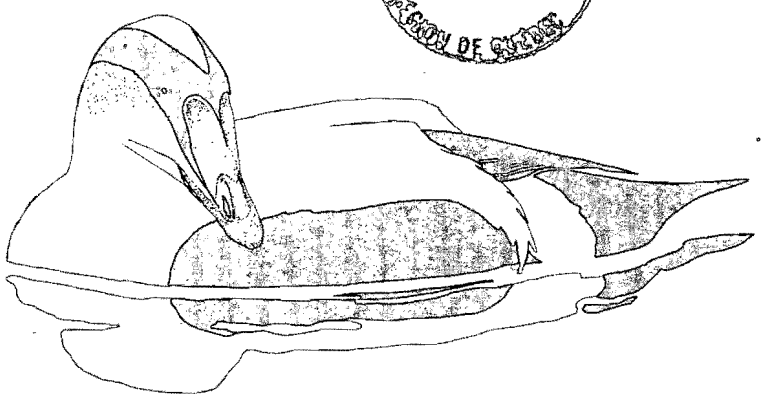
AN INVENTORY OF THE AQUATIC BIRDS OF CAPE JOURIMAIN NATIONAL WILDLIFE AREA, 1989

C. M. MacKinnon
R. J. Hicks



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ABSTRACT

Should the construction of a "fixed link" between New Brunswick and Prince Edward Island become a reality it would result in a major highway passing through the center of the Cape Jourimain National Wildlife Area (CJNWA). The purpose of this document is to record the present avifaunal use of the area for comparison with previous records. Information presented herein provides pre-construction baseline data in the event that a fixed link is built. Key to CJNWA is the wide habitat diversity and subsequent abundant bird use. In 1989, a minimum of 40 waterfowl broods were produced on the area consisting of the following species: Black Duck (70%), Blue-winged Teal (12.5%), Northern Pintail (10%), Green-winged Teal (5%), and American Wigeon (2.5%). During this same year, spring and fall waterfowl numbers peaked on 20 April and 14 September when 505 and 1743 birds were recorded, respectively. Black Ducks were the dominant spring and fall migrant with peaks of 281 and 879 birds seen, respectively.

The CJNWA is used extensively by other marsh birds and waders as well as a large variety of shorebirds and songbirds. In 1989, 16 shorebird species were seen. Peak numbers of 984 birds were recorded on 3 August consisting of 10 species. Noteworthy were a maximum of 14 pairs of Willets which also nested on the NWA in 1989. The importance of resident mammals and offshore bird movements through the Northumberland Strait are also identified. Mitigatable measures, should a fixed link be built, are not discussed in this document.

RÉSUMÉ

Si l construction d'un "lien fixe" entre le Nouveau-Brunswick et l'Île-du-Prince-Édouard se matérialise, une grosse autoroute traversera la réserve nationale de la faune du Cap-Jourimain (RNFCJ), en plein centre. Le présent document veut consigner la fréquentation actuelle de la réserve par l'avifaune afin de la comparer avec les données recueillies antérieurement. Les renseignements présentés dans ce document sont donc des données de base sur la fréquentation des lieux avant la constructin d'un lien fixe, dans l'éventualité où un tel projet devait se réaliser. La RNFCJ se caractérise essentiellement par la diversité de ses habitats, d'où l'abondance de l'avifaune. En 1989, au moins 40 nichées d'oiseaux aquatiques ont vu le jour dans la réserve; elles comprenaient les espèces suivantes: Canard noir (70%), Sarcelle à ailes bleues (12,5 %), Canard pilet (10 %), Sarcelle à ailes vertes (5 %), et Canard siffleur d'Amérique (2,5 %). Au cours de la même année, le nombre d'oiseaux aquatiques présents au printemps et en automne a atteint un sommet le 20 avril et le 14 septembre où on a recensé respectivement 505 et 1 743 oiseaux. Le Canard noir est le principal migrant puisque l'on a dénombré au plus fort de la migratin du printemps et de l'automne, respectivement 281 et 879 Canards noirs.

La RNFCJ est beaucoup fréquentée par d'autres oiseaux des marais et par des échassiers ainsi que par un grand nombre d'oiseaux de rivage. En 1989, 16 espèces d'oiseaux de rivage ont été aperçus dans la réserve. Le 3 août, on a recensé un nombre record de 984 oiseaux appartenant à dix espèces. Fait digne de mention, au plus 14 couples de Chevaliers semipalmés ont également niché dans la réserve nationale de la faune en 1989. On reconnaît en outre l'importance des mammifères qui résident dans la réserve ainsi que les mouvements des oiseaux au large des côtes, dans la détroit de Northumberland. Le présent document n'aborde pas les mesures de protection qu'il faudrait prendre si le lien fixe devait être construit.

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1. INTRODUCTION

Cape Jourimain National Wildlife Area (CJNWA) borders on the Northumberland Strait at the southeastern extremity of New Brunswick, 2 km northwest of the village of Cape Tormentine. This 600 ha (1500 acre) coastal site was designated as a National Wildlife Area in 1979 following the transfer of 205 ha from the Federal Department of Public Works in 1977 and the purchase of additional privately owned lands in 1979. The Area is controlled by the Wildlife Area Regulations under the Canada Wildlife Act and administered by the Canadian Wildlife Service.

The principal landscape features of CJNWA are extensive coastal marshes and ponds, barrier sand dunes, two upland islands (Jourimain and Trenholm), a bordering block of upland and a prominent roadway that crosses the area effectively linking all components (Figure 1). For a more complete discussion of the flora component within CJNWA, refer to Harries et. al., 1991.

The Cape Jourimain roadway was built in 1966 during the first fixed-link attempt to connect New Brunswick with Prince Edward Island. Even though the project was abandoned, the remaining roadbed effectively stopped tidal flow over the upper portions of the salt marsh resulting in two brackish impoundments. That development had the effect of increasing, not decreasing, habitat diversity and thus was beneficial to aquatic wildlife.

Since 1987, a renewed interest to build a fixed link to P.E.I. has developed. Such a development would involve using the existing roadway at Cape Jourimain that runs through the center of the National Wildlife Area. As the effects of such a construction project to resident and migrant avifauna are unknown, this report presents pre-construction, baseline data focusing on aquatic bird use of the area.

2. METHODS

Avifaunal surveys were conducted to evaluate the use of the area by both resident and migrant birds. As CJNWA is composed of several distinct areas, the survey divisions reflect these discrete units. Specifically, these are: Brackish Marsh No. 1 and No. 2 (BM# 1 and 2), Salt Marsh No. 1 and No. 2 (SM# 1 and 2), Large Beaver Flooding (No. 1), Bayfield Flooding and the Barrier Beach Pond (Oulton's Marsh) (Figure 2). For shorebird surveys, two additional site designations were used: western intertidal flats (Ann's Acres) and eastern intertidal flats and channels (saltmarshes 1 and 2, Dobson's cove).

Waterfowl surveys were initiated on 12 April at the time of spring breakup and were conducted bi-weekly until just prior to the opening of the hunting season in October. Waterfowl surveys were conducted from 6 AM to 7:30 AM.

from 12 April to 2 May. Similarly, morning counts followed by evening counts, of 1 1/2 hours duration, were conducted from 1 May - 21 July to document brood numbers. Broods were classified according to Gollop and Marshall (1954) and "crossed off" as in Wishart (1983). Surveys throughout August and September were conducted during mid-day to record numbers of staging waterfowl. Surveys were not conducted after the opening of the waterfowl hunting season on 2 October.

Four wooden platforms supporting observation blinds 12 to 16 feet high were constructed to facilitate waterfowl surveys. These towers were erected in the following locations: between SM#1-BM#1, between SM#2-BM#2, next to the Large Beaver Flooding and at the eastern side of SM#1, north of the cemetery (Figure 1). All other surveys were conducted from a vehicle. Observers, ranging from two to four, were equipped with binoculars and variable power spotting scopes. On days with only two observers, the brackish marsh-saltmarsh areas were surveyed first. Observations of other marshbirds and waders were recorded during the waterfowl surveys.

Shorebird surveys were conducted weekly, beginning on 6 July and ending on 26 September. Length of the surveys at each site was dependent on the time needed to count or estimate the numbers of each species. Consequently, the time spent at each site varied from 30 min. to 3 hours. As in the waterfowl surveys, incidental sightings of other species were recorded.

Surveys were conducted for breeding Willets, on 30 May and 27 June. The entire periphery of the salt and brackish marsh areas was covered on foot by two observers. All single birds, pairs, males performing wing displays and mobbing groups or individuals were recorded. Time for two observers to complete one survey was approximately 5 hours. Locations of all Willets observed were recorded on base maps in the field.

There appears to be considerable migration of birds through the Northumberland Strait during spring and fall. A preliminary investigation was initiated in 1989 where four spring (12, 20 April and 2, 16 May) and two fall (14, 26 September) surveys were conducted. Surveys were conducted from a vehicle situated on the northeasternmost end of the road during mid-morning for a duration of one hour. These surveys were repeated and expanded in 1990, for a more complete discussion of these results, see MacKinnon et al., 1991.

While at Cape Jourimain, any incidental observations of interest or significance were recorded. Resident bird observations were recorded and a census of the Cliff Swallow colony at the lighthouse was also conducted. Mammals observed were also documented.

3. RESULTS AND DISCUSSION

3.1 (a) Waterfowl Numbers in Spring and Fall

The wetlands of CJNWA are used extensively by waterfowl during spring and fall as staging areas for migration and during the summer months for brood rearing. The diversity of adjacent habitats plus Cape Jourimain's unique geological formation and topographical prominence has resulted in an attractive setting for a variety of birds.

Following spring break-up, of ice, in March and April many species of waterfowl migrating northward use CJNWA. Spring numbers peaked on 20 April, 1989, with 505 waterfowl on the NWA. These were predominantly Black Ducks (281), followed by Canada Geese (79), Green-winged Teal (62) and Red-breasted Mergansers (36). Although this was the overall spring peak, some species reached maximum numbers before or after this date. For example: 22 Greater Scaup were recorded on 12 April and 71 Red-breasted Mergansers were present on 2 May in 1989. The first spring sighting of Canada Geese was on 2 May. Fifteen Red-breasted Mergansers remained until 30 May and three were observed as late as 13 June, 1989. Peak numbers, per month, of waterfowl observed at Cape Jourimain NWA in 1989 are presented in Table 1.

