pachena Bay, small flocks, 3 August 1972 (AD); Black River area, five, 4 August 1973 (AD); Michigan Creek, one small flock, 5 August 1972 (AD); Klanawa River area, 12, 14 August 1972 (AD); Camper Bay area, small flocks, 24 August 1972 (AD); Owen Point area, two, 25 August 1972 (AD).

The Red Crossbill appears to be an uncommon to common resident of PRNP.

Rufous-sided Towhee (Le Tohi commun)

Papilo erythrophthalmus (L.)

J7, F1, M9, A1, M, J1, J, A, S, O8, N4, D11 = 42 records

Our only summer record is of a bird heard near Incinerator Point on 6 June 1968 (RWC). It seems evident that towhees do not breed along the immediate coast in our area, but perhaps they do so somewhat farther inland. In the Lower Mainland (Campbell et al., 1972) the species is considered a "common resident" while

it is an "abundant resident" on southern Vancouver Island (Tatum, 1972).

We have not seen this bird in the Broken Group Islands or along the West Coast Trail, but it is likely (especially in the case of the latter) that this is because winter observations are few from these areas. Some local records follow:

Vargas Island, one, 15 October 1970 (DFH); Tofino, one, 10 December 1969 (DFH); Maltby Slough area, present 17 of 25 weeks during the period 8 October 1972-31 March 1973 (AD); Long Beach, one, 7 January 1972 (DFH); Green Point, one, 16 October 1972 (SHR); McLean Point, one, 18 October 1972 (SHR); Sandhill Creek area, one, 3 March 1972 (NR); Wickaninnish Inn, one, 20 April 1964 (RWC); Kennedy Lake, one, 17 December 1971 (DFH); Willowbrae Trail, one, 14 December 1971 (MEH); Ucluelet Dump, three males, 6 January 1969 (DFH); Ucluelet Inlet, at least three, 25 January 1972 (DFH); Ucluelet, one, 25 December 1971 (DFH).

The Rufous-sided Towhee is an uncommon winter bird in the PRNP area.

Savannah Sparrow (Le Pinson des prés)
Passerculus sandwichensis (Gmelin)

J1, F, M1, A19, M41, J2, J, A, S21, O12, N, D = 97 records

This species arrives in our area during the latter parts of April and is common on local beaches and grassy areas from then through the middle of May. First and last spring records during four consecutive years were: 1969-19 April through 18 May; 1970-25 April through 30 May; 1971-25 April through 18 May; 1972-23 April through 24 May (all DFH, except 30 May 1970 record from Cleland Island=MGS). A bird was also recorded on 6 June 1970 at Cleland Island (MGS), and another was seen near the Long Beach airport on 7 June 1972 (AD). The first was probably a straggler of the spring movement, but the airport bird may have been a breeder. Airport personnel did not appreciate birdwatchers on their fields (likely Savannah Sparrow habitat) and follow-up visits were not made. There are no other June records and none from July or August.

The fall movement through the PRNP area, like that in spring, is a fairly

well-defined period of about four or five weeks (mid-September through mid- to late October). First and last records for 1969 through 1972 were 13 September (RWC)-10 October, 18 September-11 October, 16 September (JB)-27 October, and 9 September-27 October respectively (all DFH except those indicated otherwise). No observations after 15 October involved more than two birds. A few individuals are known to winter in other southwestern British Columbia areas (Campbell et al., 1972; Tatum, 1972), and apparently an occasional bird stays or wanders into our area during that season as well: 10 January 1969, one, Vargas Island (DFH); 24 March 1968, one, Darling River (RWC).

On a foggy morning in early May 1972, 30 Savannah Sparrows which had died in a collision with the Cape Scott Lighthouse (northwest Vancouver Island) were picked up by the Lightkeeper, Mr. G. Sothcott, and sent to us at the University of British Columbia Vertebrate Museum. Upon examination, we found that all 30 of these birds were males. This was of some interest in that King et al. (1965), while discussing differential migration of the sexes among bird species, have concluded that though there seems to be common acceptance that it occurs, there are few supporting data. A more complete account of the Cape Scott sample and its significance will be presented elsewhere (Hatler and Campbell, In Prep.).

Savanah Sparrows have been seen at the following locations in the PRNP area:

Cleland Island, 30, 11 May 1970 (MGS); Vargas Island, 12-15, 11 October 1970 (DFH); Tofino area, large migration, 7 May 1931 (IMcTC); Chesterman Beach, two collected, 22 May 1931 (Racey, UBC 6061-62); McLean Point, two, 23 April 1972 (DFH); Grice Bay meadows, nine, 24 April 1972 (DFH); Indian Island, one, 27 October 1971 (DFH); Long Beach, 64, 25 September 1971 (RWC); Box Island, Sandhill Creek, and Florencia Bay, many, 27 and 28 September 1971 (JB); Florencia Island, some, 26 September 1971 (DFH, JB); Swan Lake, four, 19 May 1972 (NR); Kennedy Lake, c10, 26 April 1969 (DFH); Ucluelet Inlet, three, 28 April 1972 (DFH); Wouwer Island (ten) and Clarke Island (six), 16 September 1971 (JB); Turret Island, a few, 18 May 1969 (DFH); Turtle Island, about six, 2 May 1972 (DFH); Walsh Island, one, 24 May 1972 (DFH); Faber Islets (five) and Village Reef (two), 10 May 1972 (DFH); Sarita Bay, some, 22 September 1971 (DFH); Keeha Meadows, some, 20 September 1971 (DFH); Pachena River estuary, "lots", 19 September 1971 (DFH).

The Savannah Sparrow is a common migrant in the PRNP area, with occasional individuals present in the winter months.

**Dark-eyed Junco (Le Junco ardoisé)
Junco hyemalis (L.)

J5, F2, M16, A13, M5, J16, J12, A6, S5, O6, N7, D8 = 101 records

Our Dark-eyed Junco is the subspecies formerly known as the Oregon Junco. It is perhaps the most conspicuous of our small winter birds, with flocks of up to 40 often seen along local roads and in back yards over the whole Esowista Peninsula. The bird is characteristically an ecotonal species, occurring in small openings and edges in forested regions (see Godfrey, 1966). Locally, bogs and man-made openings (logged areas, towns, campgrounds) answer to its needs. NR found it to be one of the most common species in logged areas near Lost Shoe Creek and near the head of Grice Bay, and he indicated that it nested in these areas in 1971. On 12 June 1969, a very solicitous junco, obviously nesting, was seen in a bog on Vargas Island (DFH), and at least two adults occupied territories in the Long Beach campground area in 1968 (RWC). A female with three fledged young was seen at Kennedy Lake on 17 August 1969, and another with one young appeared there on the same date in 1972 (both RWC). AD saw an adult with a single young bird on the Goldmine Trail on 16 July 1972.

Most summer observations involve small numbers of birds (one to five) at areas somewhat off the beaten track, so that the general impression one gets is that the species is rather rare during this time. However, visits to the airport bog or a logging slash are almost certain to turn up at least one or two birds. From about October through March, flocks of ten or more birds are often seen flashing across roadways everywhere, and they are usually the most common bird at the few winter feeding stations which are maintained in this area. Juncos were listed as present

during 19 of 25 weeks during the October 1972-March 1973 season in the Maltby Slough area (AD).

Some locations follow:

Vargas Island, 35-40, 12 January 1971 (DFH); Tofino, 35+, 18 December 1969 (DFH); McLean Point Road, four, 27 April 1972 (DFH); Grice Bay Trail, one, 15 July 1972 (AD); Schooner Cove, one, 6 June 1972 (AD); Green Point area, one, 13 June 1972 (AD); Goldmine Trail, one, 1 July 1972 (AD); Lost Shoe Creek area, 13 sightings (1 to 11 birds) from 25 May to 3 August 1972 (NR, AD); Swan Lake, three, 24 July 1972 (AD); Kennedy Lake, several, 29 November 1971 (DFH); Ucluelet Inlet, 25+, 18 March 1972 (DFH); Ucluelet, 20+, 25 December 1971 (DFH); Effingham Island, two, 14 September 1971 (JB); Clarke Island, four, 17 September 1971 (JB); Turtle Island, 8-10, 8 April 1972 (DFH); Hand Island, one, 20 April 1971 (DFH); Toquart Bay, one, 21 April 1971 (DFH); Barkley Sound, a few, 15 August 1967 (CJG); Bamfield, one, 19 August 1968 (CJG); Sarita Bay, one, 22 September 1971 (DFH); Pachena Bay, two, 3 August 1972 (AD).

The Dark-eyed Junco is a common resident, especially in winter, in the PRNP area.

Chipping Sparrow (Le Pinson familier)
Spizella passerina (Bechstein)

J, F, M, A, M1, J2, J, A, S, O, N, D = 3 records

Our records are: 4 June 1970, one in Bamfield (CJG); 10 May 1971, one near the head of Ucluelet Inlet (DFH); 1 June 1972, one along the McLean Point Road (DFH, AD). Irving (1953) wrote of this species, "Every year one or more single birds were to be found around the buildings, and in the garden, for a day or two" (Carmanah Lighthouse). The Chipping Sparrow is a common summer bird in the Vancouver and Victoria areas (Campbell et al., 1972; Tatum, 1972), but in PRNP it is a very rare spring species.

Harris's Sparrow (Le Pinson à face noire)
Zonotrichia querula (Nuttall)

A single immature bird of this species was seen on Chalk Island on 26 October 1972 (DFH). A detailed field description was prepared and is on file at the B.C. Provincial Museum. The species is "rare winter" in both the Lower Mainland (Campbell et al., 1972) and southern Vancouver Island (Tatum, 1972). Until further records are obtained, we can say only that the Harris's Sparrow is very rare in PRNP.

**White-crowned Sparrow (Le Pinson à couronne blanche)
Zonotrichia leucophrys (Forster)

J, F, M, A5, M4, J12, J11, A2, S2, O3, N, D = 39 records

Godfrey (1966) indicates that this is not a forest bird, and in our area we might expect to find it in disturbed areas, in brush at woodland edges and among stunted spruce on the wind-swept coast. All but eight of our records are from summer 1972, when our more extensive field effort plus that of NR in logged study areas within the park led to many more encounters with the bird than is usual. From 18 May to 2 August 1972, observations of one to nine birds were made at least 10 times in a single logging slash near Lost Shoe Creek (NR). The bird has been heard singing at several park locations and certainly nests. CJG observed an adult with young on Stubbs Island, 13 July 1960, and on 21 June 1970, DFH saw a pair of birds whose behaviour strongly suggested they had a nest nearby (Olson Road, Tofino).

Some locations in addition to those mentioned previously follow:

Tofino Inlet, one, 3 October 1972 (AD); McLean Point Road, one, 23 April 1972 (DFH); Sandhill Creek, one, 14 July 1972 (AD); Wickaninnish Inn, several, 20 April 1964 (RWC); Lost Shoe Creek road, four, 8 June 1972 (AD); Goldmine Trail, two singing, 1 July 1972 (AD); Swan Lake, one, 7 July 1972 (AD); Kennedy Lake, some, 21 September 1969 (DFH); Highway 4 Jct., one, 20 April 1972 (DFH); Turtle Island, one, 2 May 1972 (DFH); Chalk Island, one immature bird, 26 October 1972 (DFH); San Juan River, three, 22 August 1972.

This species winters at least in small numbers in other southwestern British

Columbia areas (Campbell et al., 1972; Tatum, 1972) but we have no evidence that it does so here. The White-crowned Sparrow is an uncommon summer bird in the PRNP area.

Golden-crowned Sparrow (Le Pinson à couronne dorée)
Zonotrichia atricapilla (Gmelin)

J, F, M, A22, M12, J, J, A, S3, O3, N, D = 40 records

This handsome sparrow is present in fair numbers for a short, rather rigidly defined period in spring, and trickles through during a somewhat less defined period in the fall. All of our spring sightings are from 19 April to 16 May; records for four consecutive years follow: 1969-one in Tofino on 19 April, 50+ and 25+ on 26 and 27 April respectively, no other records (DFH); 1970-(apparently a late year) first reported 7 May (R. Folker to DFH), lots present 14 and 15 May (DFH), last sighting of one on 16 May (Cleland Island, MGS); 1971-four on Hand Island on 20 April, last sighted (10-12) near Green Point on 1 May (DFH); 1972-one near Kennedy Lake on 22 April, seen regularly everywhere through 2 May, last seen (one) at Ucluelet on 11 May (DFH).

Fall observations are mostly of young birds: 15 September 1969, about six, Tofino (DFH); 24 September 1970, one immature, Vargas Island (DFH); 29 September 1971, several immatures, Ucluelet Inlet (DFH); 4 October 1972, 8-10 immature birds, Maltby Slough area (DFH); weeks of 8 and 22 October 1972, some, McLean Point (AD). Our seasonal movement records are in complete agreement with those of Campbell et al. (1972) for the Vancouver area, where migration was evident from mid-April through mid-May and mid-September through mid-October. The species winters rarely there and commonly in Victoria (Tatum, 1972), but apparently not at all on the west coast of Vancouver Island.

These sparrows are seen most often on beaches, in open woods and meadows, and in towns on lawns and gardens (where they are considered a threat by local

green-thumbers). Some locations not listed above follow:

Chesterman Beach, several, 25 April 1969 (DFH); McLean Point, 6-10, 23 April 1972 (DFH); Grice Bay meadows, four, 24 April 1972 (DFH); 1972 (DFH); Incinerator Point area, 10, 27 April 1972 (DFH); Sandhill Creek, two, 24 April 1972 (DFH); Swan Lake, four, 27 April 1972 (DFH); Chalk Island (20) and Turtle Island, (20+ with Savannah and White-crowned Sparrows), 2 May 1972 (DFH).

The Golden-crowned Sparrow is a migrant (common spring, rare fall) in PRNP.

White-throated Sparrow (Le Pinson à gorge blanche)
Zonotrichia albicollis (Gmelin)

A beautiful adult individual of this species was seen in a Vargas Island meadow on 14 November 1968 (DFH). We also have a certain sighting of one White-throated Sparrow with Golden-crowned Sparrows at McLean Point, 29 September 1972 (AD). In 1971 there apparently were no sightings in the Lower Mainland (Campbell et al., 1972), but two birds were photographed (PDF 158 and 160) in Victoria (Tatum, 1972) where the species is designated "rare winter"

The White-throated Sparrow is a very rare migrant in the PRNP area.

**Fox Sparrow (Le Pinson fauve)
Passerella iliaca (Merrem)

J7, F5, M5, A12, M17, J25, J29, A3, S4, O9, N4, D3 = 123 records

IMcTC found birds nesting on Cleland Island as early as 9 May in 1931, and saw fledged young on 22 May of that year. On 25 June 1969, an adult was seen feeding young birds on Cleland Island (MGS), and AD saw three adults with two or three young along north Long Beach on 13 June 1972.

In the winter months, this bird is conspicuous in its scratching about in litter under beach-fringing shrubbery, especially salal, and it often feeds on amphipods among windrows of marine vegetation on winter beaches. In summer its

lusty song is common from forest edges in most of the park. We have few records from the West Coast Trail area, but this is probably because of our relatively small amount of observation time there. Most of our Phase III work has been done in August, and for some reason Fox Sparrow sightings during that month have not been common anywhere. Perhaps our summer birds winter farther south and have moved on by that time, and those birds which move in to our area for the winter do not do so until later.

Following are locations at which we have seen this species:

Vargas Island, 10-12, 11 January 1969 (DFH); Wickaninnish Island, four very dark (almost pure black) birds, 6 July 1970 (DFH); Tofino, c10, 27 April 1969 (DFH); Lemmens Inlet, one, 6 July 1971 (DFH); Chesterman Beach, one pair, 8 May 1971 (IMcTC); Maltby Slough area, present on 19 of 25 weeks during the period 8 October 1972-31 March 1973 (AD); McLean Point Road, two, 21 June 1972 (AD); Indian Island, three, 27 October 1972 (DFH); Grice Bay Trail, one, 15 July 1972 (AD); Schooner Cove, one, 13 June 1972 (AD); Un-named, timbered islet south of Portland Point, about six, 2 July 1972 (DFH, AD); Box Island, three, 27 September 1971 (JB); Incinerator Point area, four, 12 June 1972 (AD); Green Point, one, 22 June 1972 (AD); Sandhill Creek, one, 10 July 1972 (AD); Florencia Island, one, 2 August 1968 (RWC); Florencia Bay, one, 22 June 1972 (AD); Goldmine Trail, three, 1 July 1972 (AD); Kennedy Lake, four, 17 December 1971 (DFH); Ucluelet Inlet, one, 24 January 1972 (DFH); Janson Island, three, 4 July 1972 (DFH); Benson Island, two, 23 June 1972 (DFH); Clarke Island, one, 9 July 1972 (DFH); Turtle Island, one, 8 June 1972 (DFH); Chalk Island, one, 2 June 1972 (DFH); Walsh Island, one, 8 April 1972 (DFH); Tiny Group, one very solicitous, probably with nest, 2 June 1972 (DFH); Hand Island, three, 9 August 1969 (DFH); Nettle Island, one, 20 July 1972 (DFH); Effingham Island, one, 6 July 1972 (DFH); Sarita Bay, some, 22 September 1971 (DFH); Pachena River estuary, at least two, 19 September 1971 (DFH); Thrasher Cove, two, 22 August 1972 (DFH, JB).

The Fox Sparrow is a common resident of the PRNP area.

Lincoln's Sparrow (Le Pinson de Lincoln)
Melospiza lincolni (Audubon)

J, F, M, A3, M1, J, J, A, S2, O1, N, D = 7 records

On 10 May 1931, a specimen of this species was collected in Tofino (Racey, UBC 6187). All of our records since that time follow: 27 April 1969, two, Tofino (DFH); 19 September 1970, at least four, Kennedy Lake (DFH); 24 April 1972, one, Sandhill Creek area (DFH); 29 April 1972, one found dead on road near Ucluelet (MEH, UBC nya); 24 October 1972, two, north Long Beach (SHR); 29 September, one, McLean Point Road (AD).

The Lincoln's Sparrow is primarily a migrant in Vancouver ("frequent," Campbell et al., 1972) and Victoria ("uncommon," Tatum, 1972) but a few birds are seen in winter in both localities. It should probably be considered a rare migrant in the PRNP area.

**Song Sparrow (Le Pinson chanteur)
Melospiza melodia (Wilson)

J14, F5, M8, A10, M28, J51, J38, A5, S10, O18, N9, D9 = 205 records

This is the sparrow of southwestern British Columbia, said to be "common everywhere" in both the Lower Mainland (Campbell et al., 1972) and southern Vancouver Island (Tatum, 1972). The same is true for our area. We have seen this species virtually everywhere we have been in Phase I and Phase II, and though we have relatively few records for Phase III, we are nevertheless sure it occurs there commonly as well. No listing of locations is necessary.

Like the Fox Sparrow, with which our dark race can be confused by the careless observer, the Song Sparrow is a bird of edges and openings in the forest. In our area it sings from the beach fringe in summer and it frequently hunts among beach debris and even occasionally in the intertidal zone (22 May 1972, one catching

isopods among the intertidal boulders on Lovett Island, DFH). Also, sparrows seen hunting along the shores of local lakes and streams will usually be this species. In winter it will be seen busily scurrying about under drift logs in pursuit of amphipods, thus, in competition with Winter Wrens.

The bird was listed as nesting on Cleland Island on 9 May 1931 (IMcTC), but no details were provided. Campbell (1967) confirmed the local breeding status with his discovery of an old nest and sighting of fledglings near Green Point in July 1967. A nest with young was seen on Cleland Island on 10 June 1970, and an adult was seen feeding two "weak-flying" young there on 30 May 1970 (MGS). Recently fledged young have also been recorded at Grice Bay Trail (26 July 1972, AD), Florencia Island (28 June 1970, RWC), Swan Lake (7 July 1972, AD), and Bamfield (21 June 1970, RWC).

The Song Sparrow is a common resident of the PRNP area.

Lapland Longspur (Le Bruant lapon)
Calcarius lapponicus (L.)

This species is listed as "uncommon migrant" in the Victoria area (Tatum, 1972) and "rare winter" in the Lower Mainland (Campbell et al., 1972). Richardson (1971) saw the species during two weeks of October, two weeks of April and one week in May (1968-1969), with a maximum daily total of 20 birds, on northwestern Vancouver Island. In our area, G. Simpson reported the brief occurrence of a small flock of Lapland Longspurs in the yard of his Ucluelet home in spring 1971, and though the details have been misplaced (DFH), this is probably a valid record. In 1972 AD saw a single bird near Maltby Slough on 9 October and a male in breeding plumage at Chesterman Beach on the following day.

The Lapland Longspur appears to be a very rare migrant in the PRNP area.

Chestnut-collared Longspur (Le Bruant à ventre noir)
Calcarius ornatus (Townsend)

A male in breeding plumage was seen and photographed (PDF 224) at the Faber Islets on 18 June 1972 (DFH). This was the third record for British Columbia, and the first from the southwestern quarter of the province (Hatler, 1973a). The Chestnut-collared Longspur is accidental in PRNP.