During the peak of spring migration, the majority of Black Ducks were observed more frequently in the saltmarsh than in the brackish marsh habitat. For example, on 20 April, Black Ducks (N = 281) at SM#1, SM#2 and BM#1 and BM#2 numbered 172 (61%), 49 (17%), 48 (17%) and 6 (2%), respectively. Red-breasted Mergansers were less specific, although more birds were observed on the saltmarsh portion of the area. Most other dabblers such as Green-winged Teal, Northern Pintail, Blue-winged Teal and Northern Shoveler were observed mostly in the brackish marsh habitat, especially in BM#1. As the surveys were designed primarily to record waterfowl numbers, areas which were used for resting versus feeding were not determined. For a summary of peak waterfowl numbers observed per observation area, see Tables 2-8.

Pattern of habitat use by fall staging waterfowl at CJNWA was different than in the spring. Throughout August and September most ducks were observed in the brackish marshes with a definite preference for BM#2 (Table 3). Waterfowl were also observed feeding on the intertidal flats at Ann's Acres and Dobson's Cove. Peak numbers at Anne's Acres on 14 September were Green-winged Teal (60), Pintail (25), Blue-winged Teal (40) and Wigeon (75) while at Dobson's Cove on 10 August, Black Duck (82) and Pintail (10).

Fall waterfowl numbers peaked at CJNWA on 27 August and 14 September with 1625 and 1743 birds seen on those days, respectively. Some species of waterfowl staged and departed earlier than others. For example, Blue-winged Teal numbers reached 590 birds on 27 August but only one was observed on 26 September.

Peak numbers for other species also varied throughout the fall. On 14 September numbers of Black Duck and Wigeon peaked at 879 and 350 birds, respectively, while the Pintail maximum was not until 26 September when 273 birds were seen. Numbers of Green-winged Teal remained consistently high with 490, 244 and 455 birds recorded on 27 August, 14 and 26 September respectively. Canada Geese were just beginning to arrive when 26 geese were sighted on 26 September when the surveys ended.

When the 1989 data are compared to MacInnis (1979) and Morton (1980) some trends appear (Table 9). MacInnis (1979) divided his field seasons in 1972 and 1973 into three units consisting of spring, summer and fall. When his observations and Morton's (1980) work are compared with this study there appears to be a noticeable shift in use by some species. In 1972/73, Green-winged Teal numbers were greatest in spring over fall with 375 and 189 birds, respectively. By 1989, however, the trend has reversed with peaks of 189 (spring) and 490 (fall) birds over the same time period. Use of CJNWA by Black Ducks as a fall staging area appears to have increased over the last 17 years from 200 and 112 in 1972/73 and 1979, respectively, to 879 birds in 1989. This increased use during the fall is also apparent in Northern Pintail and American Wigeon (Table 9). The most noticeable difference in fall use is by Blue-winged Teal where numbers have dropped from a maximum of 1511 and 700 in 1972/73 and 1979, respectively, to 590 in 1989. Although this decline could be reflective of natural fluctuations in Blue-winged Teal numbers, there has been some discussion as to a possible long term decline in this species in central Canada (Myrtle Bateman pers. comm.). One noteworthy observation was the presence of Wood Ducks on 10 August (11) and 24 August (16) respectively in the Bayfield Impoundment. These were all moulting males.

3.1 (b) Waterfowl Broods

In 1989, at least 40 broods of waterfowl, determined from "cross offs", where duplicated observations are eliminated, were observed on CJNWA. These consisted of Black Duck (28), Blue-winged Teal (5), Northern Pintail (4), Green-winged Teal (2) and American Wigeon (1). These numbers compare favourably with observations by MacInnis (1979) who reported 31 broods of Black Ducks, 3 of Northern Pintail and one brood of Northern Shoveler (Table 10).

The importance of coastal habitat like CJNWA, for breeding waterfowl, is amplified when compared to inland areas of New Brunswick. Parker et al. (1989), working in the Lepreau River area of southern New Brunswick, reported 19.2 broods/100 km^2 of study area. When the Lepreau values are converted to compare with the size of CJNWA, the number of broods/6 km^2 are 1.15 in Lepreau and 40 in CJNWA. Although this comparison does not take into account that most waterfowl are produced in the vast "hinterland", it does emphasis the inherent productivity of the coastal areas.

The distribution of waterfowl broods on CJNWA were as expected. Black Ducks equally used the saltmarsh and brackish marsh portions of the area while all of the other dabblers were observed predominantly in the brackish marsh and the impoundments (Table 11).

It is noteworthy that although Black Duck broods were observed equally on both the saltmarsh and brackish marsh impoundments, older age class birds (Class II, Gollop and Marshall, 1954) were more frequently recorded in the saltmarsh over brackish marsh habitat ($p < 0.025$, $x^2 = 8.59$, $df = 2$). It is possible that due to habitat differences, young ducklings were harder to see in the saltmarsh habitat. The authors, however, do not think this is the case and believe the observation differences to be real.

As Black Duck broods utilized both the brackish and saltmarsh portions of the area, movement between these two areas would have to be across the causeway. Just such an occurrence was observed by A. D. Smith and W. Prescott on, 12 June, 1989 between 18:20 and 20:07 hours. A female Black Duck with 2 - Ib young was initially observed near the dunes in BM #1 early during the observation period. This female duck with her brood proceeded to cross the brackish marsh, climb the causeway embankment, crossed the road, then the railbed and eventually ended up in the saltmarsh. Such brood movement may be frequent and could result in waterfowl loss and a vehicle hazard due to traffic should the fixed link be built.

3.2 Marsh birds and Waders

As most of our surveys focused on waterfowl and shorebird numbers, observations of other marshbirds and waders (loosely defined as birds frequenting wetlands other than waterfowl and shorebirds) were not the priority. It should be emphasized, however, that any such bias would be an underestimate of actual numbers using CJNWA. Probably the best example of this is in the reported numbers of very common species such as the American Crow. They are really neither marshbirds nor waders although they were frequently seen foraging in the CJNWA wetlands. Other bird species of a more unique or interesting nature were documented and have been presented with the waterfowl in Tables 2-7 for the major study areas.

A most interesting observation was 75 Great Blue Herons (GBH) feeding in Dobson's Cove on 27 August, 1989. The GBH are suspected to be from a colony situated at the head of the Gaspereau River and many of the 75 birds appeared to be immature. Generally, numbers of GBH observed on the National Wildlife Area increased throughout the summer with a high of only 12 in June, to 44 by the end of July and the peak on 27 August. These numbers suggest the importance of CJNWA not only to breeding adults but also to newly-fledged young.

A small number of Common Terns, probably less than 10 pairs in 1989, also breed on CJNWA. Two pairs were apparently nesting on the artificial island in BM#1 on 30 May, however, by 12 June the nests were destroyed. The

terns breeding at CJNWA have never appeared to be very successful and the maximum number of breeding adults on record was 15+ pairs in 1979 (Tingley, 1980).

Also of interest, were frequent observations of Pied-billed Grebes at the Bayfield Flooding and Large Beaver Flooding No. 1, (Tables 6 and 7, respectively) and two single observations of an American Coot on 3 and 10 August in the Bayfield Flooding (Table 6).

Small numbers of Double-crested Cormorants were often observed resting on the rock ledges either to the east of the lighthouse or at Gunners Point. These birds were believed to be all non-breeders. A maximum of 25 cormorants was observed on 10 August.

Four species of gulls frequented CJNWA during this study. Great Black-backed Gulls and Herring Gulls were common throughout the summer with the occasional sighting of Ring-billed Gulls and a small number (maximum of 8 birds) of Bonaparte's Gulls in August. In late fall and early winter, gull numbers increase dramatically with often over 1000 birds present including large numbers of Ring-billed Gulls, with occasionally Iceland Gulls and Glaucous Gulls. Black-headed Gulls have also been reported.

3.3 Shorebirds

In 1989, 16 species of shorebirds were observed on CJNWA (Table 12). The most abundant of these were Semipalmated Sandpiper followed by Short-billed Dowitcher, Semipalmated Plover, Lesser Yellowlegs and Least Sandpiper. Of the remaining shorebird species, less than 100 birds per survey were recorded. The shorebird sightings of most interest were a pair of Wilson's Phalarope on 16 May and one Whimbrel and one Wilson's Phalarope on 21 July.

Maximum numbers of shorebirds were observed on 3 August with 984 birds consisting of 10 species. Shorebirds tended to move about the NWA depending on the condition of the tide. During high tide, birds were observed predominantly in Brackish Marsh No. 1, Oultons Marsh, and in many of the saltmarsh pools. During ebb tide, the shorebirds moved onto the intertidal flats at Ann's Acres and Dobson's Cove. A summary of shorebird observations by area are presented in Table 13. A comparison of 1989 shorebird observations at CJNWA with previously recorded highs is presented in Table 14.

Shorebird observations in 1989 resulted in two "record numbers" for the area. On 14 September 1989, 190 Semipalmated Plovers were observed on CJNWA, this is more than double the previous maximum of 90 on 17 August 1979 (Tingley, 1980). The second record is for Willets with 53 birds on 27 August 1979 compared to 25 on 11 August 1973 (Tingley 1980). More detailed information on Willets will follow this section. The records of previous peak shorebird numbers are from Tingley (1980) thus no comparable data exists between the years 1981 to 1988. It is interesting to note the marked decline in observed numbers of some shorebird species between peak numbers in Table 14 and present observations in Table 13. Specifically,

Black-bellied Plover, Pectoral Sandpiper, White-rumped Sandpiper, Dunlin, Short-billed Dowitcher and Hudsonian Godwit numbers are reduced. It should be pointed out, however, that as the 1989 surveys ended in September, some late arriving species, such as Dunlin, and Sanderling, were likely missed. Although no statistical significance can be attached to comparisons between only two surveys, it is noteworthy that the species showing the greatest reduction in numbers, the Short-billed Dowitcher, has been identified as showing evidence of a significant decline between 1972-1983 by Howe et al. 1989.

Two color-marked shorebirds were observed at CJNWA (Table 13). One was a Semipalmated Sandpiper, originally banded on November 1987 or 1988 at Coroa do Aviao, Itamaraca, Brazil. The second bird, a Red Knot was banded in Delaware Bay, New Jersey.

3.4 Willets

Willets were once nearly extirpated in eastern North America and by 1920 their Maritime range was limited to Digby and Yarmouth Counties, Nova Scotia (Erskine, 1967). The 1989 survey of breeding Willets at CJNWA totaled 14 pair and 7 lone birds on 30 May while 11 pair and 6 lone birds were observed on 27 June. The majority of the pairs were observed around BM#1 and especially adjacent to the saltmarsh-sedge meadow complex to the immediate west of the marsh. The old abandoned dikes, now islands, within BM#1 may provide safe nesting areas for some of these birds. Supportive of this were three Willet nests, observed on these islands, each containing 4 eggs, on 2 June, 1981. The earliest reported evidence of nesting Willets at CJNWA was by D. Christie et al., 5 July, 1972, when they observed two flightless young (Maritime Nest Record Scheme files, CWS-AR). On the 27 August 1989, 53 Willets were observed on the CJNWA. Since most females leave the nesting area by early July, (G. Hansen, pers. comm), this high number of observed Willets was most likely composed of juveniles and adult males. Assuming a maximum of 14 breeding pair of Willets on CJNWA, even with a high success rate, it appears unlikely that these 53 birds are all from CJNWA but some, or most, are probably from marshes further north, or south, along the New Brunswick coast.

3.5 Offshore bird movement

Our knowledge of seabird movements through the Northumberland Strait, and specifically in the area northeast of Cape Jourimain NWA, is limited. The 1989 surveys, 4 in spring and 2 in fall, provided only a rudimentary picture of this migration. During the four spring seabird surveys conducted in 1989, peak numbers/hour were recorded on 2 May with 75 of the 135 birds observed being Great Black-backed Gulls. Other spring observations of note were 30 White-winged Scoters flying north on 12 April and 15 Red-breasted Mergansers flying north on 20 April. One migrating Northern Gannet was also observed on 20 April.

The highest fall record for Scoters was 32 Surf Scoters/hour, and 70 Black Scoters/hour on 14 and 26 September, respectively, all moving south. Twenty-two Goldeneye sp. were also observed flying south on 14 September. Observations were continued and expanded in 1990 with a minimum estimate of 500,000 seabirds and seaducks passing through the Northumberland Strait

each year. For a more complete analysis of seabird movement through the Northumberland Strait, see MacKinnon et al. (1991).

3.6 Raptors

One or more raptors were usually observed on most survey days throughout April and May. Kestrels, Sharp-shinned Hawks and Northern Harriers were frequently observed hunting along the railbed. Harriers (Marsh Hawks) were common at CJNWA throughout the summer and were probably local breeders. A Goshawk was observed once in 1989 and a Great Horned Owl frequented the Beaver Flooding.

Two pairs of Ospreys also nest on man-made towers within the area and successfully produced young. In 1990, a third pair of Osprey established a nest on an abandoned hunting blind in BM#1. The area could probably support additional breeding pairs, however, available nest sites are presently a limiting factor.

3.7 Migrants and other sightings

Cape Jourimain NWA is used extensively by migrant waterfowl and shorebirds; however, its importance to other bird groups such as passerines is not well documented. As Cape Jourimain is a prominent coastal headland, its use by other migrants was suspected. For example, on 20 April, 1989 the author was conducting a spring waterfowl count between 0630-0800 hours at BM#1 - SM#1. During this 1.5 hour interval, at least 500 Robins were observed moving southwesterly along the railbed, from the coast to the mainland. It is conceivable that these birds were off course and were using Cape Jourimain to correct their position, possibly a type of "reverse migration".

While participating in the 16 December 1991 Audubon Christmas Bird Count, observers recorded an incredible migration of Common Redpoll with 14,159 birds recorded. Many of these birds were observed coming over water from Prince Edward Island to New Brunswick with many passing through the Cape Jourimain NWA. Just north of Cape Jourimain, S. Tingley (pers. comm.) reported a continuous migration of approximately 10,000 redpolls moving in a northwesterly direction.

Although late fall bird observations are lacking in this study, a valuable data set exists from field trips conducted by the Chignecto Naturalist Club (Table 15). Between 1973 and 1988 the organization has conducted 15 field trips to CJNWA, usually centered around mid November. One word of caution, however, is that the field trip observations extend outside the confines of the CJNWA boundary. Where these observations could be detected, they have been deleted from the table. Observations of species that would be expected to frequent feeders, such as House Sparrow, Starling and Blue Jay, were probably recorded in an around the community of Bayfield, situated along the southern boundary of the NWA.

Of particular note is the general increase in Canada Goose sightings over the past 16 years from around 100 per survey in the mid 1970's to between 300 - 600 from 1985 to 1988. Also, in Table 15, it is clear that

Yellow-rumped Warbler sightings are far fewer now than in past surveys. As this warbler species over winters at CJNWA, we do not know if this decline reflects population trends or yearly variation in Bayberry (Myrica pennsylvanica) seed production, the primary winter food source for this warbler.

On the 16 May, the senior author observed "hundreds" of Yellow-rumped Warblers in the shrubs along the railbed. These birds were far more abundant than would be expected for local breeders. No directional movement, as in the Robins, was observed. The alder hedge along the DPW railbed serves as a funnel, directing birds between the islands (Jourimain and Trenholm) and the mainland. This hedge serves a valuable purpose and should be preserved in the event of constructin activities.

A final note of interest is the Cliff Swallow colony under the eaves of the lighthouse on Jourimain Island. The 1989 Survey indicated 110 active nests. This number has remained relatively the same over the past 10 years (Table 16).

For a complete list of all bird sightings for Cape Jourimain NWA and details on their status and abundance, please see Appendix I. (Tingley 1980)

3.8 Rare and Accidental Records

The coastal prominence and diversity of habitat of CJNWA tends to "attract" and "hold" rare and uncommon avian species. On 30 May, 1989 the authors observed a Snowy Egret in Oulton's Marsh, two previous records of single sightings were on June 22-27, 1973 and August 3, 1979 (Tingley, 1980). On May 11, 1973 Andrew MacInnis observed and photographed a Louisiana Heron at CJNWA. This was the fifth record for New Brunswick. A picture of the heron was printed in American Birds, 1973, Vol. 27, No. 6, p. 1025. The Peregrine Falcon, listed as an endangered species, has been observed at CJNWA on four occasions, May 6-14, 1973; September 25, 1973; October 6, 1977; October 1979. The first New Brunswick sighting since 1884 of the European Ruff, a shorebird, was observed at Cape Jourimain by A. MacInnis between July 1-20, 1972. Since that time six additional Ruff sightings have been recorded (Tingley, 1980).

Also noteworthy are two records of Little Gull sightings at CJNWA, the first in BM#2 in 1974 and the last sighting by Con Desplanque in 1977 (Tingley, 1980). More recent sightings of rare birds include the Snowy Egret noted above and a Parasitic Jaeger observed off Gunner's Point on September 3, 1989. For a complete list of all recorded bird sightings at CJNWA up to 1980, see Tingley (1980).

3.9 Mammals

Mammal observations were recorded throughout 1989 to determine use on CJNWA. Throughout the summer months, the National Wildlife Area was believed to have supported the following mammals: 5+ White-tailed Deer, 1 Moose (sporadically), 1+ family of Red Fox, 1+ family of Raccoon, possible use by Coyotes (indicated by tracks), Muskrats in the Bayfield Flooding and Beaver Floodings and one (or more) Beaver(s) adjacent to the cedar swamp.

Snowshoe Hare sightings were very common and many could be observed on the roadbed during early morning hours. The only small mammals identifiable by sight were Meadow Voles; however, others such as Red-backed Vole, Masked Shrew and Short-tailed Shrew would be expected.

4. CONCLUSION

A fixed-link from New Brunswick to Prince Edward Island has been proposed and may yet become a reality. The approach to the bridge would run through the center of the Cape Jourimain National Wildlife Area along the DPW right-of-way utilizing the old causeway approach road built during the mid 1960's.

The purpose of this report has been two-fold. Firstly, to better document the wildlife values of the CJNWA and secondly, to exist as a baseline study in the event of future changes to the area. Cape Jourimain National Wildlife Area is an important staging area for waterfowl during spring and fall migration. This area also supported 40 waterfowl broods in 1989, making it extremely productive for its size. In light of the downward population trend of the eastern Black Duck, it is especially noteworthy that seventy percent of these broods were Black Ducks.

The Cape Jourimain wetlands and intertidal flats make this one of the best sites for shorebird species diversity in the Atlantic provinces. Thirty shorebird species have been recorded at CJNWA over the past fifteen years. This area is also important to other water birds as well. Great Blue Heron, Common Tern, Herring Gull, Great Black-backed Gull, Ring-billed Gull and Double-crested Cormorant are frequently observed on the area.

As the Cape Jourimain headland creates a constriction in the Northumberland Strait, seabirds moving through this water body can best be observed from this site. Preliminary surveys and personal communications suggest that seaduck and seabird movement through the strait is substantial and more work is needed. Cape Jourimain may also be important to migrant birds in another way. A quick inspection of a map indicating the New Brunswick coast along the Northumberland Strait readily shows how singular in topography is the Cape Jourimain headland. Occasional observations indicate that some passerines and raptors may also funnel through the National Wildlife Area during their spring and fall migration.

Due to the diverse habitat at CJNWA and its coastal prominence, it is an excellent birding site (over 95 species recorded on a single day in July 1974) and it is a good place to see rare birds. The Snowy Egret and Parasite Jaeger sightings in 1989 are good examples. Our understanding of bird use at this area is still not complete. The uniqueness of CJNWA that attracts birds is also beneficial to mammals as sightings of White-tailed Deer, Snowshoe Hare, Muskrat, Raccoon and Red Fox are not uncommon.

Cape Jourimain is a unique and diverse coastal ecosystem and of significant importance to wildlife. Any development proposal that may adversely impact on the site must carefully consider scenarios to minimize disturbance and to mitigate any loss of habitat or alterations in use of the site by wildlife populations.

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Table 1. Peak numbers of adult waterfowl per month observed at Cape Jourimain NWA in 1989.