Snow Bunting (Le Plectrophane des neiges)
Plectrophenax nivalis (L.)

J, F1, M, A, M, J, J, A, S, O1, N2, D = 4 records

Mrs. M. Whittington reported to Campbell (1967) that this species appeared in numbers on the beach near Green Point on 8 February 1949. Our other west coast sightings, all of single birds, occurred in the fall: 8 November 1969, Ferrer Point (DFH); 13 October 1972, Chesterman Beach (AD); 7 November 1972, McLean Point (AD). Richardson (1971) saw two birds on 29 October 1968 at Grant Bay, but saw no others during his one year stay in that area. The species occurs, but not commonly, in both the Lower Mainland and the Victoria area in winter (Campbell et al., 1972; Tatum, 1972). These sources indicate that records are usually not obtained before October or after March.

The Snow Bunting is a very rare migrant in the PRNP area.

TRANSECT RESULTS

Introduction

In order to gather information on species associations and numbers in various park habitats, we established five permanent transect lines and two observation points in Phase I (Figure 5-9) and five modified transect lines in Phase II (Figure 10). These were studied regularly, as weather and other conditions permitted, from summer 1972 through early spring 1973. All of these lines and points were set out on already-existing trails or along easily determined routes over water, so that duplication of our transect work can easily be accomplished by future workers. Our choice of trails in Phase I was also calculated to directly facilitate commentaries on some of the guided nature walks conducted by park naturalists.

The general procedure for the transect work was as follows:

The observer proceeded along the designated trail, stopping at prescribed intervals (usually one-quarter mile) and noting all birds seen or heard at each stop during a five-minute period. Although birds seen between designated stops were occasionally noted, especially in the case of unusual observations, the actual transect data include only birds contacted during the five-minute observation periods.

The picture of the local avian community which can be obtained by this transect technique is subject to several sources of distortion. We have tried to minimize the effects of these in the following ways. The interval between stops was made large enough (on the basis of our local experience) so that there was little chance for duplication, i.e., the same bird was not likely to be recorded at two successive stations. An exception was that in open habitats such as the meadows along the Grice Bay Trail and expanses of water at McLean Point, some of the larger species

(e.g., ducks) could be seen from more than one station, but such duplication was easily detectable and these birds were not likely to be counted twice. The first station on each line was established near the trail entrance, but at a sufficient distance (20-30 m) from the point of access to minimize the edge effect created there. All other stations were set by the predetermined interval length and whether or not they were representative of the transect area as a whole was a matter of chance. The stations were first located by pacing (foot trails) or odometer (McLean Point Road), and were then marked with flagging for the duration of the study period. Most of the transects were rather homogeneous, so that the problem of representativeness was not great. The fact that precisely the same stations were observed on each visit, and all by the same observer, gives consistency to our results.

In the thick vegetation characteristic of PRNP, a quiet bird is not often detected, so that it was mandatory that we schedule visits during periods of maximum avian activity. Heavy rains, strong winds and thick fog all have depressive effects on bird activity and, in addition, the first two at least, interfere with the observer's listening ability and depth of concentration. Hence, we did not conduct transect counts under such conditions if we could avoid it. Most visits in summer were in early morning, although occasionally they were later in the day to allow time for heavy fog to dissipate. In winter, activity usually peaks later in the day, and often coincides with sunny periods following storms.

We are fairly certain that there are no regularly occurring species which we did not detect, but we are equally certain that the transect data are not precisely indicative of the numbers of birds in the respective areas. Frequently, especially in winter, the observer could imitate a small bird's "distress call" after his five-minute wait at a given station and coax birds

from nearby bushes which he had not detected during the prescribed time. It should also be evident that the species which appear to be the most abundant birds may, in fact, simply be the most conspicuous. Some species are by nature quite secretive and/or may have songs which are easily masked and overcome by the lustier singers. The error arising from this is inevitable and, in this environment, unmeasurable; we believe that our experience with the area and its birds was sufficient to keep this error very nearly as low as it could ever be.

Procedure at the two Phase I observation points was less rigidly defined than was that for the transects. At Florencia Bay, all birds visible from the lookout point, especially those on the water and on the beach, were identified through a 20x spotting scope and recorded. Nearby land birds detected during the time of such observations (up to a hour or more) were also listed. Much the same procedure pertained at Swan Lake, except that the time involved was usually less than one-half hour.

In Barkley Sound, three transects were conducted over water and it was convenient in these cases to record all species within sight of the boat along each line rather than to try to operate on a station basis. Rough water conditions greatly limited visibility, so that the best, most consistent results are obtained on calm days. Nevertheless, during some months we had to accept less than perfect conditions or else gather no data at all. The two land "transects" in Barkley Sound were also dealt with in this modified fashion, with all birds encountered along short, man-made trails being recorded. No permanent stations were established.

The results of the transect work are summarized in following pages according to this format: The map is intended to provide a relatively complete summary for each area. It shows trails and observation points

drawn in place as accurately as our aerial photograph sources would allow, and provides other geographical details sufficient to facilitate reader orientation. Major habitat types pertinent to each study unit are depicted with shading symbols (a key to symbols is given below). Also given are lists of the characteristic bird species for each area, with summary data (range) of numbers of individuals recorded along each transect over all study days.

The outline on the page facing the map provides details of procedure, a brief verbal description of habitats, and remarks on avifaunal assemblages and distribution within these habitats. Also given are details on the criteria upon which species were selected for inclusion on the map list. An exception is that in all cases the "special" list refers to species about which the following may be said. They can not be guaranteed to be present in the designated area at all times, even in the appropriate season, but they have been seen there one or more times and are considered likely to be seen there again. Finally, all actual transect data are listed in the Appendices, and the outline sheet contains reference to the page number at which data relevant to a given study unit may be found.

HABITAT SYMBOLS:



Bog



Logged



Forested



Sand beach and mud flats

McLean Point Road

Map scale (1 inch = 1000 feet)

I. Dates of Observations:

21 June, 6, 14, and 23 July, 26 September, 25 October, 25 November, 27 December, 3 February, 6 March, 28 March (1972 - 73) = 11 visits.

II. Details of Procedure:

Station 1 4.0m from Highway 4 (not precisely located on map); All other stations (total of 11) at intervals of 0.3 miles; five-minute stops at each station.

III. Habitat Description:

Stations 1 and 2 = pine-cedar bog; 2 - 5 = mixed forest (cedar, hemlock, alder) of small trees and dense shrubs, influenced by the bog; 6 = stand of large alder; 7, 9 - 11 = mixed forest, including many large standing trees; 8 = disturbed area, now in shrubs (salal, salmonberry). Station 8 at all times, and 7, 9 - 11 after leaves have fallen from deciduous trees also offer vantage points from which birds in waters of Grice Bay may be seen. All stations, 1 - 11 are influenced by a fringe of alder along the road.

IV. The Birds of McLean Point Road (78 species)

A. Species listed on map (criteria for selection): Summer list = those species recorded on at least four of the five June - September visits; Winter list = those species recorded on at least four of the six October - March visits; All Year = those species occurring on at least four summer and four winter visits.

B. Remarks:

Most of the summer birds were distributed along the entire transect route; the Yellow-rumped Warblers and Common Yellowthroats occurred mainly in the bog areas (stations 1 and 2), while Band-tailed Pigeons occurred mainly in the tall timber areas (7 - 11). Winter species, primarily water birds, abound in Grice Bay waters off Indian Island (see also: Hatler, 1973).

V. Data in Appendix 4a, page 369.

SPECIAL

Yellow-billed Loon (1)
Canvasback (140-155)
Pigeon Hawk (1)
Whimbrel (4-42)
Black-bellied Plover (1)
Yellow-rumped Warbler (1-22)
Chipping Sparrow (1)

SUMMER

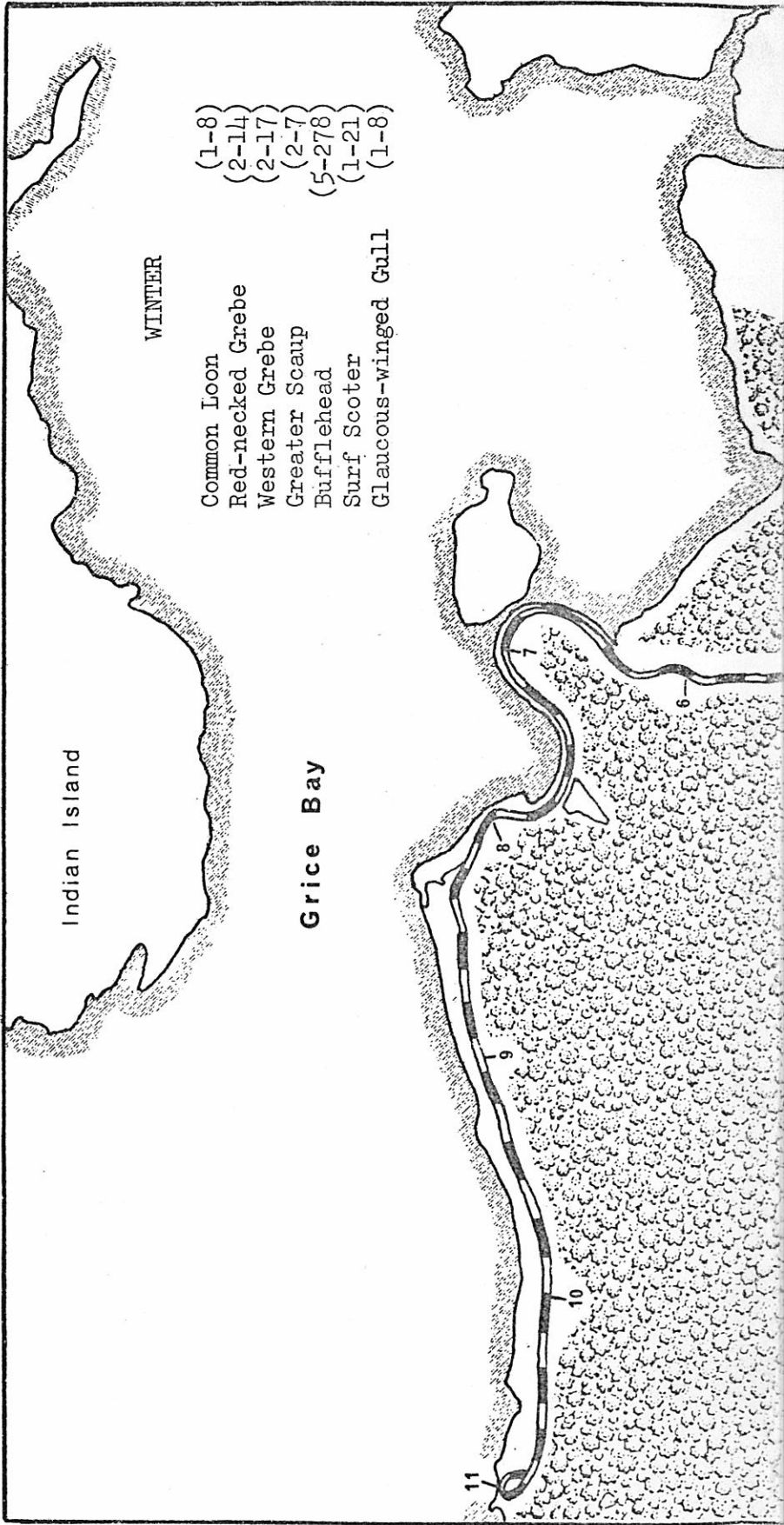
Band-tailed Pigeon (1-11)
Rufous Hummingbird (2-6)
Common Flicker (1-2)
Western Flycatcher (1-5)
Chestnut-backed Chickadee (2-4)
American Robin (6-14)
Swainson's Thrush (1-21)
Orange-crowned Warbler (2-11)
Common Yellowthroat (1-3)
Fox Sparrow (2-8)

ALL YEAR

Winter Wren (1-7)
Golden-crowned Kinglet (1-16)
Song Sparrow (1-4)

McLean Point Road

Figure 5.



Grice Bay Trail

Map scale (1 inch = 1000 feet)

I. Dates of Observations:

23 June, 7, 15 and 26 July, 26 September, 28 October, 26 November, 28 December, 3 February, 4 March, 27 March (1972 - 73) = 11 visits.

II. Details of procedure:

Station 1 in center of Lovekin's field; all other stations (total of five) at intervals of one-fourth mile; five-minute stops at each station.

III. Habitat Description:

Station 1 = disturbed area (grass field) at edge of spruce forest; 2 - 5 estuarine meadow at edge of mixed forest and thick shrub (salal) fringe; open water visible from 4 and 5 at most tide levels.

IV. The Birds of Grice Bay Trail (57 species)

A. Species listed on map (criteria for selection): Summer list = those species recorded on at least three of the five June - September visits; Winter list = those species recorded on at least four of the six October - March visits; All Year = those species occurring on at least three summer and four winter visits.

B. Remarks:

Most species listed were seen along the entire trail, although Townsend Warblers seemed to prefer the spruce forest at Station 1. The ducks, geese, swans were recorded at stations 4 and 5.

V. Data in Appendix 4b, page 371.

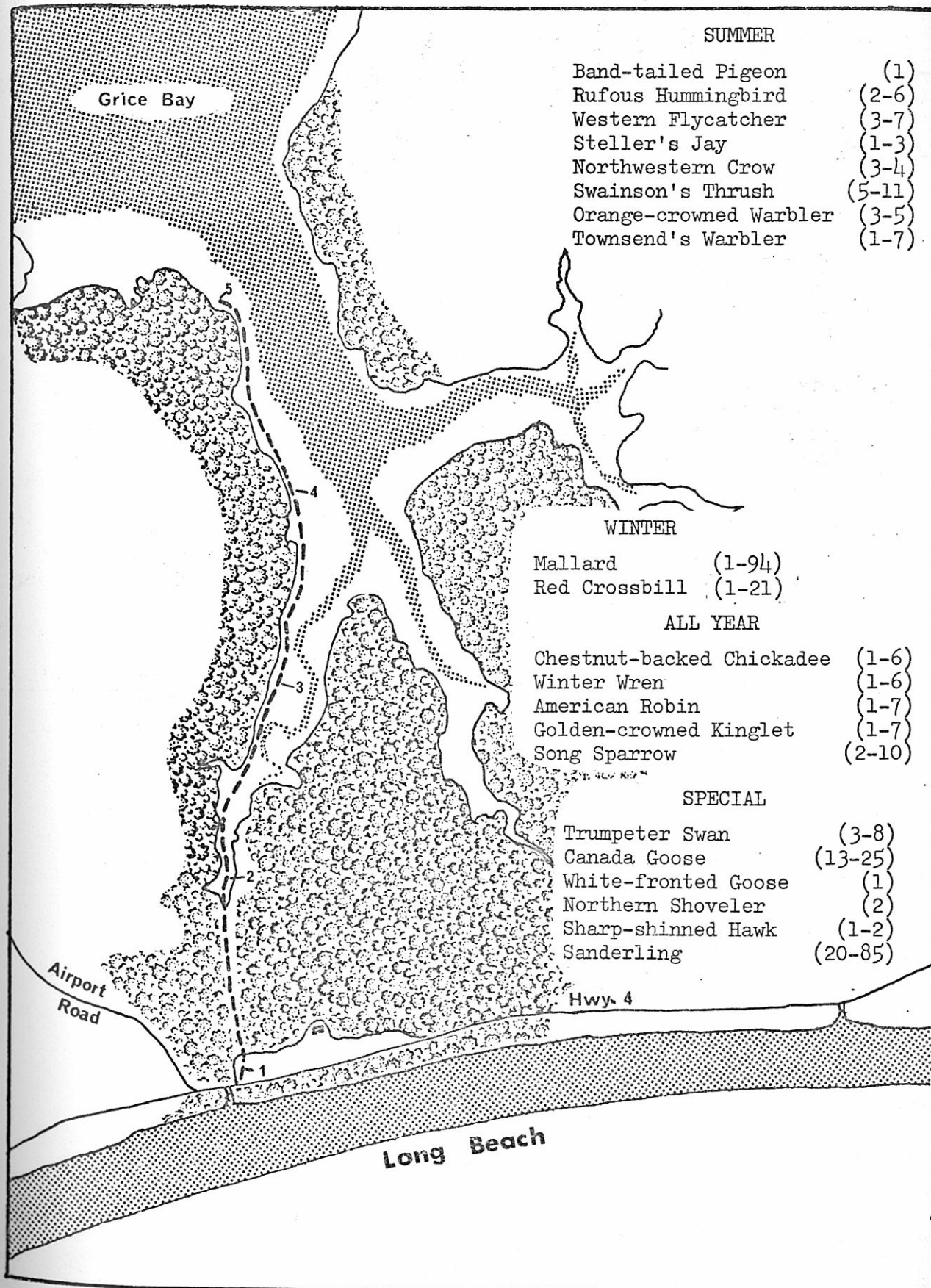


Figure 6.

Grice Bay Trail

Rain Forest Trail

Map scale (1 inch = 1000 feet)

I. Dates of Observations:

1, 10, 17 and 26 July, 26 September, 28 October, 26 November, 28 December, 3 February, 4 and 27 March (1972 - 73) = 11 visits.

II. Details of Procedure:

Station 1 about 20m along trail from entrance; all other stations (total of three) at intervals of about one-fourth mile (total trail length listed by park officials as .7 miles); five-minute stops at each station.

III. Habitat Description:

Mature cedar-hemlock forest at all stations. Note: This map is largely diagrammatical, as no aerial photos or maps which we had access to showed this trail.

IV. The Birds of Rain Forest Trail (16 species)

A. Species listed on map (criteria for selection): Summer list = those species recorded on at least three of the five July - September visits; All Year = those species occurring on at least three summer and two winter visits.

B. Remarks:

There were no species which occurred in this habitat chiefly in winter, and only two species were recorded on more than one of the six visits during that season (Golden-crowned Kinglet - 4 times; Winter Wren - twice).

V. Data in Appendix 4c, page 372.

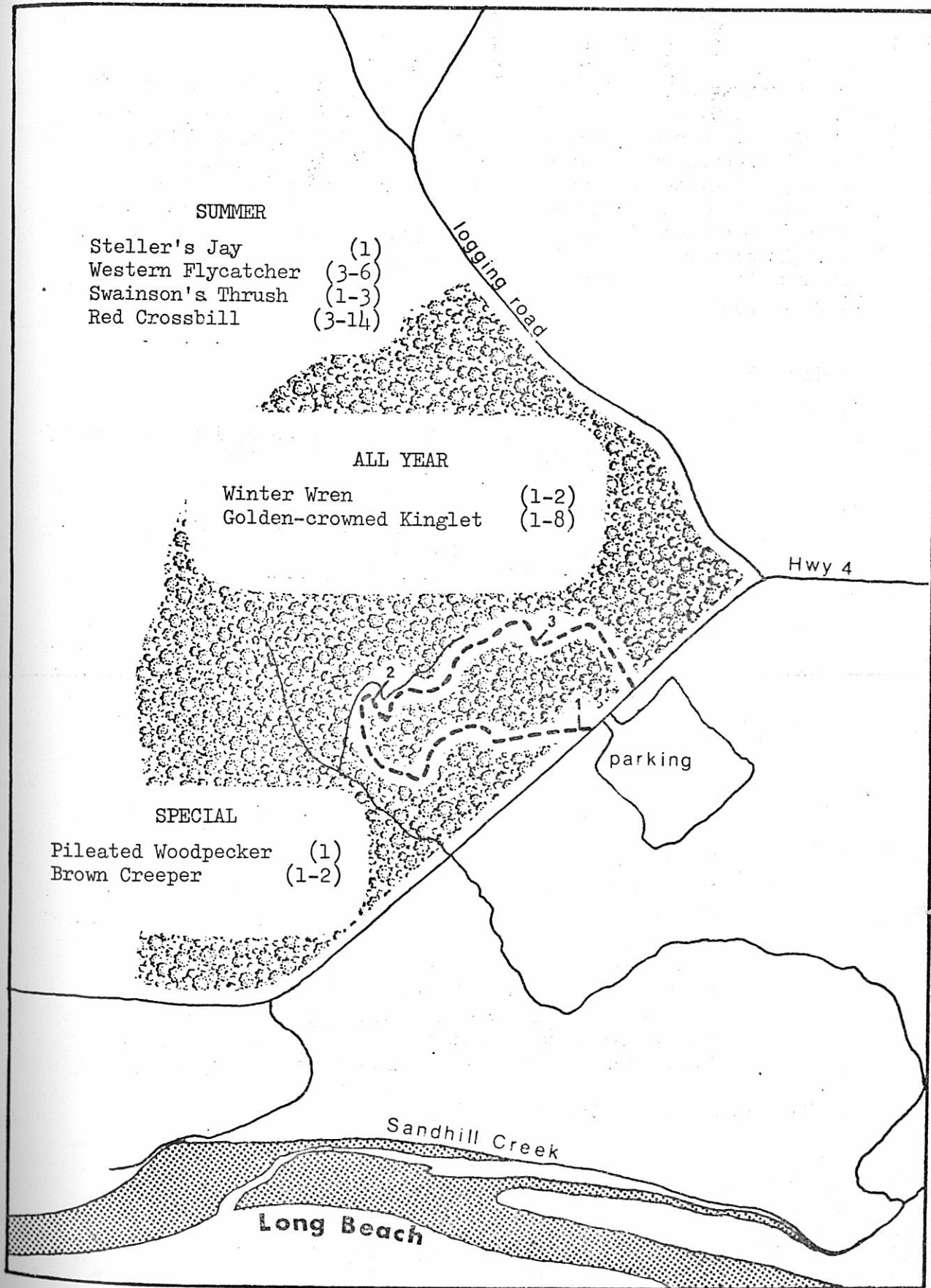


Figure 7.