Species	Observation Period					
	April	May	June	July	Aug.	Sept.
Canada Goose	79	66	-	-	-	26
Wood Duck	3	4	2	3	11	-
Green-winged Teal	62	29	18(10)[a]	12	490	55
Black Duck	281	109(23)	116(71)	85(55)	244	879
Mallard	1	-	-	-	3	3
Northern Pintail	4	9	14(11)	22(13)	75(3)	273
Blue-winged Teal	4	14	11	33(8)	595(5)	195
Northern Shoveler	-	5	4	-	-	-
Gadwall	-	1	-	-	-	-
American Wigeon	2	12(10)	7	5	73(1)	350
Ring-necked Duck	-	4	2	-	2	-
Greater Scaup	21	21	-	-	-	-
Black Scoter	-	1	-	-	-	-
Common Goldeneye	12	1	-	-	-	-
Hooded Merganser	-	-	-	2	-	-
Red-b. Merganser	36	71	3	-	-	-
Total	505	347(33)	177(92)	162(76)	1493(9)	2181

[a]Number of flightless young in parenthesis

Table 2. Peak numbers of avifauna per month, excluding shorebirds, observed on Brackish Marsh No. 1 (BM01), Cape Jourimain NWA, 1989.

Species	Observation Period					
	April	May	June	July	Aug.	Sept.
American Bittern	-	1	-	-	-	-
Great Blue Heron	-	3	2	4	6	3
Canada Goose	13	31	-	-	-	-
Green-winged Teal	53	26	7	6(5)[a]	30	210
Black Duck	48	37(23)	43(28)	25(18)	30	225
Mallard	1	-	-	-	-	-
Northern Pintail	2	7	10(9)	6	2	-
Blue-winged Teal	4	10	10	4	40	-
Northern Shoveler	-	2	2	-	-	-
American Wigeon	-	12(10)	7	4	3(1)	-
Greater Scaup	-	2	-	-	-	-
Red-b. Merganser	6	27	-	-	-	-
Osprey	-	-	-	1	-	-
Northern Harrier	-	1	-	-	-	-
Sharp-shinned Hawk	-	-	-	-	-	-
Common Tern	-	3	-	-	-	-
Belted Kingfisher	-	-	-	-	-	-
Total	128	162(33)	86(37)	54(23)	115(1)	530

[a]Number of flightless young in parenthesis

Table 3. Peak numbers of avifauna per month, excluding shorebirds, observed on Brackish Marsh No. 2 (BM#2), Cape Jourimain NWA, 1989.

Species	Observation Period					
	April	May	June	July	Aug.	Sept.
Dbl-cr. Cormorant	-	-	-	1	3	5
Great Blue Heron	-	1	3	-	4	-
Canada Goose	12	5	-	-	-	26
Green-winged Teal	9	-	13(10)[a]	1	450	235
Black Duck	16	20	22(19)	18(7)	360	650
Mallard	-	-	-	-	1	-
Northern Pintail	2	2	-	15(13)	70	260
Blue-winged Teal	-	2	1	21(8)	550	75
Northern Shoveler	-	2	2	-	-	-
American Wigeon	2	-	-	5	70	275
Ring-necked Duck	-	-	-	-	2	-
Greater Scaup	23	19	-	-	-	-
Black Scoter	-	1	-	-	-	-
Common Goldeneye	16	1	-	-	-	-
Red-b. Merganser	6	9	1	-	-	-
Osprey	-	2	-	-	-	-
Northern Harrier	-	-	-	-	1	-
Bonaparte's Gull	-	-	-	-	1	-
Herring Gull	-	1	2	-	-	-
G. Blk-backed Gull	-	2	-	-	-	-
Common Tern	-	2	3	2	3	1
Belted Kingfisher	-	1	1	-	-	-
Total	86	70	48(29)	63(28)	1515	1527

[a]Number of flightless young in parenthesis

Table 4. Peak numbers of avifauna per month, excluding shorebirds, observed on Salt Marsh No. 1 (SM#1), Cape Jourimain NWA, 1989.

Species	Observation Period					
	April	May	June	July	Aug.	Sept.
Common Loon	-	-	-	1	-	-
Dbl-cr. Cormorant	-	-	-	1	-	-
Great Blue Heron	-	3	9	15	2	-
Canada Goose	60	13	-	-	-	-
Wood duck	-	2	-	-	-	-
Green-winged Teal	-	2	-	-	-	-
Black Duck	172	46	58(38)¤	48(32)	10	-
Northern Pintail	-	-	-	-	2	-
Blue-winged Teal	-	2	2	-	-	-
Greater Scaup	20	-	-	-	-	-
Red-b. Merganser	52	22	-	-	-	-
Osprey	-	-	2	-	-	-
Ring-billed Gull	-	5	-	-	-	-
Herring Gull	-	-	14	-	-	-
Gr. Blk-backed Gull	-	-	2	-	-	-
Common Tern	-	-	6	2	-	-
Belted Kingfisher	-	-	1	1	-	-
Total	304	95	94(38)	68(32)	14	-

¤Number of flightless young in parenthesis

Table 5. Peak numbers of avifauna per month, excluding shorebirds, observed on Salt Marsh No. 2 (SM#2), Cape Jourimain NWA 1989.

Species	Observation Period					
	April	May	June	July	Aug.	Sept.
Common Loon	-	-	-	1	-	-
Dbl-cr. Cormorant	-	-	-	14	-	-
American Bittern	-	1	2	2	-	-
Great Blue Heron	2	4	4	26	-	-
Canada Goose	2	17	-	-	-	-
Green-winged Teal	-	1	-	-	-	-
Black Duck	49	29	28(9)*	11(4)	-	-
Northern Pintail	-	2	2	-	-	-
Blue-winged Teal	-	2	-	-	-	-
Northern Shoveler	-	3	-	-	-	-
Gadwall	-	1	-	-	-	-
Red-b. Merganser	14	24	2	13	-	-
Northern Harrier	-	2	-	-	-	-
Sharp-shinned Hawk	-	1	-	-	-	-
Kestrel	-	2	-	-	-	-
Herring Gull	-	40	15	6	-	-
Gr. Blk-backed Gull	-	3	20	6	-	-
Common Tern	-	1	2	2	-	-
Belted Kingfisher	-	2	2	1	-	-
American Crow	-	2	3	-	-	-
Total	67	137	80(9)	82(4)	-	-

*Number of flightless young in parenthesis

Table 6. Peak numbers of avifauna per month, excluding shorebirds, observed on the Bayfield Flooding, Cape Jourimain NWA 1989.

Species	Observation Period					
	April	May	June	July	Aug.	Sept.
Pied-billed Grebe	2	2	1	2	3	-
American Bittern	-	1	-	1	1	-
Great Blue Heron	-	3	-	-	2	-
Wood Duck	3	-	-	1	11	-
Green-winged Teal	-	-	-	-	-	6
Black Duck	3	2	-	3(2)¤	8	16
Mallard	-	-	-	-	2	1
Northern Pintail	-	-	-	-	4(3)	3
Blue-winged Teal	-	-	-	4	12(5)	-
Ring-necked Duck	-	2	-	-	-	-
Osprey	-	2	-	-	-	-
American Coot	-	-	-	-	1	-
Herring Gull	-	-	-	7	5	-
Common Tern	-	-	-	1	2	-
Common Crow	-	-	-	-	2	-
Total	8	12	1	19(2)	53(8)	26

¤Number of flightless young in parenthesis

Table 7. Peak numbers of avifauna observed on the Large Beaver Flooding (No. 1), Cape Jourimain NWA, 1989.

Species	Observation Period			
	April	May	June	July
Pied-billed Grebe	-	1	3	1
American Bittern	-	1	1	-
Wood Duck	-	2	2	2
Green-winged Teal	-	-	-	1
Black Duck	4	5	15(13)¤	9(8)
Blue-winged Teal	-	6	20(17)	6(4)
Ring-necked Duck	-	2	2	-
Hooded Merganser	-	-	-	2
Ruffed Grouse	-	-	-	1
Common Snipe	-	1	1	2
Great Horned Owl	-	-	-	1
Belted Kingfisher	-	-	1	1
Total	4	18	45(30)	14

¤Number of flightless young in parenthesis

Table 8. Peak numbers of waterfowl per month observed on the Barrier Beach Ponds (Oultons Marsh), Cape Jourimain NWA, 1989.

Species	Observation Period				
	May	June	July	August	Sept.
Green-winged Teal	2	1	12	-	-
Black Duck	5	7(5)*	-	-	3
Northern Pintail	-	12(11)	1	-	1
Blue-winged Teal	4	3	5	-	-
Total	11	23(16)	18	-	8

*Number of flightless young in parenthesis

Table 9. Peak numbers of waterfowl observed during Spring*, Summer and Fall surveys, between 1972-1989 at Cape Jourimain National Wildlife Area.

	SPRING April 29-June 30			SUMMER July 1-Aug. 14			FALL Aug. 14 - Sept. 30		
	1972/73[1]	1979[2]	1989[3]	1972/73	1979	1989	1972/73	1979	1989
Canada Goose	200	2	79	0	0	0	14	0	26
Wood Duck	0	0	4	0	0	11	0	0	6
Green-winged Teal	375	28	62	64	0	51	189	45	490
Black Duck	120	11	281	77	87	183	200	112	879
Mallard	1	0	1	0	0	3	3	0	3
Northern Pintail	12	8	9	13	4	13	85	50	273
Blue-winged Teal	25	2	14	16	25	87	1511	700	590
Northern Shoveler	10	0	5	4	0	0	9	0	0
Gadwall	2	0	1	0	0	0	0	0	0
American Wigeon	10	1	7	13	6	6	27	27	350
Ring-necked Duck	8	18	4	9	5	2	25	0	0
Greater Scaup	12	62*	22	4	0	0	0	0	0
Black Scoter	0	0	1	0	0	0	0	0	0
Common Goldeneye	40	0	12	1	0	0	0	0	0
Hooded Merganser	0	0	0	0	0	2	0	0	0
Red-br. Merganser	109	12	71	0	0	0	0	0	0

[1]MacInnis (1979), *note that season divisions are also from MacInnis, 1979

[2]Morton (1980)

[3]This Study

*Listed as Scaup sp.

Table 10. Comparison of number of waterfowl broods observed at Cape Jourimain National Wildlife Area between 1972-1973 and 1989.

	Year		
	1972[1]	1973[1]	1989[2]
Green-winged Teal	0	2	2
Black Duck	31	26	28
Northern Pintail	3	0	4
Blue-winged Teal	0	1	5
Northern Shoveler	1	2	0
Wigeon	0	0	1
Totals	35	31	40

[1]MacInnis (1979)

[2]This Study

Table 11. Total number of waterfowl broods observed at each survey division, Cape Jourimain NWA, 1989.

Survey Area	Species	Number of Broods	Times Observed
Brackish Marsh* No. 1	Green-winged Teal	1	1
	Black Duck	6	20
	American Wigeon	1	1
Brackish Marsh No. 2	Green-winged Teal	1	1
	Black duck	4	5
	Northern Pintail	2	3
	Blue-winged Teal	1	1
Salt Marsh No. 1	Black Duck	9	28
Salt Marsh No. 2	Black Duck	5	6
Bayfield Flooding	Black Duck	1	1
	Northern Pintail	1	1
	Blue-winged Teal	1	1
Beaver Flooding No. 1	Black Duck	2	4
	Blue-winged Teal	3	5
Barrier Beach Pond (Oultons Marsh)	Black Duck	1	1
	Northern Pintail	1	2

*On 21 July a Blue-winged Teal nest containing 9 eggs was found on west side of BM#1. The female was still incubating this nest on Aug. 10.

Table 12. Peak numbers of shorebirds per month observed at Cape Jourimain NWA, during 1989.

Common Name	OBSERVATION PERIOD		
	July	August	September
Black-bellied Plover	3	29	-
Semipalmated Plover	-	94	190
Killdeer	5	3	-
Greater Yellowlegs	65	60	3
Lesser Yellowlegs	81	146	133
Willet	9	53	16
Spotted Sandpiper	2	1	-
Whimbrel	1	-	-
Hudsonian Godwit	-	15	-
Ruddy Turnstone	1	2	-
Red Knot	5	-	-
Sanderling	-	30	15
Semipalmated Sandpiper	92	606	190
Least Sandpiper	25	126	-
Short-billed Dowitcher	390	340	100
Wilson's Phalarope	1	-	-
Totals	680	1505	647

Table 13. Peak numbers of shorebirds recorded by area between 6 July and 26 September 1989, Cape Jourimain NWA, 1989.

Species	BM01	BM02	Ann's Acres Cove	Dobson's Cove	Oulton's Marsh	Bayfield Flooding
Black-bellied Plover	12	-	11	18	1	-
Semipalmated Plover	20	-	150	80	12	-
Greater Yellowlegs	8	6	40	47	5	-
Lesser Yellowlegs	45	4	61	105	37	5
Willet	14	4	15	42	1	1
Semipalmated Sandpiper	300	50	160	150*	406	5
Least Sandpiper	50	-	25	1	75	-
Short-billed Dowitcher	100	-	300	140	74	8
Common Snipe	2	-	-	-	-	-
Wilsons Phalarope	2	-	-	-	-	-
Spotted Sandpiper	-	2	1	-	1	1
Whimbrel	-	-	1	-	-	-
Hudsonian Godwit	-	-	15	-	-	-
Ruddy Turnstone	-	-	2	-	-	-
Red Knot	-	-	5**	-	-	-
Sanderling	-	-	10	20	5	-
Killdeer	-	-	-	-	-	2
Total	553	66	796	613	617	22

*One Semipalmated Sandpiper observed with color banded left leg: silver manila/light green, light blue bar; right leg: O/red, yellow. Banded Nov. 1988 or 87, Coroa do Aviao, Itamaraca Brazil.

**One Red Knot observed color banded - Left leg: silver manila/yellow
Right leg: green bar/green, red
Banded Delaware Bay, New Jersey

Table 14. Comparison of 1989 shorebird observations at Cape Jourimain National Wildlife Area with previously recorded highs from Tingley (1980). Fall migration only.

	1989		Previous High	
Common Name	Max^m No.	Date	Max^m No.	Date
Black-bellied Plover	29	27 Aug.	75	25 Sept. 1975
Semipalmated Plover	¤190	14 Sept.	90	17 Aug. 1979
Killdeer	5	21 July	12	27 Sept. 1975
Greater Yellowlegs	65	26 July	100	24 July 1973
Lesser Yellowlegs	146	24 Aug.	300	24 July 1973
Willet	¤53	27 Aug.	25	11 Aug. 1973
Spotted Sandpiper	2	21 July	10	24 July 1973
Whimbrel	1	21 July	3	25 Sept. 1975
Hudsonian Godwit	15	10 Aug.	78	16 Aug.1972
Ruddy Turnstone	2	24 Aug.	15	31 July, 1975
Red Knot	5	26 July	272	28 Aug. 1975
Pectoral Sandpiper	0	-	6	10 Oct. 1975
White-rumped Sandpiper	0	-	51	18 Aug. 1975
Sanderling	30	24 Aug.	40	27 Sept. 1975
Semipalmated Sandpiper	606	3 Aug.	725	4 Aug. 1974
Least Sandpiper	126	3 Aug.	600	22 July 1975
Dunlin	0	-	237	10 Oct. 1975
Shortbilled Dowitcher	390	26 July	1700	22 July 1975
Wilson's Phalarope	1	21 July	4	12 Aug. 1973

¤Highest numbers yet recorded

Table 15 - Avifauna observations conducted by the Chignecto Naturalist Club at Cape Jourimain National Wildlife Area and bordering communities, mid-November, 1973-1988.

Species	Nov 18 1973	Nov 17 1974	Nov 15 1975	Nov 21 1976	Nov 20 1977	Nov 19 1978	Nov 25 1979	Nov 16 1980	Nov 15 1981	Nov 13 1983	Nov 18 1984	Nov 24 1985	Nov 16 1986	Nov 15 1987	Nov 20 1988
Red-throated Loon	-	3	9	1	-	76	46	6	55	1	9	4	21	12	16
Common Loon	-	1	-	-	-	3	4	1	-	12	1	3	-	6	-
Pied-billed Grebe	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1
Horned Grebe	1	4	4	4	3	3	24	7	1	1	-	-	3	-	4
Red-necked Grebe	-	3	-	-	1	18	29	42	4	1	4	6	2	2	-
Northern Gannet	1	-	1	-	-	-	1	-	-	-	-	-	-	2	-
Pied-billed Grebe	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1
Great Cormorant	-	-	-	-	1	1	2	-	-	-	-	3	2	1	-
DC Cormorant	-	-	-	-	-	-	-	-	-	3	-	-	2	-	9
Great Blue Heron	1	1	1	-	-	1	4	1	4	2	-	3	13	4	9
Canada Goose	60	125	56	140	-	118	110	94	2	18	196	340	605	450	380
Green-winged Teal	12	3	-	-	-	13	4	-	5	14	1	-	-	-	-
Black Duck	-	5	1	6	-	43	12	82	20	29	104	61	83	87	70
Mallard	-	-	-	-	-	-	-	-	-	9	-	-	-	-	-
Pintail	5	-	3	-	-	-	15	8	-	1	5	22	-	6	1
American Wigeon	-	-	-	-	-	-	-	-	-	4	-	-	-	-	-
Ring necked Duck	-	-	-	-	-	-	-	-	-	1	-	-	-	-	6
Greater Scaup	46	-	43	-	3	9	-	7	6	-	10	7	-	-	-
Common Eider	4	6	-	5	33	7	19	9	5	5	14	2	34	2	4
Oldsquaw	63	85	39	26	130	84	50	175	30	78	57	33	28	70	34
Black Scoter	4	7	-	1	2	-	-	9	5	-	1	-	-	-	2
Surf Scoter	13	1	23	1	13	5	20	9	10	1	9	-	-	-	1
White-winged Scoter	-	-	8	4	-	19	45	15	3	2	4	4	5	-	10
Scoter sp.	-	-	15	-	-	-	-	-	-	-	-	-	-	7	-
Common Goldeneye	15	10	28	13	4	61	66	4	10	8	1	156	65	-	216
Bufflehead	2	-	-	-	-	-	1	-	-	-	-	-	-	-	-
Hooded Merganser	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
Common Merganser	-	-	50	-	-	18	1	-	-	-	7	-	-	12	-
Red-breasted Merganser	8	21	51	57	32	142	43	200	92	28	51	13	16	32	70
Ruddy Duck															

Table 15 - Avifauna observations conducted by the Chignecto Naturalist Club at Cape Jourimain National Wildlife Area (cont'd) and bordering communities, mid-November, 1973-1988.

Species	Nov 18 1973	Nov 17 1974	Nov 15 1975	Nov 21 1976	Nov 20 1977	Nov 19 1978	Nov 25 1979	Nov 16 1980	Nov 15 1981	Nov 13 1983	Nov 18 1984	Nov 24 1985	Nov 16 1986	Nov 15 1987	Nov 20 1988
Bald Eagle	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
Northern Harrier	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
Northern Goshawk	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
Red-tailed Hawk	-	-	-	-	-	-	-	3	-	-	-	-	4	-	-
Rough-legged Hawk	-	1	2	-	-	-	-	-	-	-	-	1	1	-	-
Hawk sp.	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
American Kestrel	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-
Ring-necked Pheasant	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
Ruffed Grouse	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1
American Coot	-	-	2	-	-	-	2	-	-	-	-	-	-	-	-
Black-bellied Plover	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater Yellowlegs	-	-	-	-	-	-	-	-	-	-	-	-	2	1	1
Red Knot	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sanderling	12	1	1	1	-	19	-	24	-	2	-	-	4	?	-
Semi-palmated Sandpiper	-	9	-	-	-	-	-	-	-	-	-	-	-	-	-
White-rumped Sandpiper	-	-	1	-	-	1	-	-	-	-	-	-	-	1	-
Purple Sandpiper	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dunlin	-	-	67	1	-	-	3	11	-	-	-	-	-	-	-
Long-billed Dowitcher	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
Common Snipe	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1
Bonaparte's Gull	302	25	7	5	120	21	25	27	126	100+	6	-	7	1	1
Ring-billed Gull	142	16	61	163	136	234	161	350	350	54	79	73	380	73	6
Herring Gull	60	75	60	57	-	1045	199	317	26	92	30	36	52	47	48
Iceland Gull	2	-	1	1	30	138	7	4	-	5	86	21	4	40	40
Glaucous Gull	-	1	-	-	-	-	-	2	-	-	-	-	-	-	-
Great Black-Backed Gull	15	5	20	7	24	83	51	38	17	20	17	10	10	14	36
Black Guillemot	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
Rock Dove	-	-	-	-	-	-	4	-	-	-	-	-	-	7	-
Mourning Dove	-	-	-	-	-	-	39	-	-	-	-	3	-	1	1
Snowy Owl	-	-	1	-	-	-	-	-	-	-	-	-	1	-	-
Belted Kingfisher	-	-	-	-	-	-	-	-	1	-	-	-	1	1	-
Downy Woodpecker	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-

Table 15 - Avifauna observations conducted by the Chignecto Naturalist Club at Cape Jourimain National Wildlife Area (cont'd.) and bordering communities, mid-November, 1973-1988.