Rain Forest Trail

Florenxia Bay Lookout

Map scale (1 inch = 1000 feet)

Observations on 3, 6, 16, 17, 18, 19, 21, 22, 23, 25, 26 27 and 30 June, 5, 7, 9, 13, 24 and 31 July, and 27 September 1972 = 20 visits.

This is a single observation point on the cliffs overlooking Florenxia Bay, where open water and sand beach habitats were those studied most closely. A disturbed forest habitat occurs immediately adjacent to the observation point. All observations were in summer, and the species list shown (Common Loon through Belted Kingfisher) involves those species seen on eight or more of the 20 visits. The "special" list beginning with Red-throated Loon also pertains to this stop. Total number of species = 57; Data in Appendix 4d, page 373.

Goldmine Trail

I. Dates of Observations:

1, 16 and 27 July, 27 September, 27 October, 1 and 28 December, 2 February, 1 and 28 March (1972 - 73) = 10 visits.

II. Details of Procedure:

Station 1 at edge of parking lot; all other stations (total of four) at intervals of one-fourth mile; five-minute stops at each station.

III. Habitat Description:

This is a logged area. Station 1 = thick stand of second-growth conifers; 2 = slash with low shrubs (salal, huckleberry) and much dead wood; 3 = similar to 2, but with riparian influence of Lost Shoe Creek (alders, willows) and a few large, standing cedars (seed trees?); 4 = low shrub slash and alder stand.

IV. The Birds of Goldmine Trail (39 species)

A. Species listed on map (criteria for selection): Summer lists = those species recorded on at least three of the four July - September visits; All Year = those species occurring on at least three summer and four of the six winter (October - March) visits.

B. Remarks:

No species used this area chiefly for wintering. Wilson's and MacGillivray's Warblers occurred in the alder-streamside areas (3, 4) while White-crowned Sparrows were seen mostly in the second-growth at station 1. Olive-sided Flycatchers were found singing from the standing trees at station 3.

V. Data in Appendix 4e, page 375.

Swan Lake

Observations on 6 November 1971, 21 and 27 April, 8 and 29 May, 8, 16, 18, 19, 21, 26 and 29 June, 5, 7, 14 and 24 July 1972 = 16 visits.

SPECIAL

Pied-billed Grebe	(1-6)
Trumpeter Swan	(5)
Blue-winged Teal	(1)
Ring-necked Duck	(5-7)
Hooded Merganser	(4)

Swan Lake

gravel pit

SUMMER

Mallard	(1-4)
Wood Duck	(1-6)
Common Nighthawk	(1-12)
Rufous Hummingbird	(1-3)
Western Flycatcher	(1-2)
Olive-sided Flycatcher	(1)
Tree Swallow	(1-19)
Rough-winged Swallow	(1-8)
American Robin	(1-5)
Swainson's Thrush	(1-2)
Cedar Waxwing	(1-15)
Orange-crowned Warbler	(1-4)
Song Sparrow	(1-4)

Lost Shoe Creek

(1-5)
(1-2)
(2-67)
1-10

SPECIAL

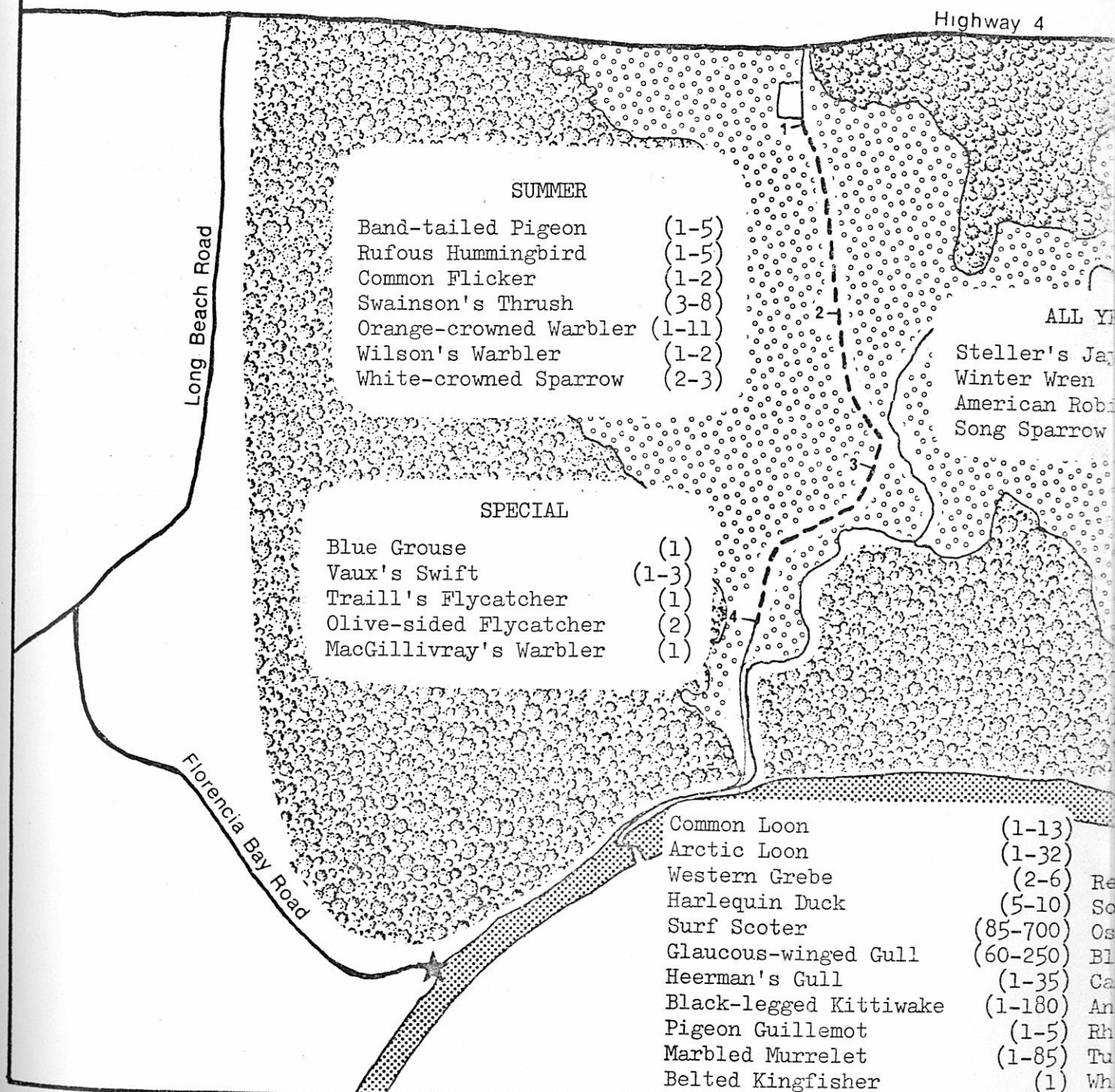
Throated Loon	(1-7)
Shearwater	(9-300)
	(1)
Oystercatcher	(1-12)
Tern	(3)
Murrelet	(1-2)
Skuas Auklet	(1-3)
Puffin	(1)
Seal	(1)

Florencia Bay

Trail -----

Swan Lake ☆

Figure 8. Florencia Bay Lookout, Goldmine Trail transect route, and Swan Lake Lookout.



Florencia Bay Lookout ★

Goldm

This observation point at the outlet of a small fresh-water lake yielded a list of 46 species, of which those occurring at least five times are shown on the map. Mallards, Wood Ducks, and Pied-billed Grebes are known to have nested there, and Trumpeter Swans and Ring-necked Ducks have been seen there frequently in winter and spring. Swan Lake is a unique and interesting spot and it is unfortunate that it, by a recent boundary change, has been lost to PRNP. Data in Appendix 4f, page

Willowbrae Trail

Map scale (1 inch = 1000 feet)

I. Dates of Observations:

29 June, 10, 17 and 27 July, 25 September, 27 October, 30 November, 2 January, 3 February, 1 and 28 March (1972 - 73) = 11 visits.

II. Details of Procedure:

Station 1 about 25m along trail from Highway 4; all other stations (total of five) at intervals of one-fourth mile; five-minute stops at each station.

III. Habitat Description:

The entire trail is through a basically mature cedar-hemlock forest; Station 2 = somewhat smaller trees with more open canopy, from influence of nearby small bog; 3 = coniferous forest on a small elevated area, probably better drained and therefore differing somewhat in growth form from adjacent woods; 5 = mature Sitka spruce fringe.

IV. The Birds of Willowbrae Trail (30 species)

A. Species listed on map (criteria for selection): Summer list = those species recorded on at least four of the five June - September visits; Winter list = those species occurring on at least five of the six October - March visits (and less than three summer visits); All Year = those species occurring on three or more summer and five or more winter visits.

B. Remarks:

The Red Crossbill was observed on all winter visits, but only twice in summer in this area. Judging from its occurrence in other areas, however, it might be more properly considered "all year" rather than "winter". Chestnut-backed Chickadees also occurred somewhat more often in winter than in summer along this trail. Northwestern Crows were seen most often at station 1, which is near the highway open area and human habitations. Gulls were occasionally seen in the Half-Moon Bay area from station 5.

V. Data in Appendix 4g, page 377.

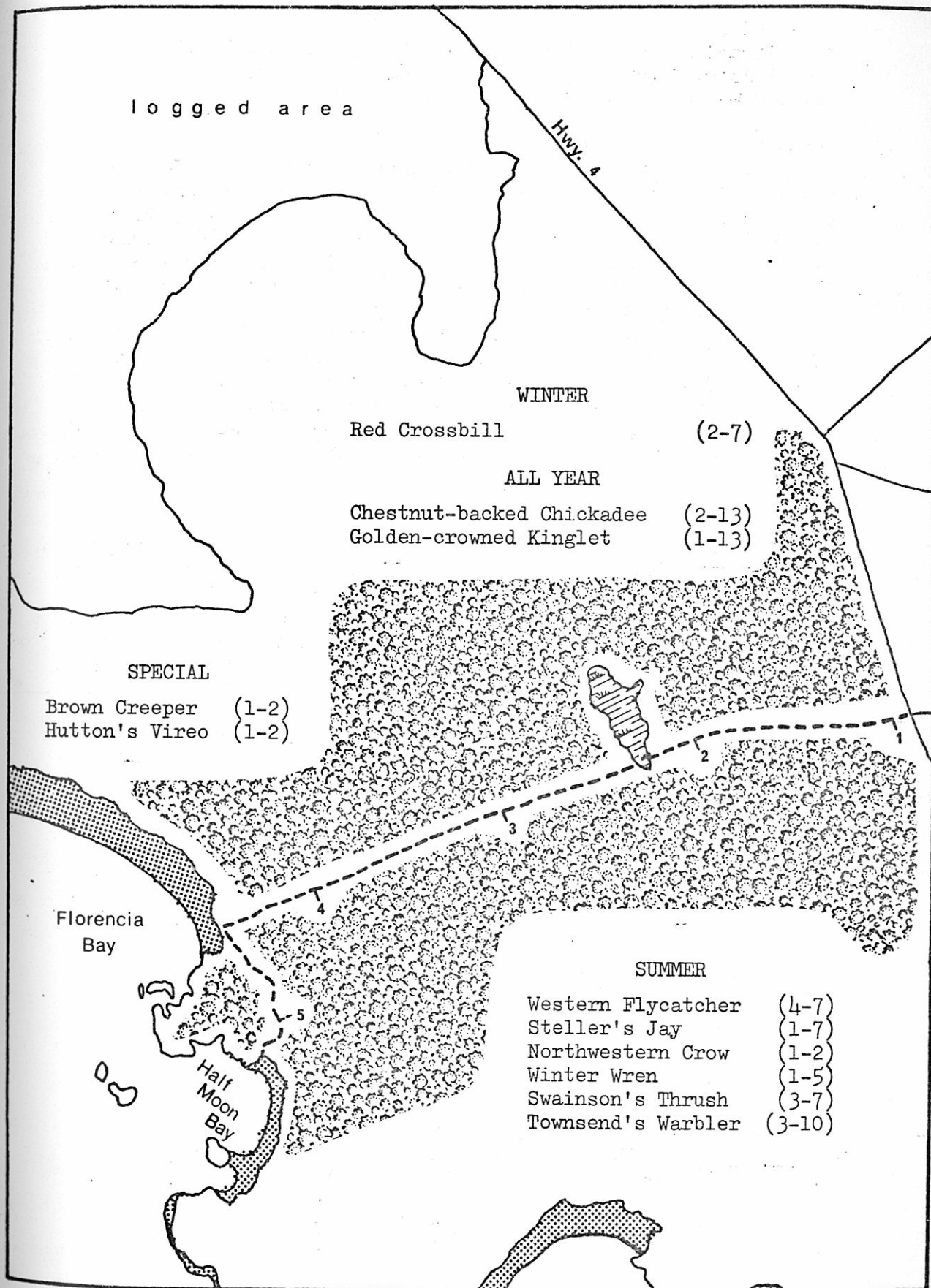


Figure 9.

Willowbrae Trail

Barkley Sound Water Transects

I. Dates of Observations:

25 and 29 April, 9, 16, 20 and 29 May, 12 and 19 June, 7, 18 and 21 July, 5 and 8 August, 13 September, 28 October, 27 November 1972, 2 March, 16 May and 5 June 1973 = 19 visits.

II. Details of Procedure:

The approximately 12 mile route from the mouth of Ucluelet Harbour to Turtle Island was divided into three sections, as follows: 1 - 2, harbour mouth to Chrow Islets (3.5 miles); 2 - 3, Chrow Islets to imaginary line between Hankin and Lovett Islands (5.75 miles); 3 - 4, above line to Turtle Island (2.75 miles). All birds seen from a small boat along each section were recorded. In most cases all three sections were censused on the same trip, although on 18 July only 1 - 2 and on 21 July only 2 - 3 were counted because different routes were travelled beyond these sections. The duration of a trip over the transect route varied with water conditions and boat load, but was usually 45 minutes or more (up to 2 $\frac{1}{2}$ hours). Stops were made only if identification of birds was uncertain and binoculars were needed, or if counts could be facilitated. Most identifications and counts were made with the unaided eye.

III. Habitat Description:

1 - 2 is a deep channel (10 - 15 fathoms) with a stretch of shallow, reef strewn water between the Beg Islets, and a tendency to be very rough from tidal influences, although moderately protected from all except southeasterly winds; 2 - 3 is a deep channel (to 30 fathoms) with full exposure to winds and open ocean swells; 3 - 4, basically the same as 2 - 3 along the first half of its length, gains increasing protection from wind and waves up to the mouth of Thiepvall Channel, and is the most protected and shallowest (less than 5 fathoms) section of the entire route along the last 3/4 mile of its length.

IV. The Birds of Barkley Sound (Ucluelet inlet to Turtle Island)

A total of 45 species were recorded along the entire route, with the largest number (31) seen along the shortest section (3 - 4) and the smallest number seen along the longest section (2 - 3). The total for section 1 - 2 was 27 species. It appears that avian variety decreases with increasing water depth and degree of exposure in our marine habitats.

Fifteen species occurred in all three sections of the transect route. A list of these, with numbers of sightings in each section, follows:

	<u>1 - 2</u>	<u>2 - 3</u>	<u>3 - 4</u>
Common Loon	3	2	8
Arctic Loon	6	2	8
Western Grebe	5	1	4
Double-crested Cormorant	1	1	2
Brandt's Cormorant	7	13	5
Pelagic Cormorant	12	8	10
White-winged Scoter	4	9	8
Surf Scoter	2	5	9

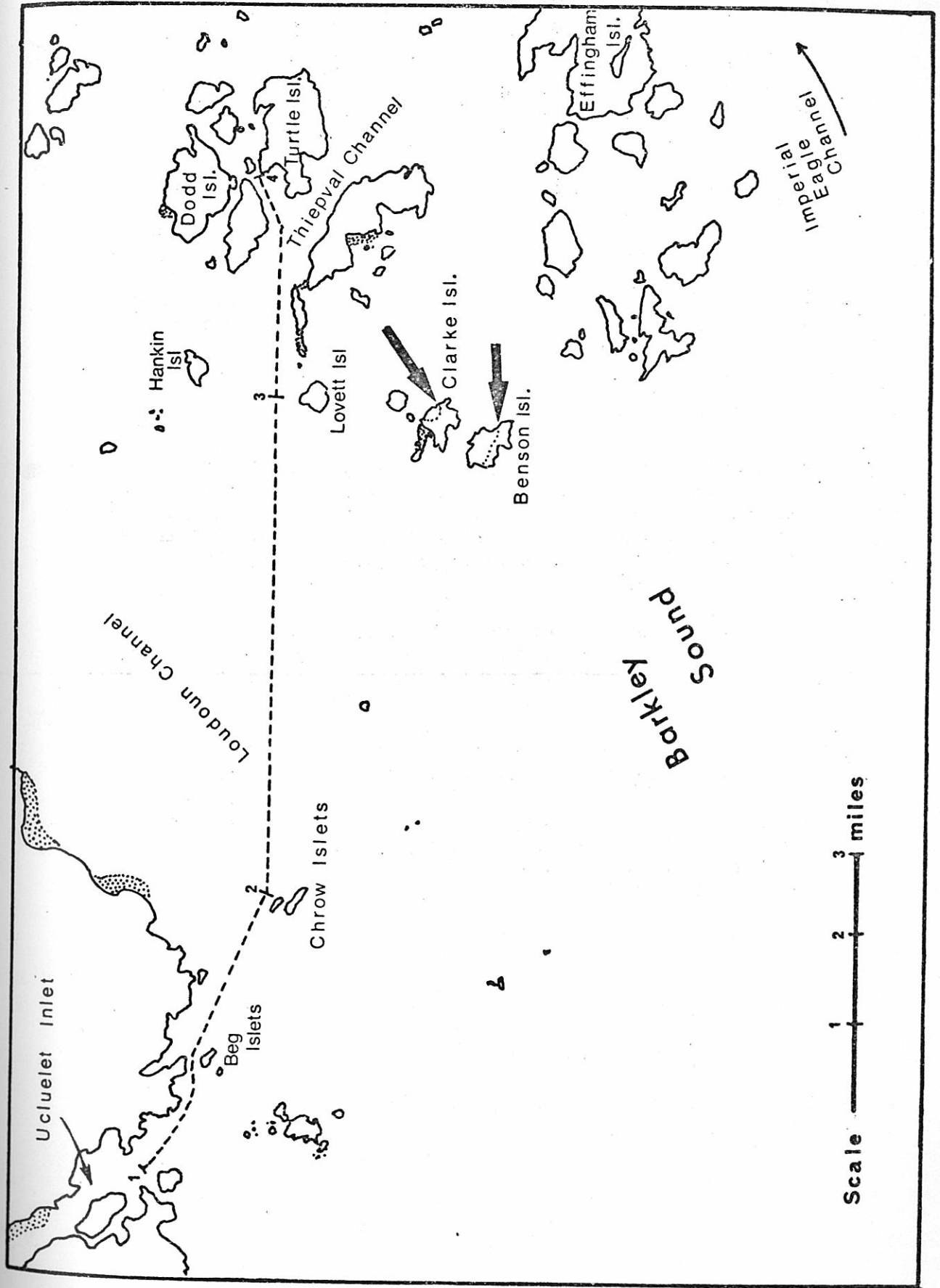


Figure 10. Barkley Sound transect routes.

	<u>1 - 2</u>	<u>2 - 3</u>	<u>3 - 4</u>
Glaucous-winged Gull	15	8	16
California Gull	5	4	3
Mew Gull	1	1	2
Common Murre	4	11	1
Pigeon Guillemot	2	6	3
Marbled Murrelet	15	14	12
Rhinoceros Auklet	3	7	1

As these figures show, Marbled Murrelets and Glaucous-winged Gulls were the most regularly occurring species, while Brandt's and Pelagic Cormorants also were seen frequently. Some of these species, e.g., Brandt's Cormorant, White-winged Scoter, Common Murre and Rhinoceros Auklet were seen most often in the deep, open waters of section 2 - 3, while some others such as the Pelagic Cormorant, Surf Scoter, and Glaucous-winged Gull appear to prefer the shallower, more protected waters near land.