Species	Nov 18 1973	Nov 17 1974	Nov 15 1975	Nov 21 1976	Nov 20 1977	Nov 19 1978	Nov 25 1979	Nov 16 1980	Nov 15 1981	Nov 13 1983	Nov 18 1984	Nov 24 1985	Nov 16 1986	Nov 15 1987	Nov 20 1988
Hairy Woodpecker	-	1	-	-	-	-	-	1	-	-	-	-	-	1	-
Northern Flicker	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
Pileated Woodpecker	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Horned Lark	-	-	1	-	-	-	-	-	1	-	-	2	-	-	-
Barn Swallow	-	-	-	-	-	-	-	=	1	-	-	-	-	-	-
Grey Jay	-	-	-	-	-	2	-	1	1	-	1	-	-	-	-
Blue Jay	-	6	3	12	-	5	4	5	10	-	3	-	2	1	3
American Crow	-	12	8	17	10	8	25	17	20	27	50	5	6	10	4
Common Raven	-	7	3	4	6	6	11	20	3	7	12	3	4	7	7
Black-capped Chickadee	-	20	16	16	5	6	28	32	17	2	29	11	13	2	3
Boreal Chickadee	-	-	1	10	1	7	6	8	-	-	-	1	-	2	3
Red-breasted Nuthatch	-	1	-	1	-	-	-	5	-	-	-	-	-	-	2
Golden-crowned Kinglet	-	6	-	2	-	1	7	10	-	-	4	-	-	-	1
American Robin	-	-	1	26	-	-	-	7	-	1	1	1	-	1	40
Mockingbird	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Water Pipit	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
Northern Shrike	1	1	-	-	1	-	1	-	-	-	1	-	-	-	-
European Starling	-	20	1	36	3	6	14	49	-	75	7	55	88	55	27
Yellow-rumped Warbler	-	8	2	27	4	5	119	-	16	-	9	1	-	-	10
Palm Warbler	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-
Bay-breasted	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Black & White Warbler	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
Common Yellowthroat	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-
American Tree Sparrow	-	4	2	10	-	3	4	7	-	-	3	-	2	8	18
Chipping Sparrow	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
Fox Sparrow	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1
Song Sparrow	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Swamp Sparrow	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
White-throated Sparrow	-	-	-	3	-	1	-	5	-	-	-	-	-	-	-
Dark-eyed Junco	-	1	-	25	-	-	-	-	-	-	-	2	-	-	17
Lapland Longspur	-	-	2	1	-	-	-	-	-	-	-	-	-	-	-
Snow Bunting	-	160	105	490	200	61	43	-	65	-	12	-	11	-	2

Table 15 - Avifauna observations conducted by the Chignecto Naturalist Club at Cape Jourimain National Wildlife Area (cont'd.) and bordering communities, mid-November, 1973-1988.

Species	Nov 18 1973	Nov 17 1974	Nov 15 1975	Nov 21 1976	Nov 20 1977	Nov 19 1978	Nov 25 1979	Nov 16 1980	Nov 15 1981	Nov 13 1983	Nov 18 1984	Nov 24 1985	Nov 16 1986	Nov 15 1987	Nov 20 1988
Red-winged blackbird	-	-	-	-	-	-	-	-	-	-	-	-	22	-	-
Rusty Blackbird	-	-	-	4	-	-	-	-	-	-	2	-	-	-	-
Common Crackle	-	-	-	5	-	-	-	2	-	-	-	-	-	-	-
Brown-headed Cowbird	-	-	-	15	-	-	-	-	-	-	-	-	-	-	-
Pine Grosbeak	-	-	1	-	1	-	-	-	2	-	-	-	2	-	-
White-winged Crossbill	-	-	-	1	-	-	-	-	-	-	6	-	-	-	-
Common Redpoll	-	-	-	-	-	-	-	10	14	-	-	14	25	-	15
Pine Siskin	-	-	-	-	-	-	-	26	-	-	-	-	-	40	-
American Goldfinch	-	20	-	-	-	5	17	-	-	-	-	16	-	-	-
Evening Grosbeak	-	-	14	4	-	2	-	-	-	-	-	-	1	-	-
House Sparrow	-	20	1	67	10	-	13	-	-	12	1	8	70	2	20
Unidentified songbirds	-	-	-	-	-	-	-	-	-	-	10	-	-	-	-
Unidentified shorebirds	-	-	-	-	-	-	-	-	-	-	-	-	5	-	-
Total Species	26	41	43	42	27	41	43	43	32	30	41	32	38	36	41

Table 16. Cliff Swallow colony records, at the lighthouse, Cape Jourimain NWA

Year	Survey Date	Number of Nests	Observer*
1979	1 June	106	Colin MacKinnon
1980	26 July	110	Tony Erskine
1981	2 June	79	Colin MacKinnon
1984	14 July	50+	Tony Erskine
1985	6 July	131	Colin & Nancy MacKinnon
1989	27 June	110	Colin MacKinnon

* Source: Maritime Nest Record Scheme

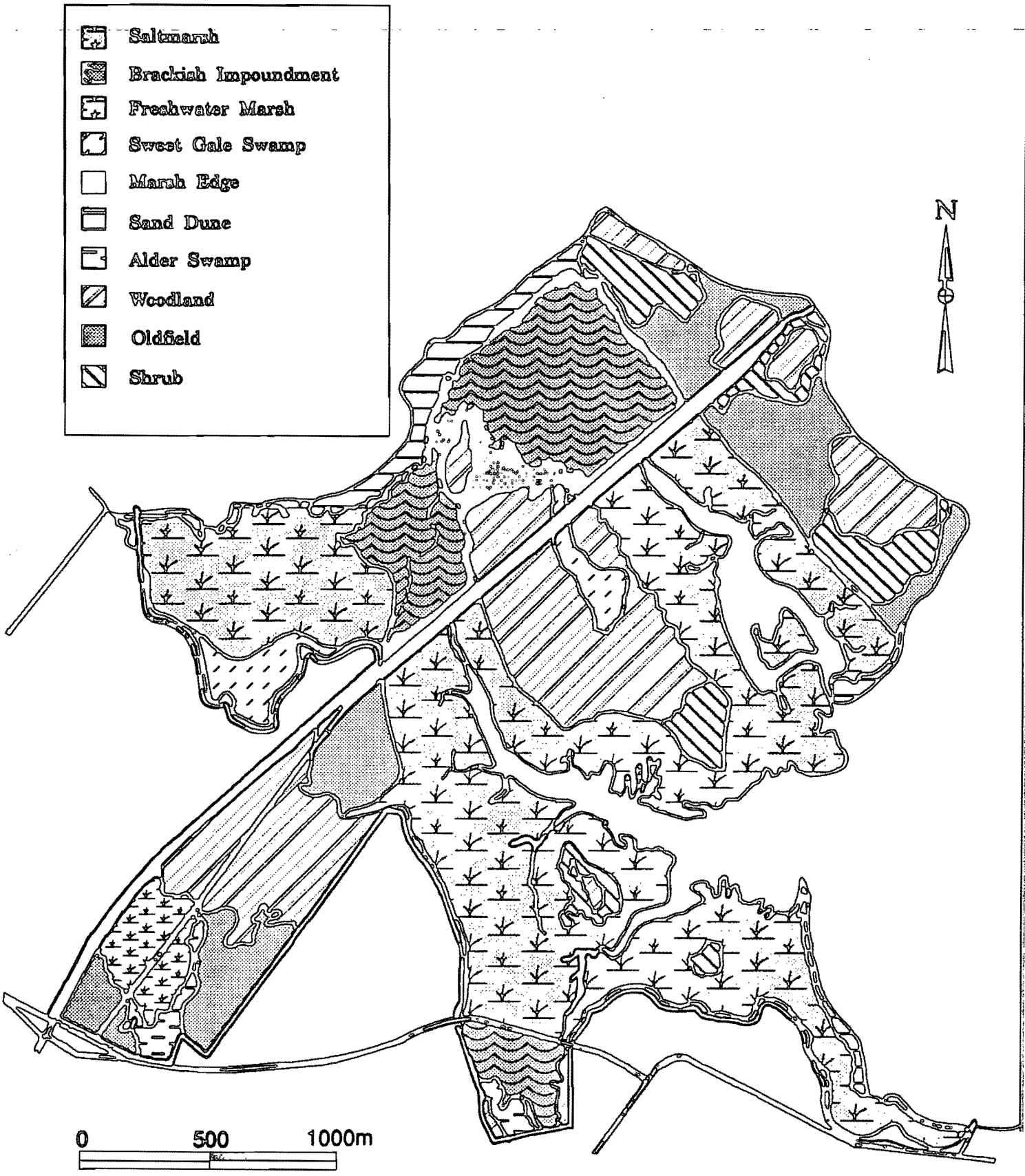

Figure 1. Locations and extents of major habitats at Cape Jourimain NWA.