Other species such as the Great Blue Heron, Bald Eagle, Black Oystercatcher and Northwestern Crow were seen occasionally along 1 - 2 and more often along 3 - 4, but because they are primarily land birds, they were seen not at all along 2 - 3. The Red-necked Grebe was recorded seven times at 1 - 2 and once at 2 - 3, but not all in the section closest to the Broken Group islands. It was seen most often near the mouth of Ucluelet Harbour, apparently preferring deep, but protected water.

Several species occurred only once or twice, and little can be said about habitat preferences. Two which should be mentioned, however, are the Ancient Murrelet and the Cassin's Auklet, both of which were seen in 2 - 3.

Three species occurred regularly along 3 - 4, but only along that section. These are the Horned Grebe (six sightings) and the Bufflehead (seven), both of which occurred only in the last 3/4 mile of this section and thereby showed a distinct preference for shallow, protected water, and the Harlequin Duck (five records). Harlequins were also seen in the shallow area, but occasionally appeared along a reef in deeper water at the entrance to Thiepval Channel.

Twice during periods of heavy fog (1 June and 8 July), Sooty Shearwaters were seen along section 2 - 3, but poor visibility made it impossible to conduct actual transects on these days. This species was not seen along the transect route when counts were being made. A Tufted Puffin was also seen in the 8 July fog, but not on any of the regular transects.

- V. Data for the water transects are given in Appendix 5 (a, b and c), pages 378-380.

Barkley Sound Land Transects

Benson Island ("Cape Gould Trail") See Figure 10

I. Dates of Observations:

25 May, 23 June, 26 July, 14 September 1972, and 5 March 1973 = five visits.

II. Details of Procedure:

The observer walked along a man-made trail and recorded all birds contacted.

III. Habitat Description:

Benson Island has a considerable history of human disturbance. The trail (about .4 miles) passes through a short artificial meadow of grass and bracken, but at the edge of a Sitka spruce forest. The rest of the trail is through an open spruce forest with salmonberry and salal understory, and across a low, dense wind-blown expanse (200 meters or more) of salal.

IV. The Birds of Benson Island

The island is well populated with Northwestern Crows, and these follow an observer, calling continuously and making detection of other species difficult. The species recorded are essentially those which would be expected in similar habitats on the mainland, Rufous Hummingbirds, Orange-crowned Warblers, and Fox Sparrows in the shrub areas, Townsend's Warblers, Golden-crowned Kinglets and Swainson's Thrushes in the forest, and American Robins in the meadow.

V. Data in Appendix 6, page 381.

Clarke Island (Lodge to Reservoir Trail) See Figure 10

I. Dates of Observations:

9 and 19 July, and 14 September 1972 = three visits.

II. Details of Procedure:

Same as for Benson Island.

III. Habitat Description:

This is a short (less than one-fourth mile) man-made trail through open coniferous forest (mostly spruce), leading from a privately-owned vacation lodge to its water storage reservoir. Though the forest is open, the shrub understory (salal, salmonberry and huckleberry) is dense.

IV. The Birds of Clarke Island

Northwestern Crows, Winter Wrens and American Robins were seen on each of the three visits. Band-tailed Pigeons and Swainson's Thrushes were heard on both July visits.

V. Data in Appendix 7, page 382.

Other (Cox Point to Amphitrite Point)

On 2 - 3 July 1972, DFH and AD travelled by small boat from Tofino to Ucluelet, and recorded all birds seen on the water within about one-half mile of shore and on several of the small offshore islets. Counts began at Cox Point, the park's north boundary, at about 0500 hours on 2 July and terminated that day on Florencia Island, where the observers spent the night. On the following morning counts resumed southward from Florencia and were terminated at Amphitrite Point at about noon. A total of 31 species were seen, and the numbers and distribution of each are given in Table 6. The weather was clear with no wind, and the sea was calm, thus fairly complete coverage and accurate counts were possible. The list of Table 6 might be considered typical for waters immediately offshore from Phase I in mid-summer.

Table 6. Birds seen along Phase I shoreline (Cox Point to Amphitrite Point) in Pacific Rim National Park, 2-3 July 1972.

Species	Locations ^a							Total
	CP-GR	GR-WI	WI-SL	SL-QP	QP-FI	FI-WP	WP-AP	
Common Loon			1			4		5
Arctic Loon			2			23		38
Sooty Shearwater	200+	400+		2				600+
Brandt's Cormorant	1	64	450+				1	759+
Pelagic Cormorant	14	84	75+	60+				258+
Cormorant sp.		2						2
Mallard					1			1
Harlequin Duck			10	1	17			28
White-winged Scoter	9	2	1		8			20
Surf Scoter	6		55		2			63
Bald Eagle			1*		3*			4
Black Oystercatcher	7	2	2	3	16+			30+
Glaucous-winged Gull	47	80+	365+	4	900+			1396+
Heerman's Gull	7	1	9		2		3	22
Black-legged Kittiwake	6	2	1					9
Caspian Tern			1					1
Common Murre	3		19					22
Pigeon Guillemot	3	2	2	4	34+			45+
Marbled Murrelet	6	7	54	6			3	181
Rhinoceros Auklet	2	11	1		2			16
Tufted Puffin	3	8			6			17
Rufous Hummingbird	1*		15+*		10+*			25+
Belted Kingfisher					1			1
Western Flycatcher					1*			1
Northwestern Crow	3*	3*			25*			31
Winter Wren					2*			2
Swainson's Thrush					3*			3
Common Starling			9*		2*			11
Orange-crowned Warbler			4		2*			6+
Wilson's Warbler					1*			1
Fox Sparrow			6*		1*			7
Song Sparrow			2*		4*			6

^aCP-GR=Cox Point through Gowland Rocks; GR-WI=Gowland Rocks through White Island; WI-SL=White Island through Sea-lion Rocks; SL-QP=Sea-lion Rocks through Quisitis Point; QP-FI=Quisitis Point through Florencia Island; FI-WP=Florencia Island through Wya Point; WP-AP=Wya Point through Amphitrite Point. * Birds seen on vegetated islands in the indicated section of shoreline.

SEA BIRD COLONIES

Introduction

There are four islets within the boundaries of Pacific Rim National Park which support two or more species of nesting sea birds. We have breeding data from three of these recorded during numbers of visits over the years 1965 - 1973, and have information from the literature and field data obtained in 1972 at the fourth (Seabird Rocks at the mouth of Pachena Bay). The purpose of this section is to provide a summary, both verbal and visual, of these data. Specifically, we show approximate locations at which we have found the various species nesting, and the numbers of nests (mean and range for all years) we have found at each.

Accounts of breeding biology, nesting habitat and the known nesting history of each species at each location have already been given in the annotated list, and should be referred to for precise details. For instance, the distribution of nesting locations shown for each species on the Phase I islets are composites from all years. Species have not necessarily nested over the entire area indicated during each year.

The format follows, roughly, that given for transect results. The map provides a quick review of species composition, numbers, and distribution, while the outline on the page facing the map supplies details on the extent of research effort, general habitat description and remarks of special interest. The map scale shown is approximate, and the geography of each islet is only as accurate as free-hand enlargements of small-scale aerial photographs would allow. They are close enough for our purposes here. The relative locations of the Phase I islets have been shown in a previous diagram (Figure 2); here, only the Seabird Rocks map is provided with an inset for orientation.

Following these accounts of park bird colonies is a brief summary and discussion of two important bird islets, Great Bear Rocks and Starlight Reef, just outside of park boundaries. No map is provided for these in this section, but both are shown in Figure 2.

White Island

Map scale (1 inch = 110 feet)

I. Visits:

30 July 1968 (RWC); 4 August 1969 (RWC); 28 June 1970 (RWC, DFH);
2 July 1972 (DFH, AD); 2 August 1973 (DFH, AD).

II. Habitat Description:

This is a completely unvegetated rock rising about 10 meters above the high water line and exposed to the open Pacific. Cormorants nest predominately on cliff ledges over the deep, west-facing surge channels, and gulls nest over all of the elevated areas (out of reach of breaking waves) adjacent to these channels.

III. Remarks:

On 24 June 1972, an Indian family was seen gathering gull eggs on this island (AD, with 20x spotting scope from Portland Point). On 2 July, 25 of 35 nests we found were empty, and most of the 27 eggs in the other 10 nests appeared to have been freshly laid. Since the peak of hatching on other islets was early July in that year, it is likely that the eggs taken on 24 June were too far advanced for anything except the very lumpiest of omelets.

The 2 July count of Pelagic Cormorant nests that year was the lowest among our five years of records, and this may also have resulted from disturbance or direct destruction by the egg gatherers.

Brandt's Cormorants nested on the island only in 1969, but they and Pelagic Cormorants roost, occasionally in large numbers, on reefs along both the north and south ends.

Other species which may often be seen resting or feeding on White Island in late summer and early fall are Harlequin Ducks, Surfbirds, Black and Ruddy Turnstones, Wandering Tattlers and several gull species. In addition, at least one pair of Black Oystercatchers nests there annually.

White Island

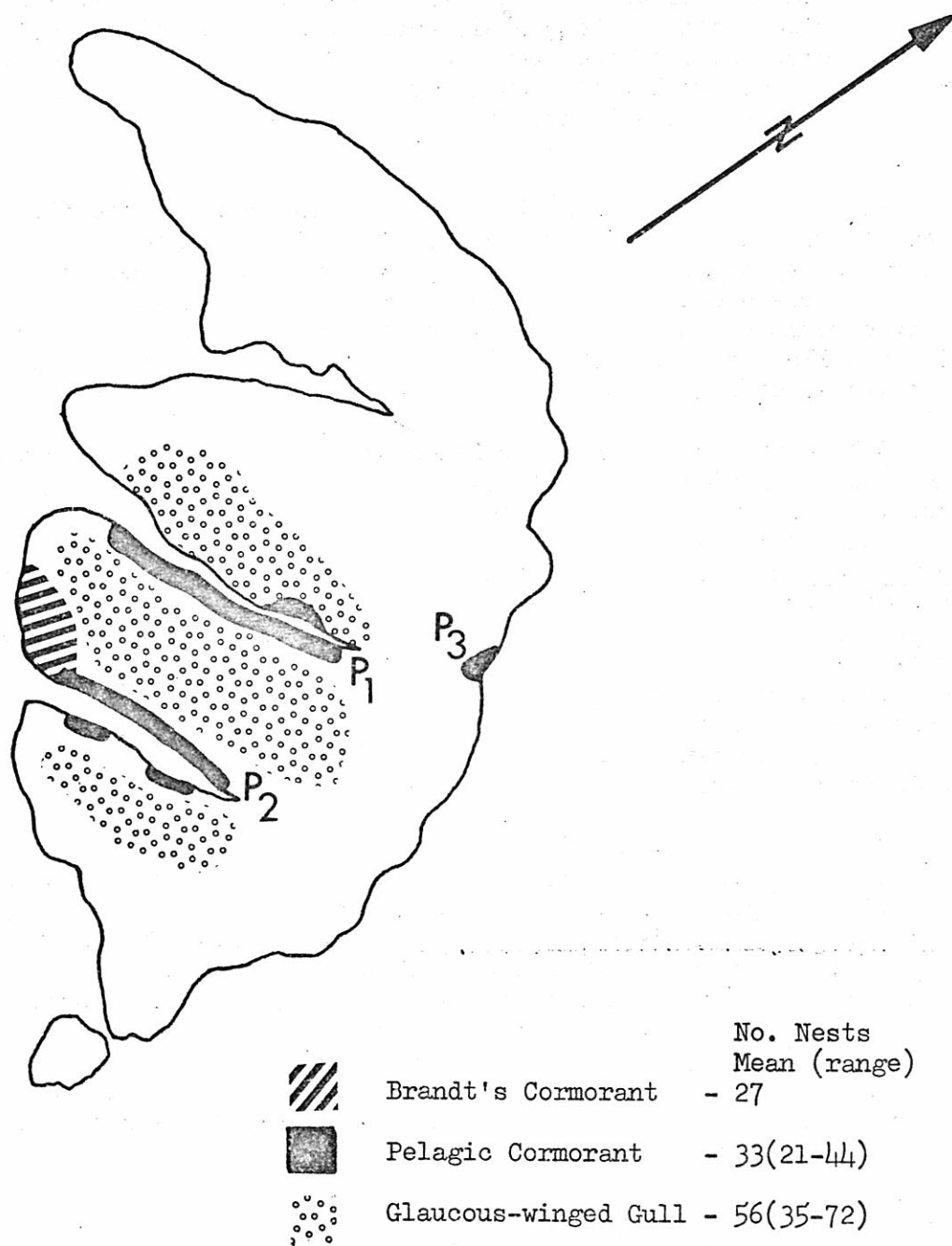


Figure 11. White Island

Sea-lion Rocks

Map scale (1 inch = 145 feet)

I. Visits:

26 July 1965 (Stirling and Buffam, 1966); 3 July 1967 (RWC) 30 June 1968 (RWC); 28 June 1970 (RWC, DFH); 10 August 1971 (DFH, JB); 2 July 1972 (DFH, AD); 29 July 1972 (DFH); 2 August 1973 (DFH, AD).

II. Habitat Description:

The Sea-lion rocks, of which there are basically four, are all relatively low, all are completely unvegetated, and all are exposed to the vicissitudes of the open ocean. During the summer, sea lions haul out on the two lowest (southernmost) rocks, and occasionally on the lower sides of the largest rock.

III. Remarks:

As indicated in the annotated list, this is where the first Canadian Brandt's Cormorant nests were found, and it has been the most regular nesting spot for that species during the years of our records. The Brandt's area shown on the map is a gently sloping plateau, while the Pelagic Cormorants occupy cliff ledges adjacent to this. Glaucous-winged Gulls nest over most of the high spots of the largest rock and to a lesser extent on the small rock just to the northwest.

All activities on and near Sea-lion Rocks should take into consideration the well-being of the Brandt's Cormorants, which are the unique resource there. Landings should be discouraged during the first three weeks of June (when birds are establishing territories and building nests), and should not be made during weather conditions which might be detrimental to nestlings. Visits to count nests and young of all birds on these rocks should be planned so that the cormorants are the last birds to be frightened off their nests (so that the time they spend away from them is minimal). The sea lion tours, the operators of which have kept their distance from the Brandt's Cormorants at our recommendation, have caused no disturbance but unauthorized boat traffic by unknowing individuals could be disastrous and should be discouraged.

On 14 June 1972, DFH postponed a nest count on Sea-lion rocks after spotting two yearling sea lions sleeping on the main rock just above the Brandt's Cormorant colonies. It was evident that if left to their own devices, these animals would descend to the water via the gentle west slope, but if frightened would probably stampede through the cormorant colony and dive from the east side. One sea lion could probably obliterate most of one year's nesting effort under such a situation.

As with White Island, there are some nesting Black Oystercatchers and opportunity for observation of several other species of birds, especially shorebirds and gulls at Sea-lion Rocks.

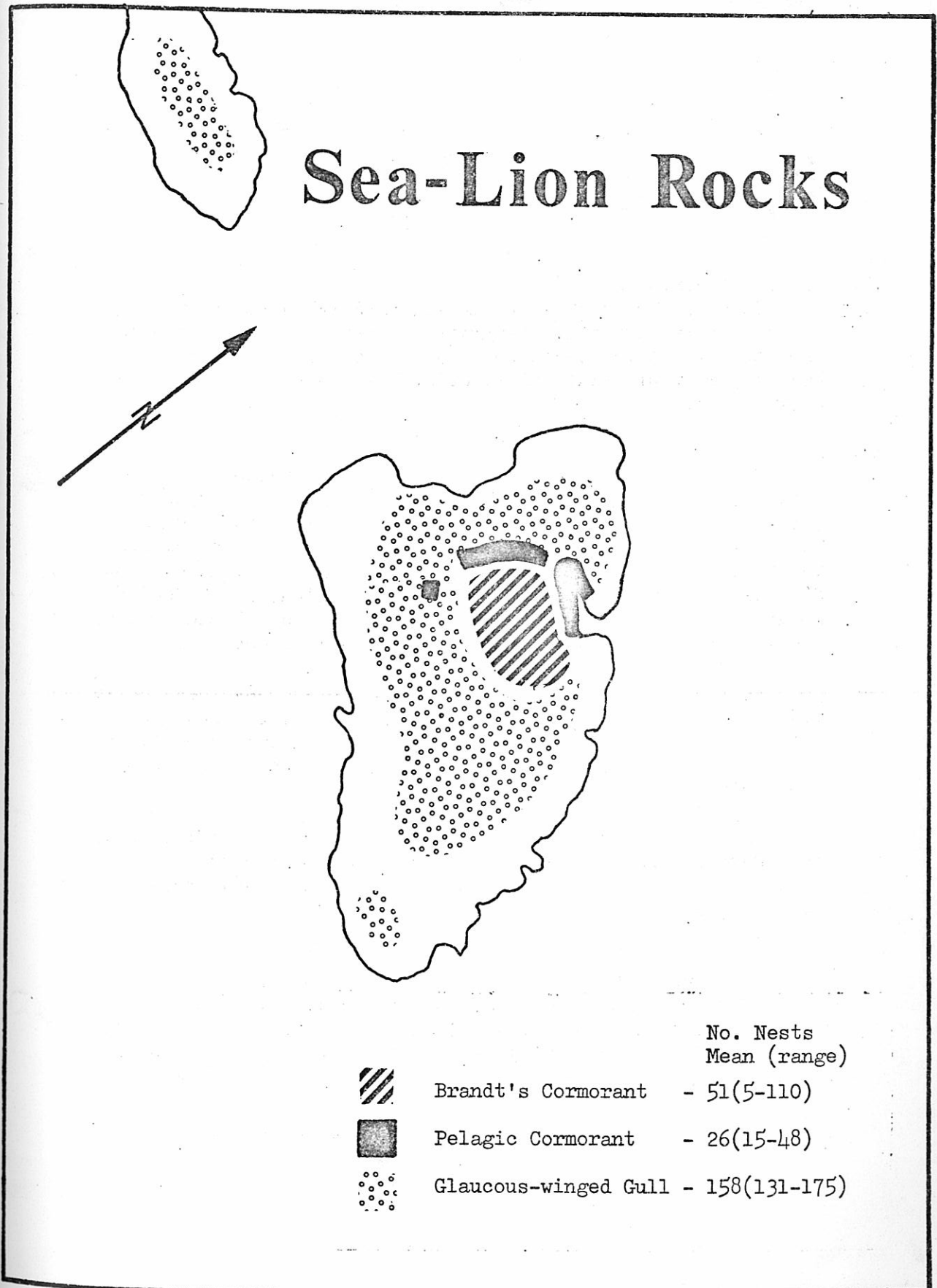


Figure 12. Sea-lion Rocks

Florencia Island

Map scale (1 inch = 400 feet)

I. Visits:

2 August 1968 (RWC); 28 June 1970 (RWC,DFH); 3 July 1970 (DFH,AD).

II. Habitat Description:

This is the largest of our sea bird islands, and it is unique in that it is timbered. A variety of habitats other than the forest area are available, including sea cliffs, surge channels, sand beaches, rock plateaus, piled drift logs and various herb and shrub communities.

III. Remarks:

The cormorant occurrences indicated are based on information obtained after the annotated list accounts had been prepared (final copy). On 12 August 1973, park personnel W. Stetski, B. MacIntyre and R. Langshaw found cormorants nesting on cliffs along the west end. DFH and AD visited the island on 21 August and found 86 Pelagic Cormorant nests in the areas indicated (RWC had found 16 at the southern site on 2 August 1968), and 3 Brandt's Cormorant nests on a flat area above the northern Pelagic colony.

As the figures on the map indicate, Glaucous-winged Gulls nest widely on the island, and in large numbers. The Pigeon Guillemot sites indicated are ones we have found or, in one case, strongly suspected, but these birds probably nest at many other locations on Florencia Island as well.

In the annotated list account of the Tufted Puffin, we said that Campbell had seen birds on the ground on the north side of the island (where DFH and AD had seen birds almost land--shown on map). Actually, RWC's sightings were on the west end at forest edge, as shown.

Large numbers of cormorants of both species roost on reefs just offshore from this island, several pairs of Black Oystercatchers nest on bare rock habitats (especially among the gull colony) and Harlequin Ducks can always be seen roosting on protected boulders between the two nesting islets or feeding along surf-washed rocks all around the island.

Florencia Island








	No. Nests
	Mean (Range)
	Brandt's Cormorant - 3
	Pelagic Cormorant - 52(16-86)
	Glaucous-winged Gull - 283(259-307)
	Pigeon Guillemot - Nest Site
	Tufted Puffin - Nest Site

Figure 13. Florencia Island

I. Visits:

12 June 1970 (Guiguet, 1971); 24 July 1972 (DFH)

II. Habitat Description:

This is a rather low, rocky islet, but it is sufficiently protected by a fringe of rock reefs to prevent its being scoured by winter storms, and a central pocket of soil supporting low vegetation has accumulated. The highest point of land is a small, rounded knoll on the east side, and it supports a marker light maintained by the Ministry of Transport (indicated on the map by a star). Wild Rye (Elymus sp.) predominates on the periphery of the vegetated area, and the sod underlying this supports the burrows of numerous nesting seabirds. A patch of Salmonberry extends from a central gully up the west and north sides of the marker light knoll.