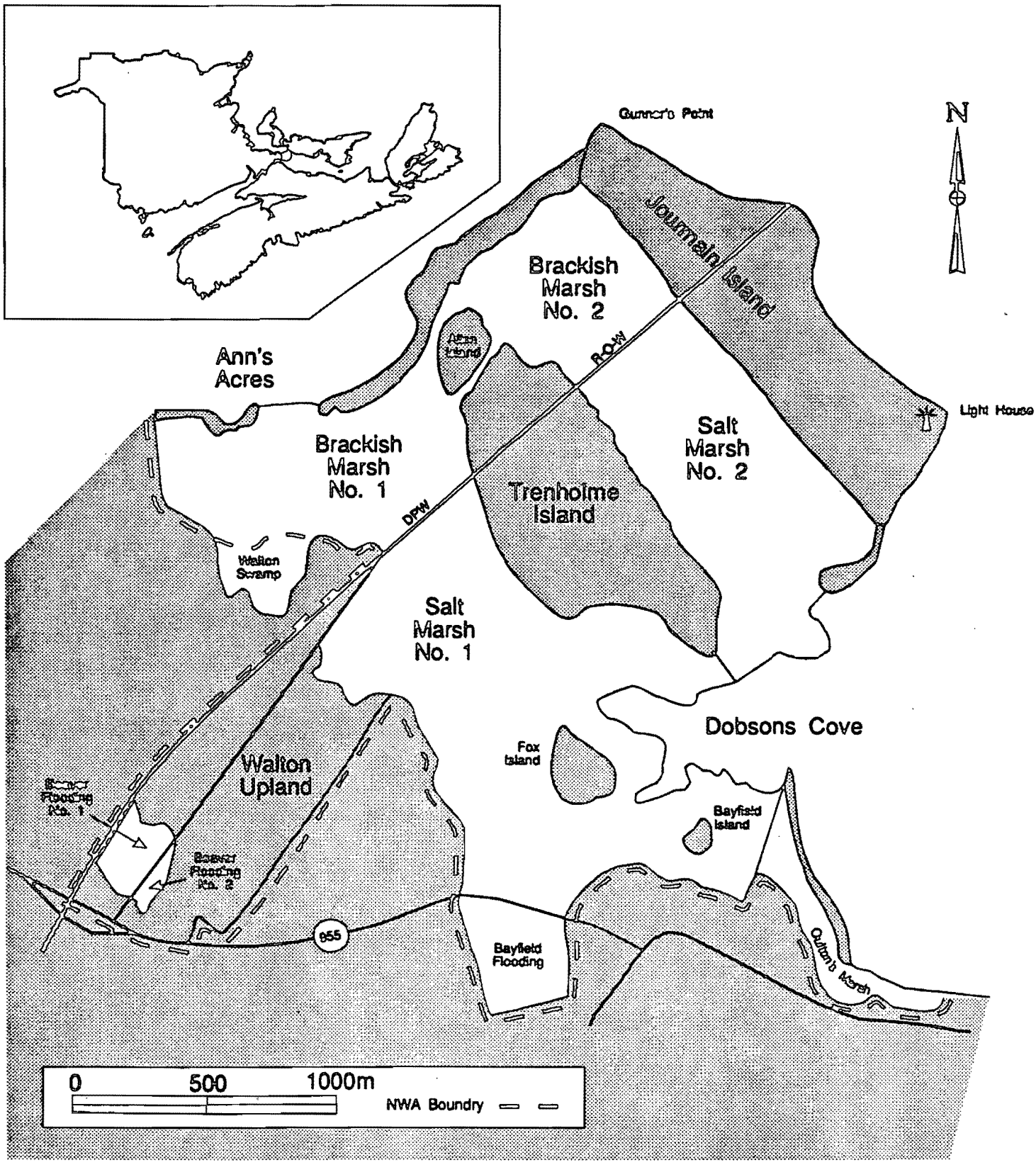

Figure 2. Salient features and survey divisions at Cape Jourmain National Wildlife Area.

Appendix 1. Checklist of Birds, Cape Jourimain National Wildlife Area.

STATUS AND ABUNDANCE CODES AND DEFINITIONS:

vr = very rare - occurs at most about once every five years.
r = rare - has occurred several times, though not annually.
u = uncommon - occurs annually, but can often be missed in a full day's birding in suitable habitat even at peak season.
fc = fairly common - at least one should be seen or heard in a full day's birding in suitable habitat at peak season.
c = common - at least several should be seen or heard in a full day's birding in suitable habitat at peak season.
vc = very common - several should be seen or heard in a short birding trip in suitable habitat at peak season.

Sp = spring
Su = summer
F = fall
W = winter
P = permanent

R = resident
T = transient
V = visitant

NORMAL DATES OF OCCURRENCE: The approximate dates during which the species can normally be expected to be present are given on the list following the status and abundance code. Dates of past occurrences of rare and very rare species are shown in brackets. Question marks indicate that data is lacking for that period. Information is especially needed for songbirds at all seasons.

LOONS		
....Common Loon	fcT,fcSuV	mid Apr.-Nov.
....Red-throated Loon	fcSpT,c-vcFT	Apr.-early May, late Sept.-Nov.
GREBES		
....Red-necked Grebe	rSpT?,fcFT	Apr.?, Oct.-early Dec.
....Horned Grebe	rSpT,fcFT	Apr., Oct.-Nov.
....Pied-billed Grebe	rT,rSuV	(Apr.-Sept.)
STORM-PETRELS		
....Leach's Storm-Petrel	vrFV	(Nov. 12)
GANNETS		
....Gannet	uSuV,uFT	July-Nov.
CORMORANTS		
....Great Cormorant	rSpT,uFT	Apr., Sept.-Nov.
....Double-crested Cormorant	uT	late Apr.-May, Aug.-Oct.
HERONS AND BITTERNS		
....Great Blue Heron	vcT,fcSuV	Apr.-Nov.
....Green Heron	vrV	(June 12-14, Aug. 16)
....Little Blue Heron	vrV	(June 10)
....Cattle Egret	vrV	(May 25-June 1)
....Great Egret	vrV	(Apr. 23)
....Snowy Egret	vr-rV	(June 22-27, Aug. 3)
....Louisiana Heron	vrV	(May 11)
....Black-crowned Night Heron	vr-rT	(July 25-Sept. 3)
....American Bittern	uT,uSuR	late Apr.-Oct.
IBISES		
....Glossy Ibis	vr-rV	(April 17, May 8)
DUCKS AND GEESE		
....Canada Goose	cT,vrSuR?	mid March-May, mid Sept.-Dec.
....Brant	uSpT	late Apr.-May
....Snow Goose	vrT	(Apr. 17-19)
....Mallard	u-fcT	Apr.-Dec.
....Black Duck	vcT,vcSuR	late Mar.-Dec.
....Gadwall	rSpT	(Apr. 24-May 26)
....Pintail	c-vcT,fcSuR	late Mar.-Nov.
....Green-winged Teal	cSpT,fcSuR,vcFT	early Apr.-Nov.
....Blue-winged Teal	fcSpT,fcSuR,vcFT	mid Apr.-early Oct.
....American Wigeon	fcSpT,fcSuR,fc-cFT	mid Apr.-Sept.
....Northern Shoveler	uT,uSuR	late Apr.-Sept.
....Redhead	vr-rSpT	(May 8, 19)
....Ring-necked Duck	fcSpT,uSuR,uFT	late Apr.-Sept.
....Greater Scaup	cT,uSuV	late Mar.-Nov.
....Lesser Scaup	rT	(Oct. 23)
....Common Goldeneye	cSpT,uSuV,fcFT	Apr.-Nov.
....Bufflehead	uFT	Oct.-Nov.
....Oldsquaw	c-vcT,cWV	mid Oct.-Apr.
....Common Eider	cT,cSuV,rWV?	Mar.-Nov.
....White-winged Scoter	c-vcT,r-uSuV,rWV?	mid Apr.-Nov.
....Surf Scoter	c-vcT,rSuV	mid Apr.-Nov.
....Black Scoter	c-vcT,r-uSuV	mid Apr.-Nov.
....Ruddy Duck	vr-rFT	(mid Nov.)
....Hooded Merganser	vrT	(Apr. 22)
....Common Merganser	uT	Apr.?-Nov.?
....Red-breasted Merganser	vcT,fcSuV,uWV?	Mar.-Dec.
HAWKS AND HARRIERS		
....Goshawk	rT	(May 4, Sept. 6-20,
....Sharp-shinned Hawk	r-uT	Apr.-May, Sept.-Oc
....Red-tailed Hawk	r-uT,r-uSuV	Apr.-Oct.
....Red-shouldered Hawk	vrV	(June 16)
....Broad-winged Hawk	vr-rT	May ?-Sept.?
....Rough-legged Hawk	uT,uWV	late Oct.-Apr.
....Gold Eagle	rT,rSuV	(Apr. 11, May 29, Ju
....Marsh Hawk	u-fcT,u-fcSuR	mid Apr.-Oct.
OSPREYS		
....Osprey	fcT,fcSuV	late Apr.-mid Sept.
FALCONS		
....Peregrine Falcon	rT	(May 6-14, Sept. 25,
....Merlin	rT	(May 6, Nov. 11, 13)
....American Kestrel	fc-cSpT,uFT,rSuR?	mid Apr.-Sept.
GROUSE		
....Ruffed Grouse	uPR?	year-round?
PHEASANTS		
....Ring-necked Pheasant	r-uV	year-round
COOTS		
....American Coot	rFT	(Nov. 15, 25)
PLOVERS AND TURNSTONES		
....Semipalmated Plover	uSpT,c-vcFT	May-early June, mid
....Piping Plover	r-vrV	(early June)
....Killdeer	cT,cSuR	early April-Oct.
....American Golden Plover	rFT	(Aug. 24)
....Black-bellied Plover	cSpT,vcFT	mid May-early Nov.
....Ruddy Turnstone	rSpT,cFT	May 17, June 10, late
WOODCOCK, SNIPE AND SANDPIPERS		
....American Woodcock	uT?	Apr.?-Oct.?
....Common Snipe	fc-cT,fc-cSuR	late Apr.-Oct.
....Whimbrel	vrSpT,r-uFT	May 18, late July-Se
....Upland Sandpiper	vrV	(Aug. 30)
....Spotted Sandpiper	fcT,fcSuR	late May-early Sept.
....Solitary Sandpiper	rFT	(late July-Sept.)
....Greater Yellowlegs	vcT	late Apr.-Oct.
....Lesser Yellowlegs	rSpT,vcFT	May 18, June 14, July
....Willet	c-vcSuR	mid May-early Sept.
....Red Knot	cFT	mid July-mid Oct.
....Purple Sandpiper	vrT	(Nov. 18)
....Pectoral Sandpiper	vrSpT,u-fcFT	Apr. 23, Aug.-Oct.
....White-rumped Sandpiper	vrSpT,c-vcFT	June 19, late July-ea
....Least Sandpiper	c-vcT	mid May-Oct.
....Dunlin	rSpT,vcFT	Apr. 23, June 2, Aug
....Semipalmated Sandpiper	uSpT,c-vcFT	late May-early June.
....Sanderling	cFT	late July-early Nov
....Short-billed Dowitcher	vrSpT,vcFT	June 9, late June-ea
....Long-billed Dowitcher	rFT	(Aug. 16-17, Oct. 14,
....Stilt Sandpiper	uFT	July-mid Sept.
....Hudsonian Godwit	cFT	mid July-Sept.
....Ruff	rT,rSuV	(May 3, mid June-mi
....Wilson's Phalarope	rT,rSuV	(June-mid Sept.)
....Northern Phalarope	rFT	(early Aug.-late Sept
GULLS AND TERNS		
....Glaucous Gull	r-uT,r-uWV?	Nov.?-Apr.?
....Iceland Gull	u-fcT,u-fcWV	mid Oct.-early May
....Great Black-backed Gull	c-vcT,c-vcSuV,uWV	year-round
....Herring Gull	vcT,vcSuV,uWV	year-round
....Ring-billed Gull	c-vcT,cSuV	late Mar.-Dec.
....Black-headed Gull	uFT,vrSuV	July, Oct.-mid Dec.
....Bonaparte's Gull	uSpT,cSuV,cFT	Apr. 12, June-Nov
....Little Gull	vr-rSuV	(late June-July)
....Common Tern	cT,cSuR	mid May-early Oct.
....Arctic Tern	rT	(Aug.-Sept.)
....Caspian Tern	rFT	(July 19-24, Aug. 17)
....Black Tern	vrSuV	(July 5)
ALCIDS		
....Black Guillemot	r-uT	Apr., Nov.
DOVES		
....Rock Dove	uV	year-round
....Mourning Dove	r-uSuV,r-uFT	July-Nov.
CUCKOOS		
....Black-billed Cuckoo	u-fcSuR	late June-Aug.
OWLS		
....Great Horned Owl	rV?	(year-round?)
....Snowy Owl	rT,rWV,vrSuV	(Nov.-Apr., July)
....Short-eared Owl	rT	(Apr.?-Nov.?)
....Saw-whet Owl	rT?	(Mar.-Apr.?, Oct.-No
GOATSUCKERS		
....Common Nighthawk	uSuV	June-Aug.
SWIFTS		
....Chimney Swift	uT?	mid May?-early Sept
HUMMINGBIRDS		
....Ruby-throated Hummingbird	uT,uSuR	late May-early Sept.?
KINGFISHERS		
....Belted Kingfisher	u-fcT,uSuR?	mid Apr.-Oct.?

Appendix 1 (Cont'd)

WOODPECKERS		
....Common Flicker	fcT,fcSuR	late Apr.-Nov.
....Pileated Woodpecker	rV	(year-round?)
....Yellow-bellied Sapsucker	rT,rSuR?	(May?-Sept.?)
....Hairy Woodpecker	u-fcPR	year-round
....Downy Woodpecker	u-fcPR	year-round
FLYCATCHERS		
....Eastern Kingbird	u-fcT,u-fcSuR	late May-late Aug.
....Yellow-bellied Flycatcher	uT?	late May?-early Sept.?
....Alder Flycatcher	cT,cSuR	early June-early Sept.
....Least Flycatcher	u-fcT,u-fcSuR	late May-early Sept.
....Eastern Wood Pewee	uT,uSuR?	late May-Sept.
....Olive-sided Flycatcher	rT?	late May?-early Sept.?
LARKS		
....Horned Lark	u-fcT,rSuR?	late Mar.-Dec.
SWALLOWS		
....Tree Swallow	cT,fcSuV	late Apr.-early Sept.
....Bank Swallow	c-vcT,c-vcSuV	mid May-early Sept.
....Barn Swallow	fcT,fcSuV	early May-early Sept.
....Cliff Swallow	fcT,cSuR	mid May-early Sept.
CROWS AND JAYS		
....Gray Jay	uPR	year-round
....Blue Jay	u-fcPR	year-round
....Common Raven	fc-cPR	year-round
....Common Crow	c-vcT,c-vcSuR,uWV	year-round
CHICKADEES		
....Black-capped Chickadee	fc-cPR	year-round
....Boreal Chickadee	u-fcPR	year-round
NUTHATCHES		
....Red-breasted Nuthatch	uV	year-round
CREEPERS		
....Brown Creeper	uPR?	year-round?
WRENS		
....Winter Wren	uT,uSuR	late Apr.?-Oct.?
....Long-billed Marsh Wren	vrT	(May 26)
MOCKINGBIRDS		
....Mockingbird	rSuV	(July 3, Aug. 17)
....Gray Catbird	uT,uSuR?	mid May-Sept.?
THRUSHES		
....American Robin	c-vcT,c-vcSuR	early Apr.-Nov.
....Hermit Thrush	u-fcT,u-fcSuR	early May-Oct.?
....Swainson's Thrush	fcT,fcSuR	late May-Sept.?
....Veery	u-fcT,u-fcSuR	late May-Sept.?
....Eastern Bluebird	vrSuV	(June 19)
KINGLETS		
....Golden-crowned Kinglet	fc-cPR	year-round
....Ruby-crowned Kinglet	cT,fcSuR	late Apr.-Oct.
PIPITS		
....Water Pipit	u-fcT	May, Sept.-Oct.
WAXWINGS		
....Cedar Waxwing	fcSuR	June-Sept.
SHRIKES		
....Northern Shrike	uT,uWV	Nov.-Apr.
STARLINGS		
....Starling	vcT,cSuR,rWV?	year-round
VIREOS		
....Solitary Vireo	u-fcT,u-fcSuR	mid May-mid Sept.;
....Red-eyed Vireo	fc-cT,fc-cSuR	early June-early Sept.
WARBLERS		
....Black-and-White Warbler	u-fcT,u-fcSuR	mid May-mid Sept.
....Tennessee Warbler	cT,cSuR	late May-mid Sept.
....Nashville Warbler	u-fcT,u-fcSuR	late May-mid Sept.
....Northern Parula	fcT,fcSuR	late May-mid Sept.
....Yellow Warbler	cT,cSuR	late May-mid Sept.
....Magnolia Warbler	fc-cT,fc-cSuR	late May-mid Sept.
....Cape May Warbler	u-fcT,u-fcSuR	late May-mid Sept.
....Black-throated Blue Warbler	uT	late May-mid Sept.
....Yellow-rumped Warbler	vcT,cSuR,u-cWV	year-round
....Black-throated Green Warbler	fcT,fcSuR	late May-mid Sept.
....Blackburnian Warbler	u-fcT,u-fcSuR	late May-mid Sept.
....Chestnut-sided Warbler	fcT,fcSuR	late May-mid Sept.
....Bay-breasted Warbler	fcT,fcSuR	late May-mid Sept.
....Blackpoll Warbler	fc-cT	late May-early June, Aug.-early Sept.
....Palm Warbler	fcT	May, Sept.-mid Oct.
....Ovenbird	u-fcT,u-fcSuR	late May-mid Sept.
....Northern Waterthrush	fcT,fcSuR	mid May-mid Sept.
....Mourning Warbler	uT	late May-early June, early-mid Sept.
....Common Yellowthroat	cT,cSuR	mid May-early Oct.
....Wilson's Warbler	uT,uSuR	late May-mid Sept.
....Canada Warbler	fcT,fcSuR	late May-mid Sept.
....American Redstart	c-vcT,cSuR	late May-mid Sept.
WEAVER FINCHES		
....House Sparrow	uV?	year-round?

MEADOWLARKS AND BLACKBIRDS		
....Bobolink	fcT,fcSuR	mid May-early Sept.
....Eastern Meadowlark	rT,rSuR	(late April-Nov.)
....Red-winged Blackbird	c-vcT,c-vcSuR	late Mar.-Nov.
....Rusty Blackbird	u-fcT,u-fcSuR?	late Mar.-Oct.?
....Common Grackle	cT,cSuR	late Mar.-Nov.
....Brown-headed Cowbird	c-vcT,cSuR	late Mar.-Nov.
TANAGERS		
....Scarlet Tanager	rT	(mid-late Aug.)
GROSBEAKS, SPARROWS, FINCHES, AND BUNTINGS		
....Rose-breasted Grosbeak	fcT,fcSuR	late May-mid Sept.
....Evening Grosbeak	uT,uSuV,uWV	year-round
....Purple Finch	u-fcT,u-fcSuR,rWV?	late Apr.-Nov.
....Pine Grosbeak	uT,uWV	Sept.?-Apr.?
....Common Redpoll	uT,uWV	Nov.-Mar.
....Pine Siskin	uT,rWV?,rSuV?	year-round?
....American Goldfinch	fc-cT,fc-cSuR	mid May-Nov.
....Red Crossbill	r-uV?	year-round?
....White-winged Crossbill	uV?	year-round?
....Savannah Sparrow	c-vcT,c-vcSuR	late Apr.-Oct.
....Sharp-tailed Sparrow	fc-cSuR	early June-Sept.?
....Vesper Sparrow	rT	(May 6)
....Dark-eyed Junco	fc-cT,fc-cSuR	late Mar.-Dec.
....Tree Sparrow	fcT,fcWV	late Oct.-late Apr.
....Chipping Sparrow	fcT,fcSuR	early May-early Oct.
....White-crowned Sparrow	r-uT	(mid-late May, mid Sep mid Oct.)
....White-throated Sparrow	c-vcT,c-vcSuR	late Apr.-early Nov.
....Fox Sparrow	u-fcT	late Mar.-late Apr., mid mid Nov.
....Lincoln's Sparrow	uT?	May?, late Sept.-mid Oc
....Swamp Sparrow	u-fcT,u-fcSuR	late Apr.-Oct.
....Song Sparrow	c-vcT,c-vcSuR	late Mar.-Nov.
....Lapland Longspur	u-fcT,rWV?	mid Oct.-Mar.?
....Snow Bunting	c-vcT,c-vcWV	late Oct.-Mar.?

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