III. Remarks:

The distribution of nesting birds indicated is approximate. There are some Rhinoceros Auklets in the wild rye patch marked "1", but Cassin's Auklets and Leach's Petrels are the main nesting species there. Likewise, there are undoubtedly both Leach's Petrels and Rhinoceros Auklets under the pile of drift logs numbered "1", but these species occur in the greatest numbers in other areas, as indicated. One each of the three species listed for "driftlogs, 1" were found there and then observations ceased as the search for birds in that type of habitat is disruptive. The question mark after Pigeon Guillemot in the "driftlogs 2" area indicates that this bird was suspected to nest there, but it seemed unnecessary to tear apart the habitat for confirmation.

A wooden ladder which apparently used to provide access from the bare rock to the M.O.T. installation has fallen into disrepair, and the present route taken by light-tending personnel has caused considerable damage to a portion of the puffin colony. Also, dead batteries from the light have been discarded into the vegetation north of the marker and have undoubtedly resulted in some loss of petrel nesting habitat.

Only 20 eggs and five young birds could be accounted for from a total of 108 gull nests, and this in conjunction with the fact that some of the grass areas had been trampled (24 July 1972) suggested that further human disturbance, perhaps egg gathering, had occurred on the island in that year.

Seabird Rocks, with its nesting petrels and alcids, is unique in Pacific Rim National Park, but it is small and fragile, and it will require careful handling. It cannot withstand being made an attraction, and should simply be preserved, quietly.

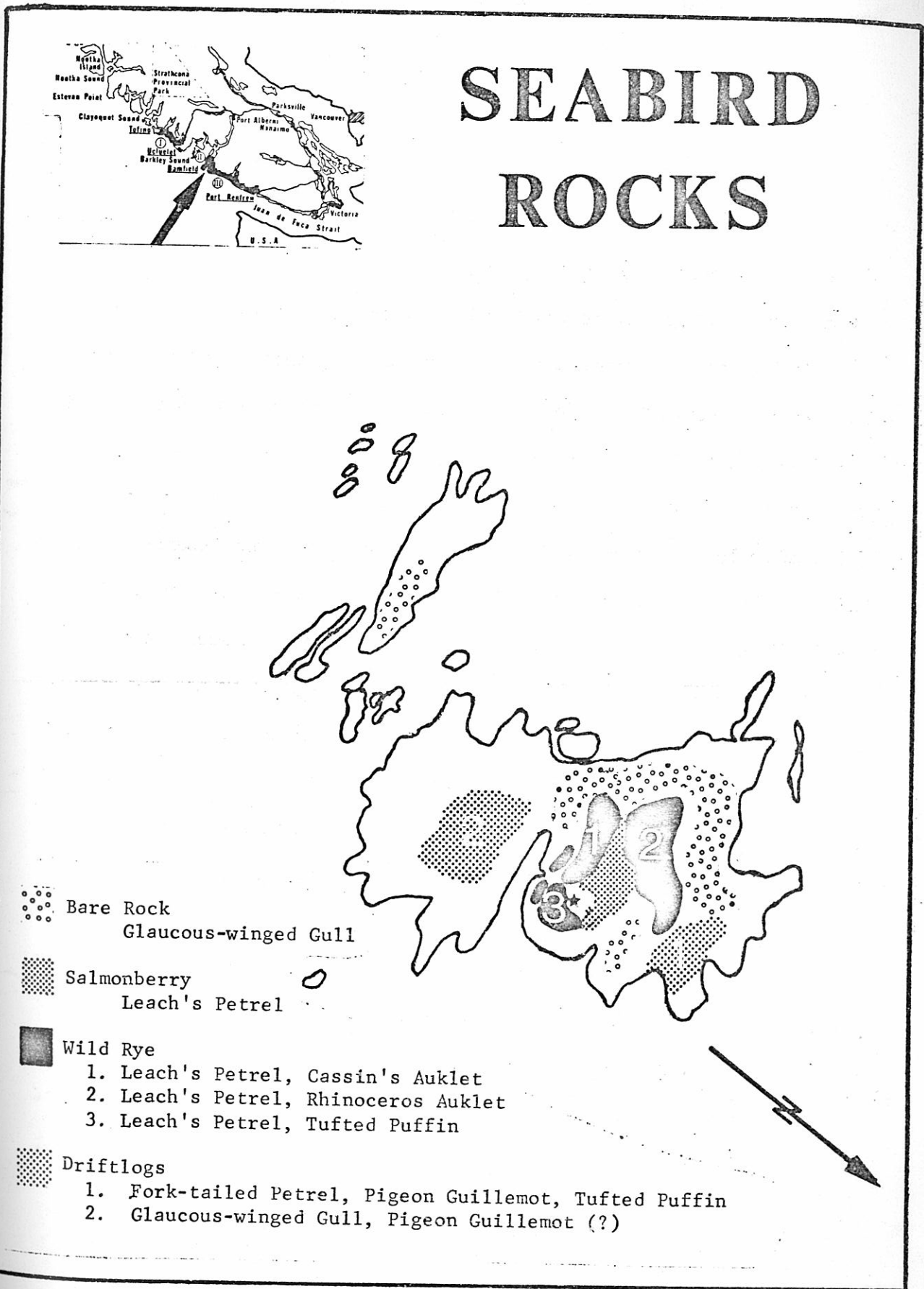


Figure 14. Seabird Rocks

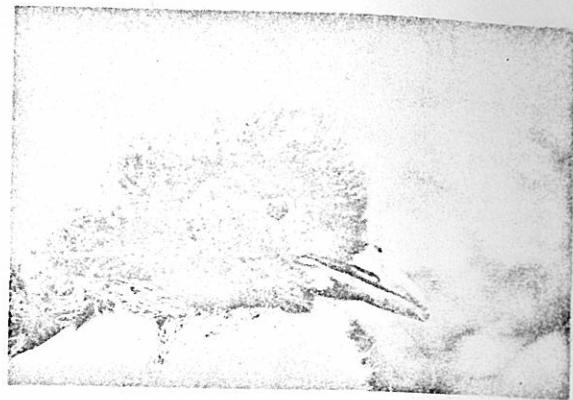
Other

Special mention should be made here of Great Bear Rocks and Starlight Reef. These small, rocky islets support the only sea bird colonies in Barkley Sound which are near the park, but both fall outside its boundaries. They are of interest in that in recent years both have supported substantial colonies of successfully nesting Brandt's Cormorants and, with Sea-lion Rocks, they are the only places in Canada which have done so during more than one year. At the present time, these cormorants are nesting on Starlight Reef (which is far enough offshore and sufficiently difficult to land upon to be self-protecting), but have not done so on Great Bear Rocks since 1971. The large number of birds which roosted there, even during winter months (15 December 1971, hundreds, DFH), disappeared after the Japanese freighter "Vanlene" went aground on Austin Island. They have not been seen there in numbers since. On 19 May DFH found a single carcass on Great Bear Rocks, its wing feathers heavily coated with oil, but whether or not the complete disappearance of cormorants there was caused by the oil released by the Vanlene can not be determined with certainty.

Throughout this report we have stressed the fragile nature of sea bird colonies, and we will end this section with remarks on that subject. Appendix 8, a reproduction of the B. C. Parks Branch pamphlet "How to Visit a Sea Bird Colony" is provided as a summary procedure. We hope that park personnel will keep records of the distribution and performance of nesting birds in future years, and they should do so knowing that disturbance can be kept to a minimum if done properly. Two points not brought out in the pamphlet are worth mentioning here:



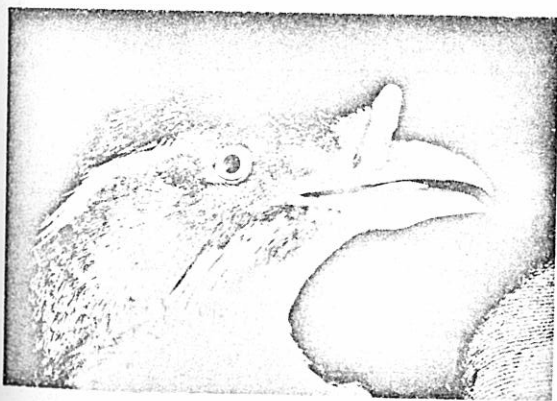
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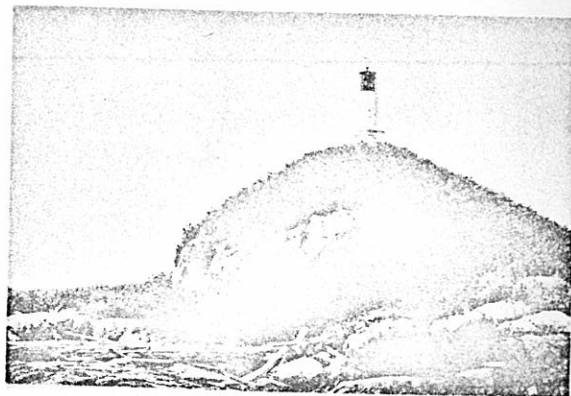
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e

Among the birds nesting on Seabird Rocks in Phase III are the Tufted Puffin (a. an adult taken from its nesting burrow, b. a downy young bird), the Fork-tailed Petrel (c), and the Rhinoceros Auklet (d). Significant occurs only on this tiny islet. The Ministry of Transport marker light is shown in illustration "e". MOT personnel servicing the light have passed through a portion of the puffin colony, collapsing burrows and making nesting there impossible. Dead batteries from the light have been discarded in the low vegetation, in Leach's Petrel nesting habitat. These problems are easily correctable (see recommendations). (photo credits: MEH-a; RWC-c; DFH-b, d and e.)

1. Cormorants, if suddenly frightened, can break eggs and kill young in their haste to escape, but if an observer shows himself slowly, at some distance, the birds can move onto the edges of their nests first, and their flights from there will cause minimum damage.
2. Colonies of burrow nesters, such as at Seabird Rocks, exist in a spongy "honeycomb" turf which is subject to considerable damage. The observer should crawl, rather than walk upon such areas.

DISCUSSION

Previous pages have provided detailed specific information on the avifauna of Pacific Rim National Park, and a detailed discussion here seems neither desirable nor necessary. A review of our findings, in general terms, should prove useful, however.

Of the 238 species on our list, just 53 are breeding residents. Notable among these are denizens of sea and shore such as the Red-throated Loon, Brandt's and Pelagic Cormorant, Great Blue Heron, Bald Eagle, Black Oystercatcher and Glaucous-winged Gull, and several forest species such as the Steller's Jay, Pileated Woodpecker, Chestnut-backed Chickadee, Golden-crowned Kinglet, Winter Wren, Brown Creeper and Red Crossbill.

Another 13 birds including all three scoter species, the Harlequin Duck and some of the spectacular offshore species (Black-footed Albatross and Northern Fulmar) are present throughout the year, but do not breed in the park area.

Species which winter elsewhere and move into the park area to breed number 34, and include Fork-tailed and Leach's Petrels, Marbled Murrelets, Rhinoceros Auklets, Tufted Puffins, Band-tailed Pigeons, and numerous smaller birds of which some of the most common are Rufous Hummingbird, Swainson's Thrush and Orange-crowned Warbler. Four species of shearwaters and the Caspian Tern also appear in the park area in summer, but only as non-breeders.

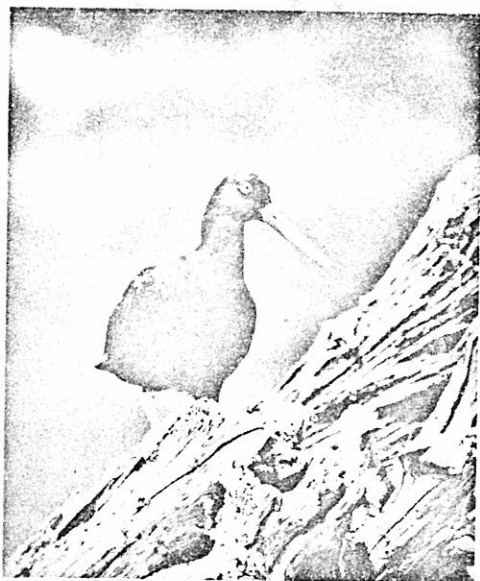
Twenty-three species are primarily winter birds in this area. These include three species of grebes, eight species of diving ducks, the Double-crested Cormorant and the Trumpeter Swan. The largest category in the park area, however, is that of migrant. Birds which feed and rest in our area during the time they are enroute to and from their breeding grounds number 75, and include several ducks and geese, some hawks, a large list

of shorebirds, and several passerines. These are very variable in their local occurrence. Some, such as the Black Brant, are here only in spring while others (Buff-breasted Sandpiper, Heerman's Gull) have been seen only in fall. Some (Canada Goose, Green-winged Teal) may stay in the area for months, while others (most sandpipers in spring) are present for only a matter of days.

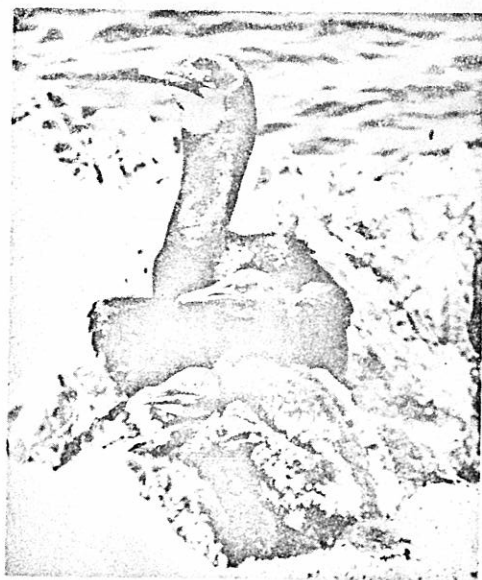
The remaining 35 species include 18 which we have listed as hypothetical either because our records of their occurrence were not satisfactorily documented (Eared Grebe, Long-tailed Jaeger, Hammond's Flycatcher) or because we have not seen them even though their known occurrence in adjacent areas have led us to suspect them to be present at least occasionally (Redhead, Golden Eagle, Common Tern). Nine species which we documented in the park area were unexpected on the basis of their presently known range, and we have given them a status of accidental (eg., Green Heron, Snowy Plover, and Chestnut-collared Longspur). The other eight species are known to occur, but only very rarely and we did not have sufficient information to fit them into any of the above categories. Among these were the Virginia Rail, the Downy Woodpecker, and the Northern Mockingbird.

At the start of a typical chronological year, in January, an observer could expect to see most of the resident and winter birds in visits to the appropriate habitats. Diving species such as the loons, grebes, and ducks (especially scoters, scaup and Buffleheads) predominate on park waters at that time, and passerines such as Winter Wrens, Song Sparrows, and Dark-eyed Juncos can be seen frequently on land. By March, Varied Thrushes and Song Sparrows are singing in local woods and juncos seem especially abundant. Gulls and diving ducks peak in numbers coincidental with the spawning of herring in local bays during that month.

The appearance of spring migrants and summer species occurs mostly in April and May, during which time most of the winter species also depart. June is probably the month during which fewest species may be seen in the Pacific Rim National Park area. The beginning of the fall movement of shorebirds begins in early to mid-July and peaks in August. Also during the latter month, migration of geese and dabbling ducks is much in evidence, especially just offshore. Fall migration continues through September and October, with some winter species appearing at that time. By early November few migrants will be seen and most winter species have arrived. Appearance of the latest arriving species such as Common Goldeneyes and Trumpeter Swans completes the local phenological cycle.



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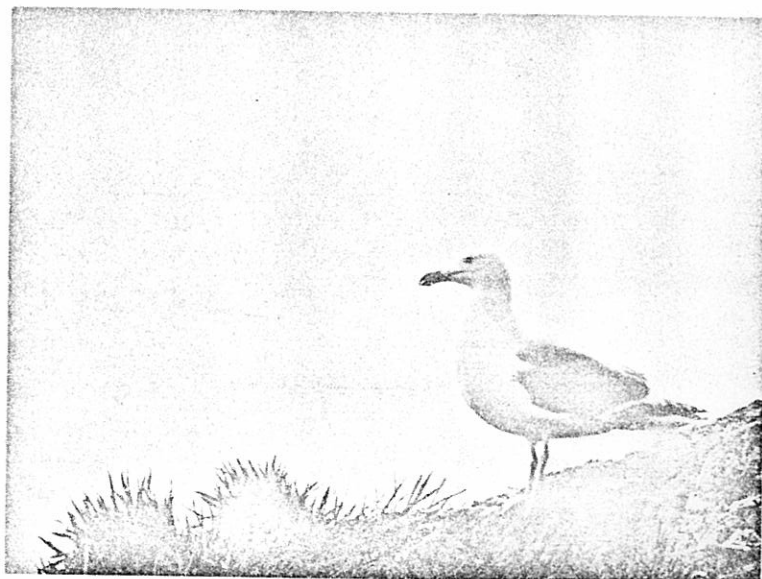
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f

The Black Oystercatcher (a. adult, b. young and egg in nest) is a common resident of the park; The Brandt's Cormorant (c. adult with young, d. nests on White Island) nests, in Canada, only in the park area. Gathering of gull eggs (e) is probably no threat to local Glaucous-winged Gull (f) populations, but may cause serious disturbance to other species nesting near gull colonies. (RWC-a, d and e; DFH-b, c, and f).

RECOMMENDATIONS

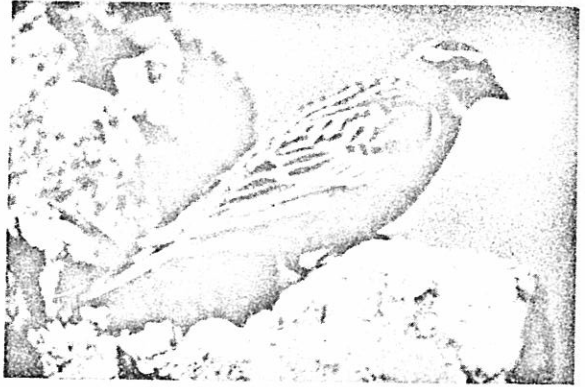
1. We recommend that park personnel continue to record observations on the avifauna of Pacific Rim National Park, paying particular attention to the gaps in our knowledge for a number of species, as indicated in this report. Observers should remember that documentation by photograph or specimen can be handled through the British Columbia Provincial Museum.
2. A potential problem on sea bird colonies is the gathering of the eggs of colonial nesters, especially gulls, by people who claim aboriginal rights to them. While there are probably "enough gulls to go around", such activities can have adverse effects on other species, especially cormorants and burrow nesters. We have heard that sea bird eggs were not eaten on this coast before the arrival of the white man, but can supply no evidence one way or the other. Neither can we provide details on the extent of egg collecting in the park, although we have seen it on White Island and have suspected it on Seabird Rocks. An anticipatory study of this problem before friction develops might prove worthwhile.
3. Unauthorized small boats should be discouraged from approaching the Sealion Rocks' Brandt's Cormorant colony too closely.
4. The Ministry of Transport should be asked to cooperate with Pacific Rim National Park authorities in the following ways at Seabird Rocks:
 - a. A metal ladder should be secured from the signal light platform to bare rock at the base of the knoll, and personnel tending the light should be encouraged to use only this ladder. Portions of the Tufted Puffin colony there which have been damaged by foot traffic to the light in the past, could probably be restored in just one season.
 - b. Batteries which have been discarded on the island should be removed.
 - c. Personnel tending the light should be encouraged not to walk on the vegetated part of the island.
 - d. Work indicated in a and b, above, should be carried out before the next nesting season, preferably in fall or winter.
5. The avifauna of Seabird Rocks should not be advertised to park visitors, and access to unauthorized persons should be forbidden. This small islet can contribute to the direct enjoyment of the masses only by supplying birds which can be seen pelagically in park waters.
6. Though it is not now supporting nesting Brandt's Cormorants, Great Bear Rocks has done so in the past and is clearly capable of doing so again. It is close enough to the north boundary of Phase II so that inclusion of it and Alley Rock, an important roosting area, should not be difficult. There are now no sea bird nesting or regular roosting areas within Phase II boundaries and this should be corrected. We strongly recommend that Great Bear Rocks and Alley Rocks be claimed for Pacific Rim National Park.

7. In a previous report, the senior author showed that South Bay, at the park's north boundary in southern Clayoquot Sound, is an important feeding and resting area for Canada Geese and dabbling ducks in fall and early winter. That report (Hatler, 1973) also showed that no area presently within park boundaries provides for these species satisfactorily. This area has supported thousands of birds in the past, with no management assistance from man, and we therefore question whether the management plan which we have heard rumoured for the area (under the auspices of the Canadian Wildlife Service and the British Columbia Fish and Wildlife Branch) is necessary. We question even further whether habitat management for the area is compatible with the policy of preservation of natural habitats, a stated function of national parks. We again recommend that South Bay, at least, be taken into Pacific Rim National Park.

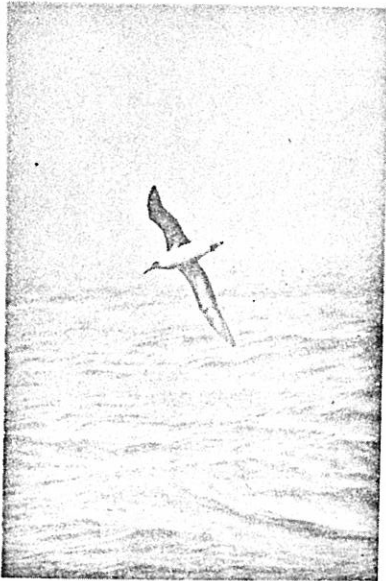
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In the past, the only acceptable proof of the occurrence of a bird in a particular place was a dead body. Documentation by photograph, certainly as reliable as the former method for easily recognized species, is particularly appropriate in national parks where preservation is the prevailing policy. The above photographs from the photoduplicate file at the B. C. Provincial Museum (see Campbell and Stirling, 1971) document the following occurrences in the PRNP area:

- a.) Mew Gulls nesting at Kennedy Lake (note nest and eggs)-
PDF No. 14. (RWC)
- b.) Chestnut-collared Longspur in Barkley Sound (note that
photo need not be of prize-winning quality to enable
confirmatory identification)-PDF No. 224. (DFH)
- c.) Laysan Albatross off British Columbia coast-PDF No. 149. (RWC)
- d.) Cassin's Auklet nesting on Seabird Rocks. Photo is of
a juvenile (note downy plumage) taken from a burrow
there-PDF No. 290. (DFH)

LITERATURE CITED

- American Ornithologists' Union. 1957. The A. O. U. checklist of North American birds (5th. edition). Baltimore, Maryland. 691 p.
- American Ornithologists' Union. 1973. Thirty-second supplement to the American Ornithologists' Union checklist of North American Birds. *Auk* 90:411-419.
- Beebe, F. 1959. A nesting record of a Black Swift. *Murrelet* 40:9.
- Bent, A. C. 1919. Life histories of North American diving birds. *U. S. Nat. Mus. Bull.* 107:1-239.
- Bent, A. C. 1922. Life histories of North American petrels and pelicans and their allies. *U. S. Nat. Mus. Bull.* 121:1-335.
- Brooks, A. 1922. Notes on the abundance and habits of the Bald Eagle in British Columbia. *Auk* 39(4):556-559.
- Brown, R. G. B. 1970. Fulmar distribution: A Canadian perspective. *Ibis* 112:44-51.
- Campbell, R. W. 1967. Wickaninnish Provincial Park, summer 1967. Unpubl. report, Interpretation, B. C. Parks Branch, Victoria, B. C. 162 p.
- Campbell, R. W. and D. Stirling. 1967. Notes on the natural history of Cleland Island, British Columbia, with emphasis on the breeding bird fauna. B. C. Provincial Museum Annual Report, 1967. Victoria, B. C. 19 p.
- Campbell, R. W. 1968. Wickaninnish Provincial Park, summer 1968. Unpubl. report, Interpretation, B. C. Parks Branch, Victoria, B. C. 104 p.
- Campbell, R. W. 1968a. European Starling at Pachena Lighthouse. *Victoria Naturalist* 24:55.
- Campbell, R. W. and D. Stirling. 1968. Notes on the vertebrate fauna associated with a Brandt's Cormorant colony in British Columbia. *Murrelet* 49(1):7-9.
- Campbell, R. W. 1968. Long-tailed Jaeger sighted at Vancouver, British Columbia. *Murrelet* 49:6.
- Campbell, R. W. 1969. Bald Eagle swimming in ocean with prey. *Auk* 86(3):561.
- Campbell, R. W. 1970. Summary of spring and fall pelagic trips from Tofino, British Columbia. *Vancouver Natural History Society Newsletter* 150:13-16.
- Campbell, R. W. 1970a. The Sabine's Gull in southwestern British Columbia. *Can. Field-Natur.* 84:310-311.

- Campbell, R. W. 1970b. Recent information on nesting colonies of Mew Gulls on Kennedy Lake, Vancouver Island, British Columbia. *Syesis* 3:5-14.
- Campbell, R. W. and D. Stirling. 1971. A photoduplicate file for British Columbia vertebrate records. *Syesis* 4:217-222.
- Campbell, R. W. 1971a. Status of the Caspian Tern in British Columbia. *Syesis* 4:185-189.
- Campbell, R. W. 1971b. First Canadian specimen of New Zealand Shearwater. *Can. Field-Natur.* 85:329-330.
- Campbell, R. W. 1971. Steller's Eider photographed near Campbell River, British Columbia. *Can. Field-Natur.* 85:330-331.
- Campbell, R. W., M. G. Shepard and R. H. Drent. 1972. Status of birds in the Vancouver area in 1970. *Syesis* 5:137-167.
- Campbell, R. W. and M. G. Shepard. 1972a. Checklist of Vancouver birds. University of British Columbia. Department of Zoology (publisher)
- Campbell, R. W., M. G. Shepard and W. C. Weber. 1972. Vancouver birds in 1971. Vancouver Natural History Society Spec. Publ. No. 2, 88 p.
- Campbell, R. W. 1972. The Green Heron in British Columbia. *Syesis* 5:235-247.
- Campbell, R. W. and R.G. Foottit. 1972. The Franklin's Gull in British Columbia. *Syesis* 5:99-106.
- Campbell, R. W. and M. G. Shepard. 1972. Summary of 1971 offshore birding trips. *Discovery* 154:7-8. (published by the Vancouver Natural History Society).
- Campbell, R. W. and M. G. Shepard. 1973. Laysan Albatross, Scaled Petrel, Parakeet Auklet: Additions to the list of Canadian birds. *Can. Field - Natur.* 87(2): 179-180.
- Campbell, R. W. In press. The Buff-breasted Sandpiper in British Columbia. (*Syesis*, 1974).
- Campbell, R. W. and K. Taylor. Manuscript. The Mockingbird in British Columbia.
- Clemens, W. A. and G. V. Wilby. 1961. Fishes of the Pacific Coast of Canada. *Bull. Fish. Res. Bd. Canada*, No. 168. 443 p.
- Drent, R. H. and C. J. Guiguet. 1961. A catalogue of British Columbia sea-bird colonies. *B. C. Provincial Mus. Occas. Papers* No. 12. 173 p.
- Drent, R. H., G. F. van Tets, F. Tompa, and K. Vermeer. 1964. The breeding birds of Mandarte Island, British Columbia. *Can. Field-Natur.* 78(4):208-263.
- Edwards, R. Y. 1968. Notes on the gulls of southwestern British Columbia. *Syesis* 1:199-202.

- Erskine, A. J. 1971. Buffleheads. Can. Wildl. Serv. Monograph Ser. No. 4. Queen's Printer, Ottawa. 240 p.
- Friedmann, H. 1963. Host relations of the parasitic cowbirds. U. S. Natl. Museum Bull. 233:1-276.
- Godfrey, W. E. 1966. The birds of Canada. Nat. Mus. Canada Bull. 203. Ottawa 428 p.
- Grant, J. 1966. A Black Swift nest in British Columbia. Can. Field-Natur. 80:60-61.
- Gruchy, C. G., A. R. R. Dykes and R. H. Brown. 1972. The Short-tailed Albatross recorded at Ocean Station Papa, North Pacific Ocean, with notes on other birds. Can. Field-Natur. 86(3):285-287.
- Guiguet, C. J. 1953. An ecological study of Goose Island, British Columbia, with special reference to mammals and birds. B. C. Prov. Museum Occas. Papers No. 10, Victoria. 78 p.
- Guiguet, C. J. 1961. Some recent sight records of European Starling nesting on new territory in western British Columbia. Report of the B. C. Prov. Museum, 1960. Victoria, B. C.
- Guiguet, C. J. 1971. A list of sea bird nesting sites in Barkley Sound, British Columbia. Syesis 4:253-259.
- Hansen, H. A., P. E. K. Shepherd, J. G. King and W. A. Troyer. 1971. The Trumpeter Swan in Alaska. Wildl. Monogr. 26. 83 p.
- Harris, R. D. 1971. Further evidence of tree nesting in the Marbled Murrelet. Can. Field-Natur. 85(1):67-68.
- Hartwick, E. B. 1973. Foraging strategy of the Black Oystercatcher. Unpubl. PhD Thesis, Univ. of British Columbia, Vancouver. 138 p.
- Hatler, D. F. 1972. The mammals of Pacific Rim National Park. Unpubl. report, National and Historic Parks Branch, Western Region, Edmonton. 223 p.
- Hatler, D. F. 1972¹. Fish eating birds choking on prey. Discovery (Vancouver Natural History Society) 1(4):108-110.
- Hatler, D. F. 1973. An analysis of use, by waterfowl, of tideflats in southern Clayoquot Sound, British Columbia. Unpubl. report, Canadian Wildlife Service. 134 p.
- Hatler, D. F. 1973a. Chestnut-collared Longspur in British Columbia. Can. Field-Natur. 87(1):66.
- Hatler, D. F. Manuscript. Bald Eagle preys upon Arctic Loon. Submitted to the Auk, February 1973.
- Hatler, D. F. and R. W. Campbell. In preparation. Notes on spring migration, including sex segregation, of the western Savannah Sparrow.

- Henderson, B. A. 1972. Control and organization of parental feeding and its relationship to the food supply for the Glaucous-winged Gull, Larus glaucescens. Unpubl. MSc Thesis, Univ. of British Columbia, Vancouver. 94 p.
- Henny, C. J. and J. C. Ogden. 1970. Estimated status of Osprey populations in the United States. *J. Wildl. Mgmt.* 34(1):214-217.
- Henny, C. J. and H. M. Wight. 1969. An endangered osprey population: estimates of mortality and production. *Auk* 86(2): 188-198.
- Irving, E. B. 1953. Birds at Carmanah Point. *Victoria Naturalist* 10(3):28-32.
- Jewett, S. G., W. P. Taylor, W. T. Shaw and J. W. Aldrich. 1953. Birds of Washington State. Univ. of Washington Press, Seattle. 767 p.
- Johnson, S. R. 1972. Thermal regulation in North American Sturnidae. Unpubl. PhD Thesis, Univ. of British Columbia, Vancouver.
- Jones, R. D. 1970. Reproductive success and age distribution of Black Brant. *J. Wildl. Mgmt.* 34(2):328-333.
- King, J. G., F. C. Robards and C. J. Lensink. 1972. Census of the Bald Eagle breeding population in southeast Alaska. *J. Wildl. Mgmt.* 36(4):1292-1295.
- King, J. R., D. S. Farner and L. R. Mewaldt. 1965. Seasonal sex and age ratios in populations of the White-crowned Sparrows of the race gambelii. *Condor* 67(6):489-504.
- Koelink, A. F. 1972. Bioenergetics of growth in the Pigeon Guillemot, Cepphus columba. Unpubl. MSc Thesis, Univ. of British Columbia, Vancouver. 71 p.
- Lemon, E. K. 1968. First nesting record of the Mockingbird in British Columbia. *Can. Field-Natur.* 82:146-147.
- MacArthur, R. H. 1958. Population ecology of some warblers of northeastern coniferous forests. *Ecology* 39:599-619.
- Martin, P. W. 1942. Notes on some pelagic birds on the coast of British Columbia. *Condor* 44:27-29.
- Martin, P. W. and M. T. Myres. 1969. Observations on the distribution and migration of some seabirds off the outer coasts of British Columbia and Washington State, 1946-1949. *Syesis* 2:241-256.
- Morse, T. E., J. L. Jakabosky and V. P. McCrow. 1969. Some aspects of the breeding biology of the Hooded Merganser. *J. Wildl. Mgmt.* 33(3): 596-604.
- Munro, J. A. 1938. The northern Bald Eagle in British Columbia. *Wilson Bull.* 1: 28-35.
- Munro, J. A. and I. McT. Cowan. 1947. A review of the bird fauna of British Columbia. B. C. Prov. Museum Spec. Publ. No. 2. Victoria. 285 p.

- Nettleship, D. N. 1972. Breeding success of the Common Puffin (Fratercula arctica L.) on different habitats at Great Island, Newfoundland. *Ecol. Monogr.* 42(2): 239-268.
- Nichols, J. T. 1927. Tubinares off the Northwest Coast. *Auk* 44:326-327.
- Pearse, T. 1946. Nesting of Western Gull off the coast of Vancouver Island, British Columbia, and possible hybridization with Glaucous-winged Gull. *Murrelet* 27:39-40.
- Pearse, T. 1968. Birds of the early explorers of the northern Pacific. Publ. by Theed Pearse, Comox, B. C.; sponsored by the Centennial Commission as a Centennial of Canadian Confederation project.
- Peterson, R. T. 1961. A field guide to western birds, Second Edition. Houghton Mifflin Co., Boston. 366 p.
- Plowden-Wardlaw, W. J. 1941. Birds collected off the west coast of Vancouver Island. *Murrelet* 22:37.
- Poynter, G. A. 1972. British Columbia Record of Snowy Plover. *Discovery* 1(3):69-70. (publ. by Vancouver Natural History Society)
- Retfalvi, L. 1965. Breeding behaviour and feeding habits of the Bald Eagle (Haliaeetus leucocephalus L.) on San Juan Island, Washington. Unpubl. MSc Thesis, Univ. of British Columbia, Vancouver. 180 p.
- Richardson, F. 1970. A North American record of the Bristle-thighed Curlew outside Alaska. *Auk* 87(4):815.
- Richardson, F. 1971. Birds of Grant Bay and Browning Inlet, Northwest Vancouver Island, British Columbia; a year's phenology. *Murrelet* 52(3):29-40.
- Robbins, C. S., B. Bruun, H. S. Zim and A. Singer. 1966. *Birds of North America*. Golden Press, New York. 340 p.
- Robertson, I. 1971. The influence of brood-size on reproductive success in two species of cormorant, Phalacrocorax auritis and P. pelagicus, and its relation to the problem of clutch size. Unpubl. MSc Thesis, Univ. of British Columbia, Vancouver. 47 p.
- Sanger, G. A. 1965. Observations of wildlife off the coast of Washington and Oregon in 1963, with notes on the Laysan Albatross in this area. *Murrelet* 46(1):1-6.
- Sanger, G. A. 1970. Checklist of bird observations from the eastern north Pacific Ocean. *Murrelet* 53(2):16-21.
- Sanger, G. A. 1970. The seasonal distribution of seabirds off Washington and Oregon, with notes on their ecology and behaviour. *Condor* 72(3): 339-357.
- Savile, D. B. O. 1972a. Spring observations of Sabine's Gull. *Can. Field-Natur.* 86(4):389.

- Savile, D. B. O. 1972b. Evidence of tree nesting by the Marbled Murrelet in the Queen Charlotte Islands. *Can. Field-Natur.* 86(4): 389-390.
- Schick, W. J. 1970. First British Columbia specimen record of Caspian Tern. *Syesis* 3:187.
- Slater, P. 1970. A field guide to Australian birds: non-passerines. Rigby Ltd., Adelaide. 428 p.
- Smith, I. D. and D. A. Blood. 1972. Native swans wintering on Vancouver Island over the period 1969-71. *Can. Field-Natur.* 86(3):213-216.
- Smith, S. M. 1967. An ecological study of winter flocks of Black-capped and Chestnut-backed Chickadees. *Wilson Bull.* 79(2):200-207.
- Stirling, D. and F. Buffam. 1966. The first breeding record of Brandt's Cormorant in Canada. *Can. Field-Natur.* 80(2):117-118.
- Tatum, J. B. 1972. Annual bird report (1971) for southern Vancouver Island. Victoria Natural History Society, Victoria, B. C. 66 p.
- Tuck, L. M. 1960. The murre. *Can. Wildl. Service Series*, No. 1. Queen's Printer, Ottawa. 260 p.
- Udvardy, M. D. F. 1954. Summer movements of Black Swifts in relation to weather conditions. *Condor* 56(5):261-266.
- Vermeer, K. 1963. The breeding ecology of the Glaucous-winged Gull (Larus glaucescens) on Mandarte Island, British Columbia. *Occas. Papers, B. C. Prov. Museum* 13:1-104.
- Ward, J. G. 1973. Reproductive success, food supply, and the evolution of clutch size in the Glaucous-winged Gull. Unpubl. PhD Thesis, Univ. of British Columbia, Vancouver. 124 p.
- Westerborg, B. 1964. Seabirds off Tofino. *Victoria Naturalist* 21:27-28.
- Wilbur, S. R. and C. F. Yocom. 1971. Unusual geese in the Pacific Coast states. *Murrelet* 52(2):16-19.

Appendix 1. Gazetteer of locations mentioned in text.

Most of the locations mentioned in the text occur along the southern half of Vancouver Island's west coast, in the immediate vicinity of Pacific Rim National Park. In the following list, the description of each location actually within park boundaries (as shown in Figure 1) is prefaced with a Roman numeral (I, II, or III) indicating in which of the three park "phases" it occurs. The description of each location is as concise as possible, and often employs reference to another location in the list. Knowledge of the locations of Tofino, Clayoquot Sound, Ucluelet, Barkley Sound, Bamfield, Port San Juan, and Port Renfrew (see Figure 1) is assumed. In most cases, reference is made to 1. A topographical map, British Columbia Department of Lands, Forests and Water Resources-A. Vancouver Island (SGS No. 1), B. Tofino (92F/4 east and west), C. Carmanah (92C/10 east and west); D. Nootka Sound (92E), 2. A marine chart, Canadian Hydrographic Service-Barkley Sound and Approaches (3627), or 3. An illustration in this report (by figure number) on which the location may be found. The following abbreviations are used: V.I.=Vancouver Island; n,s,e and w= north, south, east and west; W.C. Trail=West Coast Trail (phase III).

- A: AHOUSAT-se Flores Island (Fig. 1); ALLEY ROCK-sw Barkley Sd. near Great Bear Rocks (3627); ALMA RUSSELL ISLANDS-n Barkley Sd. e of Pinkerton Islands (Fig. 1); AMPHITRITE POINT-s tip of Ucluth Peninsula (Ucluelet area, Fig. 1); ARAKUN FLATS-tideflats near mouth of Lemmens Inlet (92F/4 west); ATLEO RIVER-across Millar Channel from ne Flores Island; AUSTIN ISLAND-(II), outer Broken Group near Effingham Island (Fig. 2);
- B. BAERIA ROCKS-inner Barkley Sd. near Alma Russell Islands (Fig. 2); BARTLETT ISLAND-just nw of Vargas Island (92E); BATLEY ISLAND-(II), outer Barkley Sound near Wouwer Island (3627); BECK ISLAND-between Tofino and Opitsat (92F/4 west); BEDWELL SOUND (B. RIVER)-n of Meares Island in Clayoquot Sound (Fig. 1); BEG ISLETS-near mouth of Ucluelet Inlet (Fig. 10); BENSON ISLAND-(II), sw Broken Group (Fig. 10); BIG BANK-fishing grounds in pelagic waters off Ucluelet and Tofino; BLACK LAKE-e of Pachena Bay (Fig. 1); BLACK RIVER-(III), stream draining Black Lake (Fig. 1); BONILLA POINT-(III), s of Carmanah Point (Fig. 1); BOTANY BAY-s of Port Renfrew; BOX ISLAND-(I), off s end of Schooner Cove (92F/4 west); BRABANT ISLANDS-(II), nw Broken Group near Hand Island (3627); BROKEN GROUP-the islands comprising Phase II of PRNP; BROOKS PENINSULA-nw V. I. about 18 miles n of Kyuoquot (SGS No. 1); BROWNING INLET-nw V.I. at mouth of Quatsino Sd (SGS No. 1); BROWNING PASSAGE-channel in Tofino Inlet (Fig. 1).
- C. CACHALOT INLET-s side of Kyuoquot Sd. at mouth of Narrowgut Crk. (92E); CALMUS PASSAGE-channel n of Vargas Island (92E); CAMPER BAY-near s end W.C. Trail (Fig. 1); CAPE BEALE-(III), n point of Phase III (Fig. 1); CAPE SCOTT-nw tip of V. I. (SGS No. 1); CARMANAH POINT-(C. CREEK)-(III), s of Clo-oose (Fig. 1); CHALK ISLAND-(II), in Turtle Island Group (3627); CHEEWAT (C. LAKE, C. RIVER)-(III), near Clo-oose (Fig. 1); CHESTERMAN BEACH-about 3 miles s of Tofino on w side of Esowista Peninsula, just n of Cox Bay; CHROW ISLETS-Barkley Sd. in Loudoun Channel near Ucluelet (Fig. 10); CLARKE ISLAND-(II), sw Broken Group (Fig. 10); CLAUD ELLIOTT LAKE-head of Tsitida River (SGS No. 1); CLAYOQUOT ARM-branch of Kennedy Lake (Fig. 1); CLAYOQUOT SPIT-north Stubbs Island; CLELAND ISLAND-3 miles w of Vargas Island (92E); CLO-OOSE-(III), village just s of Nitinat (Fig. 1); COMBERS'-(I), =Sandhill Crk.; COOPER ISLAND-(II), outer Broken Group near Effingham Island (3627); CORMORANT ROCK-(I), islet off Quisitis Headland (Fig. 2); COX BAY-bay just n of Phase I's n boundary (Fig. 1); COX POINT-(I), near nw park boundary (Fig. 1); CREE ISLAND-(II), se Broken Group (3627); CULLITE CREEK-(III), s quarter of W. C. Trail (Fig. 1).

- D. DARE POINT-(III), just s of Clo-oose (92C/10 west); DARLING RIVER-(III), s of Michigan Creek (3627); DEER GROUP-string of islands between Imperial Eagle Channel and Bamfield (Fig. 1); DEMPSTER ISLAND-(II), near Gibraltar Island in east central Broken Group (Fig. 2); DIANA ISLAND-outer Deer Group (Fig. 1); DICEBOX ISLAND-(II), outer Broken Group near Effingham Island (3627); DODD ISLAND-(II), in Turtle Island Group (3627); DOOBAH LAKE-near Sprise Lake (92C/10 east).
- E. EDWARD KING ISLAND-outer Deer Group (Fig. 2); EFFINGHAM ISLAND-(II), se Broken Group (Fig. 1); EQUUS BEACH-n Barkley Sd. near Pinkerton Islands (3627); ESOWISTA PENINSULA-the peninsula on which Tofino lies (92F/4 west); ESOWISTA RESERVE-(I) IR.3 along n Long Beach (92F/4); ESPERANZA INLET-just north of Nootka Sound, central w coast of V. I. (SGS No. 1).
- F. FABER ISLETS-(II), central Broken Group se of Turtle Island (3627); FATHER CHARLES CHANNEL-e of Vargas Island (92E); FERRER POINT-s side of mouth of Nuchatlitz Inlet (SGS No. 1); FLEMING ISLAND-Deer Group n of Bamfield (Fig. 1); FLETCHER'S BEACH-s of Wya Point (Fig. 2); FLORENCIA BAY-(I), s of Quisitis Point (Fig. 8); FLORENCIA ISLAND-(I), in Florencia Bay (Fig. 2); FLORES ISLAND-about 12 miles nw of Tofino (Fig. 1); FOLGER ISLAND-outer Deer Group (Fig. 2).
- G. GEORGE FRASER ISLANDS-Barkley Sd. near Ucluelet (3627); GIBRALTER ISLAND-(II), s of Nettle Island (Fig. 2); GILBERT ISLAND-(II), outer Broken Group near Effingham Island (3627); GOLDMINE TRAIL-(I), Fig. 8; GOWLAND ROCKS (=GOWLLAND ROCKS-(I), about 2 miles s of Cox Point (92F/4 west); GRANT BAY-nw V. I. at mouth of Quatsino Sd. (SGS No. 1); GRAPPLER INLET-Bamfield (3627); GREAT BEAR ROCKS-sw Barkley Sd. (Fig. 2); GREEN POINT-(I), headland at mid-Long Beach below campground; GRICE BAY-(I), southern Clayoquot Sd. along park's n boundary (Fig. 1); GRICE BAY TRAIL-(I), see Fig. 6.
- H. HAND ISLAND-(II), nw Broken Group (3627); HANKIN ISLAND-(II), north central Broken Group (Fig. 10); HERBERT INLET-e of Flores Island (Fig. 1); HOBBS CREEK-(III), near s end of W. C. Trail--drains into Port San Juan; HOBITON LAKE-ne of Tsusiat Lake (Fig. 1); HOLE-IN-THE-WALL-(III), just n of Nitinat; HOWELL ISLAND-(II), outer Broken Group near Wouwer Island (3627).
- I. IMPERIAL EAGLE CHANNEL-e Barkley Sd. (Fig. 1); INCINERATOR POINT-(I), 1st headland on Long Beach s of Esowista Reserve; INDIAN ISLAND-(I), n Grice Bay (Fig. 1); INDIAN RIVER-(I), stream running into head of Grice Bay (Kootawis Creek on 92F/4 east); INNER BASIN-inner Nuchatlitz Inlet (SGS No. 1).
- J. JANSON ISLAND-outer Barkley Sd. near George Fraser Islands (3627); JAQUES ISLAND-(II) ne Broken Group sw of Nettle Island (3627).
- K. KAPOOSE CREEK-about 2 miles s of Kyuoquot Sd. (SGS No. 1); KEEHA BEACH (K. BAY, K. MEADOWS)-(III), between Cape Beale and Pachena Bay (3627); KEITH ISLAND-(II), central Broken Group (3627); KENNEDY LAKE-(I, in part), lake east of Tofino--most observations near swim beach or on Hwy. 4 frontage (see Fig. 1); KENNEDY RIVER-outlet from Kennedy Lake (Fig. 1); KICHLA LAKE-(III), near Cape Beale (3627); KLANAWA RIVER-(III), one-third way along W.C. Trail from n (Fig. 1); KULAHNT CREEK-(III), just s of Bonilla Point (92C/10 east).
- L. LEMMENS INLET-Meares Island, n of Tofino (Fig. 1); LOGAN CREEK-(III), s quarter of W. C. Trail (Fig. 1); LONG BEACH AIRPORT-(I), between Grice Bay and McLean Point Road (Fig. 1); LONG BEACH CAMPGROUND-(I), mid-Long Beach, formerly Wickaninnish Provincial Park campsite; LONG BEACH ROAD-(I), road from Hwy. 4 to Wickaninnish Inn; LOST SHOE CREEK-(I), stream w/ mouth at Florencia Bay (Fig. 8); LOUDOUN CHANNEL-Barkley Sd. between Ucluelet and Broken Group (Fig. 1); LOVEKIN ROCK-(I), vegetated rock off Long Beach just s of Incinerator Point; LOVETT ISLAND-(II), w of Trickett Island (3627); LOWER MAINLAND-the Vancouver area, across the Strait of Georgia from V. I.; LYALL POINT-n Barkley Sd., n of Hand Island (Fig. 1).
- M. MACKENZIE BEACH-less than 2 miles s of Tofino on w side of Esowista Peninsula; MAGGIE LAKE-off n side of Barkley Sd., near Toquart Bay (Fig. 1);

MALLARD LAKE-(I), less than 2 miles se of Cox Point (92F/4 west); MALTEBY SLOUGH-tidal inlet near park's n boundary in Tofino Inlet (see Hatler, 1973); MARA ROCK-mouth of Barkley Sd. near Starlight Reef (3627); MARCHANT ISLAND-(II), in Tiny Group (3627); MARY BASIN-inner Nuchatlitz Inlet (92E); MAYNE BAY-n Barkley Sd. n of Lyall Point (3627); MCLEAN POINT-(I), s across Grice Bay from Indian Island; MCLEAN POINT ROAD-(I), from Hwy. 4 to Grice Bay (Fig. 5); MEGIN RIVER-n of Flores Island off Shelter Inlet (Fig. 1); MENCE ISLAND-(II), nw Broken Group near Brabant Islands (3627); MICHIGAN CREEK-(III), first creek s of Pachena Point (3627); MILLAR CHANNEL-e of Flores Island (Fig. 1); MORETON ISLAND-(II), outer Broken Group near Cooper Island (3627); MOUNT OZZARD-ne of Ucluelet (Fig. 1); MOYEHA RIVER-n of Tofino at head of Herbert Inlet (Fig. 1).

N. MANTES ISLAND-(II), just w of Turret Island (3627); NETTLE ISLAND-(II), ne Broken Group (Fig. 1); NITINAT (N. LAKE)-(III), central W. C. Trail (Fig. 1); NORTH LONG BEACH-(I), Incinerator Point to Box Island; NUCHATLITZ INLET-n Nootka Island, central west coast of V. I. (SGS No. 1).

O. ONION ISLAND-(II), central Broken Group (3627); OPTSAT-village on Meares Island just n of Tofino (Fig. 1); OUOUKINSCH INLET-nw V. I. just s of Brooks Peninsula (SGS No. 1); OWEN POINT-(III), n point at mouth of Port San Juan (Fig. 1); OWENS ISLAND-(II), n of Clarke Island (3627).

P. PACHENA BAY (P. BEACH, P. RIVER)-(III), s of Bamfield at start of W. C. Trail (Fig. 1); PACHENA POINT-(III), s of Pachena Bay (Fig. 1); PEACOCK CHANNEL-(II), n of Turtle Island Group (3627); PINDER ROCK-just n of Hankin Island in Broken Group (3627); PINERIDGE CORNER (=PINE RIDGE CORNER)-(I), Hwy. 4 where it meets McLean Point Road (Fig. 5); PINKERTON ISLANDS-n Barkley Sd. e of Lyall Point (3627); PORT SAN JUAN-(III), s end of W. C. Trail (Fig. 1); PORTLAND POINT-(PORTLAND HEADLAND)-(I), nw end of Schooner Cove (Fig. 2); PRIDEAUX ISLAND-(II), ne Broken Group near Nettle Island (3627); PUFFIN ISLET-(II), northcentral Broken Group near Lovett Island (3627).

Q. QUISITIS POINT-(QUISITIS HEADLAND)-(I), s end of Long Beach (Fig. 1).

R. RADAR BEACHES-(I), on shore below (w of) Radar Hill; RADAR HILL-(I), 2nd summit se of Mallard Lake on s side of Hwy. 4; RAIN FOREST TRAIL-(I), see Fig. 7; REEKS ISLAND-(II), near Nettle Island (3627).

S. SAN JUAN RIVER-Port San Juan, head of (Fig. 1); SANDHILL CREEK-(I), s of Green Point on Long Beach (92F/4 east); SANDSTONE CREEK-(III), just s of Cullite Creek on W. C. Trail (92C/10 east); SANFORD ISLAND (=SANDFORD ISLAND)-Deer Group n of Bamfield (Fig. 1); SARITA BAY-(S. RIVER)-n of Bamfield (Fig. 1); SEABIRD ROCKS-(III), mouth of Pachena Bay (Fig. 14); SEA-LION ROCKS-(I), bare islets of Green Point (Fig. 2); SOUTH BAY-tidal inlet along park's n boundary in Tofino Inlet (see Hatler, 1973); SOUTH LONG BEACH-(I), Wickaninnish Inn to Quisitis Headland; SPRIZE LAKE (=SPRISE LAKE)-near Cheewhat Lake (92C/10 east); SPROAT LAKE-along Hwy. 4 near Port Alberni (Fig. 1); STARLIGHT REEF-mouth of Barkley Sd. (Fig. 2); STONE ISLAND-between Tofino and mouth of Lemmens Inlet (92F/4 west); STOPPER ISLANDS-Barkley Sd. at mouth of Toquart Bay (Fig. 1); STUBBS ISLAND-nw of Tofino (shown as "Clayoquot" in Fig. 1); SUGSAW LAKE-just ne of Bamfield (3627); SWALE ROCK-(II), ne Broken Group near Nettle Island (3627); SWAN LAKE-(I), near Hwy. 4 jct. (Fig. 8); SWISS BOY ISLAND-ne Barkley Sd. (Fig. 2).

T. TAHSIS-inner Esperanza Inlet (SGS No. 1); TAYLOR RIVER-central V. I. along Hwy. 4 (Fig. 1); THIEPVAL CHANNEL-(II), between Turret and Turtle Islands (Fig. 10); THRASHER COVE-(III), ne of Owen Point along W. C. Trail (facing Port San Juan); TINY GROUP-(II), islets ne of Turtle Group in central Broken Islands (3627); TOFINO INLET-as used in this report, southern Clayoquot Sd. from Tofino waterfront through Tsapee Narrows (including Browning Passage); TONQUIN ISLAND-just se of

Wickaninnish Island (92F/4 west); TOQUART BAY (T. RIVER)-nw Barkley Sd (Fig. 1); TRANQUIL INLET-Clayoquot Sd. 10 miles ne of Tofino (Fig. 1); TRICKETT ISLAND-(II), just w of Turret Island (3627); TSITIKA RIVER-ne V. I. between Sayward and Port McNeil (SGS No. 1); TSUSIAT FALLS (T. RIVER, T. LAKE)-(III), just s of Klanawa River (Fig. 1); TURRET ISLAND-(II), central Broken Group (Fig. 1); TURTLE ISLAND-(II), central Broken Group (Fig. 1); TZARTUS ISLAND-ne Barkley Sd. (Fig. 1).

U. UCLUELET INLET-inlet along which Ucluelet harbour and Port Albion lie (Fig. 1); USELESS INLET-inner Barkley Sd. n of Tzartus Island (3627).

V. VARGAS ISLAND-nw of Tofino (Fig. 1); VICTORIA-s end of V. I. (SGS No. 1); VILLAGE REEF-(II), rock n of Effingham Island (3627).

W. WALERAN CREEK-(III), s of Bonilla Point on W. C. Trail (Fig. 1); WALSH ISLAND-(II), in Turtle Island Group (3627); WARN BAY-n of Meares Island in Clayoquot Sd. (Fig. 1); WATTA CREEK-head of Shelter Inlet ne of Flores Island (Fig. 1); WHITE ISLAND-(I), just s of Portland Point (Fig. 2); WHYAC-(III), village near Nitinat Lake (Fig. 1); WICKANINNISH INN-(I), s Long Beach; WICKANINNISH ISLAND-just w of Tofino (92F/4 west); WICKANINNISH ROAD-(I), =Long Beach Road; WIEBE ISLAND-(II), e central Broken Group (3627); WILLIS ISLAND-(II), in Turtle Island Group (3627); WILLOWRAE TRAIL-(I), near s boundary of Phase I (Fig. 9); WINTER HARBOUR-nw V. I. near mouth of Quatsino Sd. (SGS No. 1); WOUWER ISLAND-(II), outer Broken Group (3627); WRECK BAY-(I), =Flores Bay; WYA POINT-(I), headland s of Flores Bay (3627).

Appendix 2: Hatler (1972')

Fish-eating Birds Choking On Prey

On 13 December 1968, Mr. K. Gibson of Tofino, British Columbia, brought me a Brandt's Cormorant (Phalacrocorax penicillatus) with a staghorn sculpin (Leptocottus armatus) lodged in its throat (see photo). The sculpin's opercular spines had prevented its being either swallowed or "spit out", and both fish and bird had suffocated.

My examination showed that the cormorant was a young female (no developing follicles) weighing 1690g. Its digestive tract contained a few fish bones and several nematodes. The sculpin, a gravid female, measured 27.3cm and weighed 320g. It seemed bulky enough to have given the bird trouble even if it had not possessed spines.

More recently (26 June 1972) I watched an adult Common Loon (Gavia immer) struggle for over one minute to dislodge a staghorn sculpin which it had started to swallow. I watched from a small boat at a distance of about 10m as the bird frantically alternated between two basic movements: 1) A vigorous shaking of the head sideways, with the bill held down perpendicular to the water and the neck arched, and 2) Holding the head and neck forward, flat out on the water surface, and producing regurgitory waves up the throat. The movements became more frantic, then began to get feeble and I was contemplating giving aid when the fish suddenly dropped free and slowly sank. The loon rested, gasping, for about 45 seconds, then dove and I did not see it again. This observation, as with the one involving the cormorant, occurred in the Tofino waterfront area of Clayoquot Sound, Vancouver Island (49 9'N, 125 55'W).

Mr. G. Trenholme, also of Tofino, has told me of his finding a merganser (probably Mergus merganser) which had choked on a sculpin (species unknown) in Esperanza Inlet (49 50'N, 126 55'W) some years ago.

Clearly these spine-bearing Cottidae are particularly likely to stick in the throats of predators, but other fish have also been involved in such situations. Morejohn (1969) found a Brandt's Cormorant which had choked on a midshipman (Porichthys notatus) (again, opercular spines were involved) and cites a reference reporting the mutual strangulation of a Brown Pelican (Pelecanus occidentalis) and a stingray (Urotrygon asterias). Two photographs in a popular magazine (Anonymous, 1968) depict a male Common Merganser which had died while attempting to swallow a "ten inch trout" (apparently Salmo clarkii).

As Nikolsky (1963) observes, spines act to increase the size of fish and make them less available to predators. Spiny fish are still available, however, and they are commonly eaten. In all of the cases mentioned above it seems that the main factor leading to death has been the apparent inability of the birds to judge their swallowing capabilities. Since the fish are invariably swallowed head-first, their natural streamlining will prevail and their spines will lie flat against the surface as long as they move forward through the digestive tract. Problems arise only when swallowing can't be completed and the fish must be "backed up" against the grain.

The incidence of death in this way is certainly higher than published records would suggest, but it is unlikely to be of any great importance to populations. It is of interest in that it reflects the state of dynamic evolution between the predator and prey. In this case, prey individuals brandish adaptations to make them seem bigger than they are while individual predators strive to maintain themselves by using all sizes

of the available food species that they can. There is a line of demarcation in prey size below which the individual predator "succeeds" and above which the prey succeeds. At that borderline, where the prey is not quite large enough and the predator over-extends itself just a bit, both are sacrificed.

* * *

LITERATURE CITED

- Anonymous. 1968. Merganser chokes on trout. Wildlife Review (Victoria, B. C.) 4(10): 18.
- Morejohn, G. V. 1969. Brandt Cormorant killed by fish. Auk 86(3): 555-556.
- Nikolsky, G. V. 1963. The ecology of fishes. Academic Press, New York. 352 p.

YEAR	CLELAND ISLAND			WHITE ISLAND			SEALION ROCK			FLORENCIA ISLAND			GREAT BEAR ROCK			BAERIA ROCKS				
	Number banded	Total returns	Percent returns	Number banded	Total returns	Percent returns	Number banded	Total returns	Percent returns	Number banded	Total returns	Percent returns	Number banded	Total returns	Percent returns	Number banded	Total returns	Percent returns		
1967	433	13	3.0				266	10	3.7										3.29%	
1968	400	41	10.25	56	4	6.8	244	13	5.33	100	10	10.0							8.50%	
1969	1200	73	6.06	38	2	5.4	150	12	7.20	112	6	5.34							5.48%	
1970	1268	52	4.06							232	10	4.3								4.09%
1971	1000	31	3.01				100	7	7.0				200	5	2.5	99	0	0.0	3.01%	
1972	300	2	1.5				190	2	1.04	264	4	1.52								1.04%
TOTALS	4601	212	4.60	94	6	6.36	950	44	4.62	608	30	4.80	200	5	2.5	99	0	0.0		

Appendix 3. Summary of Glaucous-winged Gull bandings (excluding multiple returns)
West Coast Vancouver Island, B. C. 1967 -- 1972.

Species	Transect Dates															
	6 Apr	23 Apr	27 Apr	12 May	1 Jun	21 Jun	6 Jul	14 Jul	23 Jul	26 Sep	25 Oct	25 Nov	27 Dec	3 Feb	6 Mar	28 Mar
Western Flycatcher						5	3	3	2	1						
Steller's Jay				1			1		3	5	1	2				3
Common Raven										5			2		2	
Northwestern Crow								2	1				1			
Chestnut-backed Chickadee								3	2	4	2			3	11	
Red-breasted Nuthatch										9						
Winter Wren						4	3	6	2	2	4	4	2	1	7	7
American Robin		10	13	2	14	8	7	6	7						6	4
Varied Thrush		1	1			1				8		3	3			2
Hermit Thrush			2													
Swainson's Thrush						21	17	18	17	1						
Golden-crowned Kinglet							1	1	3	16	9	3	4		15	2
Ruby-crowned Kinglet		2	2										2			22
Cedar Waxwing							5	1						1		
Hutton's Vireo																
Orange-crowned Warbler			9			10	11	5	2							
Yellow Warbler			2							4						
Yellow-rumped Warbler		22	3				3	1								1
Townsend's Warbler					1	4	4									
Common Yellowthroat					2	3	1	3	2	1						
Wilson's Warbler						3	2	3								
Purple Finch					1			5								
Pine Siskin										13						
American Goldfinch						1		2	3							
Red Crossbill									24		12			3	2	
Savannah Sparrow		2	2													
Dark-eyed Junco		7	4		1		1	1	1				6		3	2
Chipping Sparrow					1											
White-crowned Sparrow						1		1		8						
Golden-crowned Sparrow		10	25													
Fox Sparrow			7	2		2	2	2		8		3			3	1
Song Sparrow	2		6			4	2	1		2	1	2	1	1	2	4

Transect conditions - Time (P.S.T.) and weather: 21 June, 0730, overcast; 6 July, 0840, overcast-cool; 14 July, 0730, foggy-later sunny; 23 July, 0735, overcast; 26 September, 0750; 25 October, 0940, windy (from north), sunny with some cloud; 25 November, 0937, calm, mostly sunny; 27 December, 1400, calm, partly cloudy; 3 February, 0940, sunny-calm; 6 March, 0916, light breeze, sunny and mild; 27 March, 0844, mostly sunny, calm and mild.

Species	Transect Dates											
	24 Apr	23 Jun	7 Jul	15 Jul	26 Jul	26 Sep	28 Oct	26 Nov	28 Dec	3 Feb	4 Mar	27 Mar
Common Loon										1		
Great Blue Heron							1	1				1
Trumpeter Swan									7	8	3	
Canada Goose									25	13		
White-fronted Goose							1					
Mallard	4						14	1	1	94	55	9
Pintail										11	13	
American Wigeon										31	3	
Shoveler							2					
Common Goldeneye										2		
Bufflehead							4			3	2	
Sharp-shinned Hawk		1				2						
Red-tailed Hawk									1	1	1	
Bald Eagle	1									1	1	
Killdeer							2		4			
American Golden Plover						3						
Greater Yellowlegs	2											
Dunlin	4											
Short-billed Dowitcher				1								
Western Sandpiper	1	160										
Sanderling									85	20		
Glaucous-winged Gull				3		3						1
California Gull						17		60				
Mew Gull			1									
Band-tailed Pigeon		1	1	1								
Black Swift		1										
Rufous Hummingbird	6	4	4	2								
Common Flicker							2					
Hairy Woodpecker						2	1					
Downy Woodpecker											1	
Western Flycatcher		4	3	4	7							
Rough-winged Swallow	6											
Steller's Jay				3	3	1	3			1		2
Common Raven		1					1	1				
Northwestern Crow		4	4	3						3		
Chestnut-backed Chickadee		5	2	6	4		1	1			1	3
Red-breasted Nuthatch							1					
Winter Wren		4	1	1	1		6	1	1			1
American Robin	12	5	3	2	3	1	2			2	3	7
Varied Thrush	6				1		2				1	
Hermit Thrush	2											
Swainson's Thrush		5	11	6	7							
Golden-crowned Kinglet		2			1	6	7	3	5	2	4	5
Ruby-crowned Kinglet	1							1				1
Common Starling	11											2
Orange-crowned Warbler		5	3	3	4							
Townsend's Warbler		5	7	2	1							
Wilson's Warbler					1							

Species	Transect Dates											
	24 Apr	23 Jun	7 Jul	15 Jul	26 Jul	26 Sep	28 Oct	26 Nov	28 Dec	3 Feb	4 Mar	27 Mar
Purple Finch				1								
Pine Siskin				1	1	18						
Red Crossbill					1		10	21		1	2	
Rufous-sided Towhee							2		1			
Savannah Sparrow	10					14						
Dark-eyed Junco	1			1			1				1	
Golden-crowned Sparrow	6											
Fox Sparrow	2	1		1				1	1			1
Song Sparrow	3	3	5	4	7	9		3	2	3	10	5

Transect conditions - Time (P.S.T.) and weather: 23 June, 0700; 7 July, 0835, partly cloudy; 15 July, 0608, sunny; 26 July, 0610, sunny; 26 September, 1015; 28 October, 0845, sunny and calm; 26 November, 1134, sunny and calm; 28 December, 1143, sunny and calm; 3 February, 1111, sunny and calm; 4 March, 0930, overcast with rain after stop no. 1; 27 March, 1021, mostly sunny and calm.

Appendix 4c.

RAIN FOREST TRAIL

Species	Transect Dates											
	1 Jul	10 Jul	17 Jul	26 Jul	25 Sep	28 Oct	1 Dec	28 Dec	2 Feb	4 Mar	28 Mar	
Black Swift					1							
Rufous Hummingbird				1								
Pileated Woodpecker											1	
Western Flycatcher	3	4	5	6								
Steller's Jay	1	1		1		1						
Chestnut-backed Chickadee	3	3	1						5			
Brown Creeper		1						2				
Winter Wren	2	1	1	1	1			1			1	
American Robin		2		1								
Varied Thrush		1										
Swainson's Thrush	3	1		2								
Golden-crowned Kinglet			4		3	1	8			3	3	
Wilson's Warbler	1		1									
Pine Siskin	4		1									
Red Crossbill			14	3	3		5					
Song Sparrow												1

Transect conditions - Time (P.S.T.) and weather: 1 July, 0800; 10 July, 0700, Overcast; 17 July, 0744, sunny; 26 July, 0815, sunny; 25 September, 1146, sunny; 28 October, 1030, sunny; 1 December, 1129, sunny and windy; 28 December, 1302, partly cloudy; 2 February, 1559, sunny and calm; 4 March, 1318, fine drizzle; 28 March, 1457, light overcast with breeze.

FLORENCIA BAY LOOKOUT

Species	June												July							Sept.		
	3	4	5	6	16	17	18	19	21	22	23	25	26	27	30	5	7	9	13	24	31	27
Common Loon																						
Arctic Loon																						
Red-throated Loon																						
Loon sp.																						
Red-necked Grebe																						
Horned Grebe																						
Western Grebe																						
Sooty Shearwater																						
Pelagic Cormorant																						
Cormorant sp.																						
Harlequin Duck																						
White-winged Scoter																						
Surf Scoter																						
Common Scoter																						
Scoter sp.																						
Common Merganser																						
Bald Eagle																						
Osprey																						
Ruffed Grouse																						
Black Oystercatcher																						
Western Sandpiper																						
Glaucous-winged Gull																						
Herring Gull																						
California Gull																						
Mew Gull																						
Bonaparte's Gull																						
Heerman's Gull																						
Black-legged Kittiwake																						
Caspian Tern																						

FLORENCIA BAY LOOKOUT (continued)

Species	June												July					Sept.		
	3	6	16	17	18	19	21	22	23	25	26	27	30	5	7	9	13	24	31	27
Common Murre														8						
Pigeon Guillemot	1								1	2	1	1	1	1	2		2	150	1	
Marbled Murrelet	5	1								9	4			11	18	6	5	85	6	
Ancient Murrelet															1			2		
Rhinoceros Auklet										1									3	
Tufted Puffin															1					
Band-tailed Pigeon	1																			
Vaux's Swift																				
Rufous Hummingbird									2		2	3							4	
Belted Kingfisher	1	1	1		1		1	1	1			1								
Hairy Woodpecker																				
Tree Swallow			1																	1
Rough-winged Swallow	2	2	3						1				3			2				
Steller's Jay													1							
Common Raven													1							
Northwestern Crow	13														1	1	1			7
Chestnut-backed Chickadee					2											16	1			2
Winter Wren																				
American Robin																				
Swainson's Thrush	1		2																	
Ruby-crowned Kinglet																				
Water Pipit																				
Cedar Waxwing		5	1		3															2
Common Starling																				4
Orange-crowned Warbler		1	1																	
Wilson's Warbler		1			4	3						1								1
Pine Siskin																				
American Goldfinch															1					25
Savannah Sparrow													2							2
Fox Sparrow																				

Species	Transect Dates									
	1 Jul	16 Jul	27 Jul	27 Sep	27 Oct	1 Dec	28 Dec	2 Feb	1 Mar	28 Mar
Bald Eagle								1		
Osprey	2									
Blue Grouse	1									
Gull sp.					2					
Band-tailed Pigeon	1	2	5							
Black Swift			1							
Vaux's Swift		3	1							
Rufous Hummingbird	1	5	2							
Belted Kingfisher		1								
Common Flicker	1		2	1				1	5	
Hairy Woodpecker								1	4	1
Traill's Flycatcher	1									
Western Flycatcher	1	1								
Olive-sided Flycatcher			1							
Tree Swallow	5									
Rough-winged Swallow			1							
Steller's Jay	2	2	1	3	1			1	1	5
Common Raven		1			2	1				1
Northwestern Crow	3									
Chestnut-backed Chickadee									3	1
Winter Wren		2		1	2	1			2	2
American Robin	6	3	3	67	2				5	2
Varied Thrush				23						
Swainson's Thrush	3	8	3							
Golden-crowned Kinglet							2		5	
Ruby-crowned Kinglet				3			2			1
Water Pipit				1						
Cedar Waxwing	1			13						
Common Starling					7					
Orange-crowned Warbler	11	6	1	1						
MacGillivray's Warbler		1								
Wilson's Warbler	2	1	1							
Pine Siskin	1			4						
American Goldfinch		1	1							
Red Crossbill	6		10		5			3	1	
Dark-eyed Junco		2	3							2
White-crowned Sparrow	2	3	3							
Fox Sparrow	3	2				3	1			9
Song Sparrow	3	3	3	1	1	2			10	9

Transect conditions - Time (P.S.T.) and weather: 1 July, 0905; 16 July, 0607, sunny; 27 July, 0720, overcast; 27 September, 0731; 27 October, 0910, mostly cloudy but calm; 1 December, 1218, windy and cloudy; 28 December, 1340, sunny and calm; 2 February, 1447, sunny and calm; 1 March, 0945, overcast but calm; 28 March, 0919, calm.

Species	Transect Dates															
	6 *Nov	21 Apr	27 Apr	8 May	29 May	8 Jun	16 Jun	18 Jun	19 Jun	21 Jun	26 Jun	29 Jun	5 Jul	7 Jul	14 Jul	24 Jul
Pied-billed Grebe						1							1		1	
Trumpeter Swan	5															
Mallard	25	2	2					1		2			4		2	2
Pintail								1			2		4			
Blue-winged Teal										1						
American Wigeon	3												1			
Shoveler					2											
Wood Duck				3	6	1		2		3		3	4		2	1
Ring-necked Duck		5	7													
Bufflehead		1		1												
Hooded Merganser																
Red-tailed Hawk													4		4	
Bald Eagle									4							
Ruffed Grouse															1	
California Gull										1				1	1	
Band-tailed Pigeon														13		
Common Nighthawk											1		8			
Rufous Hummingbird		2	2				1	2	12	6				5		
Belted Kingfisher									1				3	2	2	3
Common Flicker						1					1			1		
Hairy Woodpecker						1					1				1	
Western Flycatcher							1									
Olive-sided Flycatcher						1		1	1	1		1		1		2
Violet-green Swallow					1			1	1	1		1	1		1	1
Tree Swallow	10			4	2											
Rough-winged Swallow	6			8			1	2	1	2	1	19	4	2		7
Barn Swallow				2				1	1	1		5	1			
Steller's Jay		2			2	1			1	1			1	2		
Chestnut-backed Chickadee											1	2	4	2		1
Winter Wren																2
American Robin		4		2	4	4	1	3	1	2		1				
Swainson's Thrush							2	1	1	2		3	3	4		5
Cedar Waxwing												2		1		1
Common Starling							2	4	4	6	7	1	12	15	10	10
Orange-crowned Warbler									1	1						
Yellow-rumped Warbler								2	4	3			2	2		1
MacGillivray's Warbler									1						1	
Wilson's Warbler											1					
Red-winged Blackbird						1										
Pine Siskin																1
American Goldfinch																2
Red Crossbill								2		2		1	2			
Dark-eyed Junco															20	
White-crowned Sparrow						1					2					3
Golden-crowned Sparrow									1					1		
Song Sparrow		4														
		1		2	1	2	1	1	1			2	2	1		4

* This visit 1971.

Species	Transect Dates										
	29 Jun	10 Jul	17 Jul	27 Jul	25 Sep	27 Oct	30 Nov	2 Jan	3 Feb	1 Mar	28 Mar
Osprey	2										
Glaucous-winged Gull					2						
California Gull					23						
Gull sp.						1					
Band-tailed Pigeon					6						
Black Swift					11						
Rufous Hummingbird			1	1							
Western Flycatcher	5	4	7	4							
Steller's Jay		1	2	7	2	2					
Common Raven									1		
Northwestern Crow	2	1	1	1	1					1	
Chestnut-backed Chickadee	2		2		3	4	7	13		3	3
Red-breasted Nuthatch					2						
Brown Creeper				1	1						
American Robin	2	2			1						
Varied Thrush				1							1
Hermit Thrush	1										
Swainson's Thrush	3	3	7	3							
Winter Wren	5	4	3	1	1	2					3
Golden-crowned Kinglet	1		1	2	5	13	3	4	1		8
Ruby-crowned Kinglet											1
Hutton's Vireo			1								2
Orange-crowned Warbler		2									
Townsend's Warbler	10	3	5	5							
Wilson's Warbler		1									
Pine Siskin		3		2	2						
Red Crossbill	3		2			1	3	6	3	7	4
Rufous-sided Towhee											1
Dark-eyed Junco											3
Fox Sparrow											2
Song Sparrow						1	1				

Note: On 28 March, on stop "C", a bird distress call was imitated and this attracted many more birds than would normally have been recorded there.

Transect conditions - Time (P.S.T.) and weather: 29 June, 0735; 10 July, morning, overcast; 17 July, 0735, sunny; 27 July, 0720, overcast; 25 September, 1000, sunny; 27 October, 0910, mostly cloudy but calm; 30 November, 1045, light rain; 2 January, 1017, sunny; 3 February, 1238, sunny and calm; 1 March, 1135, partly cloudy but calm; 28 March, 1025, sunny and calm.

Appendix 5a.

BARKLEY SOUND (MOUTH OF UCLUELET HARBOUR TO CHROW ISLETS)

Species	25 Apr	29 Apr	9 May	16 May	20 May	29 May	12 Jun	19 Jun	7 Jul	18 Jul	5 Aug	8 Aug	13 Sept	28 Oct	27 Nov	2 Mar	16 May	5 Jun	
Common Loon	1				1	2													
Arctic Loon	8		2		1	26							1						60+
Loon sp.							1												
Red-necked Grebe		2	4	2	8	3								5	3			1	
Western Grebe	3	12	17		3										1				
Double-crested Cormorant								3						4		1			
Brandt's Cormorant		23	18	1	1	12								4					
Pelagic Cormorant	5	7	8				3	1	10	1	1	1	11	1	3	12			
Unidentified Cormorant															6				
Great Blue Heron																			1
Canada Goose		235																	
Black Brant		30																	
White-winged Scoter		4	19			4									2				
Surf Scoter		210																	
Bald Eagle			1							1									
Black Oystercatcher																			4
Surfbird		87																	
Dunlin																			
Peeps			5																
Northern Phalarope			47																
Glaucous-winged Gull	100	3	3	7	14		1	1	1	3			4	3	3	2	2	2	1
California Gull							3	85	1	35	1								
Mew Gull																			
Black-legged Kittiwake						48													
Gull sp.																			
Common Murre							60	110	1					5					
Pigeon Guillemot														2					
Marbled Murrelet														4					
Rhinoceros Auklet	10	2	9	6	19	5	31	29	2	1	18			3	8	7	13		
Northwestern Crow			1				3	4	3	2									1

Appendix 5c.

BARKLEY SOUND (HANKIN ISLAND TO TURTLE ISLAND)

Species	25 Apr	29 Apr	9 May	16 May	20 May	29 May	12 Jun	19 Jun	7 Jul	5 Aug	8 Aug	13 Sept	28 Oct	27 Nov	2 Mar	16 May	5 Jun
Common Loon	1		1	2	1	2	8					1				2	
Arctic Loon	27		8	1	2	2							5				3
Horned Grebe	1	1	16				1						11	4			
Western Grebe	2	6	4											5			
Double-crested Cormorant														1		6	
Brandt's Cormorant	1	1							2			1	2	4			
Pelagic Cormorant	2		7		1	2	2			1		4	12	11		3	
Unidentified Cormorant												2					
Great Blue Heron							1					2		1			1
Cinnamon Teal						2											
Goldeneye sp.														1			
Bufflehead	5	10	6										20	25	10	1	
Harlequin Duck	6	2		4			5						3				
White-winged Scoter	2	16	6	8	11	3	2					5					
Surf Scoter	41	40	25	27			9						12	12	15	67	
Common Merganser	3			1													
Red-breasted Merganser			2														
Bald Eagle	1	2	3	1		2										2	3
Black Oystercatcher	2	2		2													
Surf-bird	250																
Black Turnstone	50	70															
Wandering Tattler		1		3													
Glaucous-winged Gull	3	6	4	12	6	1	4	2	2	3	2	4	3	6	8	2	4
California Gull												8					
Mew Gull							1					3					
Bonaparte's Gull							1										
Common Murre							1					182					
Pigeon Guillemot			1				1										
Marbled Murrelet	6		58	14	13	25	12	8	2	1	1			2	15	6	
Rhinoceros Auklet																	
Common Raven																	1
Northwestern Crow			3	6	9	3	8		3			2		20	10	2	

Barkley Sound water transect conditions -- Time (P.S.T.) and weather: 25 April, 1100, light wind; 29 April, 0830, clear-calm; 9 May, 0800, clear-light wind; 16 May, 0800, calm; 20 May, 0930, clear-calm; 29 May, 0730, cloudy-calm; 12 June, 0540, cloudy-light wind; 19 June, light fog-wind, 7 July, evening, windy-choppy; 18 July, 0945, calm-fog patches; 21 July, 1730, cloudy-calm; 5 Aug., 1435, clear-windy; 8 Aug., 0820, cloudy-light wind; 13 Sept., 1340, fog patches; 28 Oct., evening, clear-windy; 27 Nov., 0955, rain-wind (all preceding, 1972); 2 March, 1973, 1030, SE gales; 16 May, 1973, 5 June, 1973, 0930, fog-calm.

Appendix 6.

BENSON ISLAND ("CAPE GOULD TRAIL")

Species	Transect Dates				
	25 May	23 Jun	26 Jul	14 Sept	5 Mar
Red-tailed Hawk					1
Bald Eagle		1			
Rufous Hummingbird	7+	8	1		
Northwestern Crow		8	13	17	
Chestnut-backed Chickadee					4
Red-breasted Nuthatch				2	
Winter Wren			1	6	2+
American Robin		2		2	
Swainson's Thrush		2	1		
Golden-crowned Kinglet				4	2+
Orange-crowned Warbler		2			
Townsend's Warbler	2	2			
Fox Sparrow		5	1	1	
Song Sparrow		1			

Appendix 7.

CLARKE ISLAND (LODGE TO RESERVOIR TRAIL)

Species	Transect Dates		
	9 Jul	19 Jul	14 Sept
Rufous Hummingbird	1		
Band-tailed Pigeon	1	2	
Northwestern Crow	3	4	2
Red-breasted Nuthatch			2
Winter Wren	1	1	4
American Robin	2	2	1
Swainson's Thrush	3	1	
Orange-crowned Warbler	1		
Fox Sparrow	1		

Appendix 8. HOW TO VISIT A SEA BIRD COLONY

Well meaning but uninformed people, naturalists included, can seriously damage bird colonies simply by visiting them. Because of disturbance a number of dangers confront the birds.

Disturbed birds may fail to breed, desert their nests, or even kill their young.

Eggs and young left unattended may be eaten by predators, or damaged by heat or cold.

Frightened young gulls may fall into crevices, or lose touch with their parents.

Unattended cormorant nests are particularly vulnerable to crow predation.

When in or near a bird colony, observe these rules.

- never take a dog into a colony
- move quietly and slowly; allow time for the birds to "get ready".
- on the other hand keep moving; you are keeping birds from their nests.
- watch where you step.
- large groups of people should never enter a colony.
- small groups should remain fairly compact to reduce the area of disturbance.
- one or two people may sit quietly in a colony if they are more or less hidden. Larger groups can rarely do this effectively.
- don't stop for long discussions, or picnics, while conspicuously located in or near a colony.
- stay in the colony a much shorter time than you would like to.

Well meaning people, even naturalists, can cause more damage to a bird colony than would a party of egg smashers.

Obey these rules, and the damage you do will be minimum.

General Information No. 1
Parks Branch Nature Houses
Dept. of Recreation & Conservation

ADDENDA

The following observations made during summer 1973 (AD, DFH), while the present report was being prepared, depart somewhat from findings related in the text and should be mentioned:

1. By 8 August, no Black-legged Kittiwakes had been seen and no juvenile Herring Gulls had appeared on local beaches. Herring Gulls did appear later in the month, but unusually late, and we were aware of no kittiwake sightings.
2. Common Murres did not attain near numbers in late July and early August which they did in either 1971 or 1972.
3. The conspicuous movement of Brandt's Cormorants northward in July and August did not occur in 1973.
4. Arctic Loons were rarely seen in the summer of 1973.
5. A Trumpeter Swan was seen by Mr. and Mrs. J. Baxter (satisfactory description of call) at Warm Bay, north of Tofino, on 7 August.
6. The finding of cormorant nests on Florencia Island in August has already been mentioned in the seabird colonies account. It now seems evident that cormorants move around in their nesting from year to year, but the reason for this is not apparent. The results of our Florencia counts in 1973 are shown in Figure 2, but are not mentioned in the annotated list.

The following reference was missed in the literature cited:

Cumming, R. A. 1930. Some birds observed in the Queen Charlotte Islands, British Columbia. Murrelet 12:15-17.