ATLAS OF COLONIAL WATERBIRDS NESTING ON THE CANADIAN GREAT LAKES, 1989-1991

PART 1
CORMORANTS, GULLS AND ISLAND-NESTING TERNS ON LAKE SUPERIOR IN 1989

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NOTE

The Atlas is to consist of five parts as follows:

Part 1. Cormorants, gulls and island-nesting terns on Lake Superior in 1989. (This report).

Part 2. Cormorants, gulls and island-nesting terns on Lake Huron in 1989. (In preparation).

Part 3. Cormorants, gulls and island-nesting terns on the Lower Great Lakes system in 1990. (In preparation).

Part 4. Marsh-nesting terns on Lake Huron and the lower Great Lakes system in 1991. (In preparation).

Part 5. Herons and egrets in the Great Lakes system during 1989-1991. (In preparation).

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ABSTRACT

During the 1989 breeding season, an inventory was made of Double-crested Cormorants (Phalacrocorax auritus), Ring-billed Gulls (Larus delawarensis), Herring Gulls (L. argentatus), and Common Terns (Sterna hirundo) nesting in the Canadian portion of Lake Superior.

The field work was a cooperative effort by the Canadian Wildlife Service, the Ontario Ministry of Natural Resources, Pukaskwa National Park and contractors hired and trained by CWS. Islands were visited by boat and all active nests were counted using hand counters. Caribou Island located some 60 km offshore was not part of the study area.

Excluding Caribou Island and four other sites that were not visited, there was in 1989 a total of 306 colony sites that held a total of 20 colonies of Double-crested Cormorant (with a total of 895 nests), 12 colonies of Ring-billed Gull (4,981 nests), 299 colonies of Herring Gull (12,181 nests) and 1 colony of Common Tern (25 nests).

The Double-crested Cormorant colonies were largely restricted to the western-most portion of the study area. From 1978 to 1989 the nesting population increased from 35 to 895 nests which represents an average annual growth rate of 34.3%.

The Ring-billed Gull colonies were scattered throughout the study area but one large colony in the western portion contained 77.4% of the total number of nests. In 1978 and 1989, the nesting population was virtually the same, but the number of colonies increased from 4 to 12 during that period.

The Herring Gull was the predominant species with its colonies spread throughout the study area. Overall, the nesting population increased from 6,386 nests in 1978 to 12,181 nests in 1989, which represents an average annual growth rate of 6.0%. However, growth rates varied for different parts of the coastline and in Pukaskwa National Park the Herring Gull population showed a slight decrease during 1978-1989.

The 1989 survey results (together with those for 1978) are presented in detail in Appendices 3-7 (p. 23 to p. 48), that correspond to the five 1:250,000 Topographic Maps that cover the study area. The organization and layout of the appendices is explained in Appendix 2.

In addition to being listed, the 1989 colony sites (together with those for 1978) are also plotted, again by the five 1:250,000 Topo Maps, in Appendices 9-13 (p. 51 to p. 96). The colony sites are plotted both on 1:250,000 maps (to provide overviews) and on 1:50,000 maps (to provide details of location). The organization of these maps is explained in Appendix 8.

RÉSUMÉ

Pendant la période de nidification de 1989, on a inventorié le Cormoran à aigrettes (Phalacrocorax auritus), le Goéland à bec cerclé (Larus delawarensis), le Goéland argenté (L. argentatus) et la Sterne commune (Sterna hirundo), lesquels nichent dans la partie canadienne du lac Supérieur.

Le travail sur le terrain a été l'effort du Service canadien de la faune, du ministère des richesses naturelles de l'Ontario, du parc national Pukaskwa et d'entrepreneurs embauchés et entraînés par le S.c.f.

Les îles ont été visitées par bateau et tous les nids occupés ont été comptés manuellement. L'île Caribou située à quelques 60 kilomètres au large n'a pas été visitée.

A l'exclusion de l'île Caribou et les quatre autres endroits non visités, il y avait en 1989 un nombre de 306 emplacements où nichaient 20 colonies de Cormoran à aigrettes (895 nids), 12 colonies de Goéland à bec cerclé (4,981 nids), 299 colonies de Goéland argenté (12,181 nids) et 1 colonie de Sterne commune (25 nids).

Les colonies de Cormoran à aigrettes se trouvaient surtout dans la partie ouest du lac. De 1978 à 1989, la population nichante a augmenté de 35 à 895 nids, ce qui représente une moyenne annuelle de croissance de 34.3%.

On a retrouvé des colonies du Goéland à bec cerclé un peu partout de l'ouest à l'est du lac. Toutefois, dans la partie ouest, il y avait une colonie qui contenait par elle-même, 77.4% du nombre total des nids. De 1978 à 1989, la population nichante est demeurée pratiquement la même mais le nombre de colonies a augmenté de 4 à 12.

Le Goéland argenté était l'espèce prédominante avec des colonies sur tout l'aire inventoriée. La population nichante a augmenté de 6,386 nids en 1978 à 12,181 nids en 1989, ce qui représente une moyenne annuelle de croissance de 6.0%. Cependant, les taux de croissance sont différents pour certaines parties du lac et au parc national Pukaskwa, la population du Goéland argenté a dénoté une légère diminution entre 1978 et 1989.

Les résultats des relevés de 1989 (ainsi que ceux de 1978) sont présentés en détail aux annexes 3 à 7 (p. 23 à p. 48), lesquelles correspondent aux cinq cartes topographiques à l'échelle de 1:250,000 qui englobent l'aire de l'étude. C'est à l'annexe 2 que se trouve les détails relatifs à l'organisation ainsi qu'à la disposition des annexes.

En plus de paraître sur une liste nominative, le site des colonies de 1989 (de même que celles de 1978) est aussi relevé graphiquement, encore d'après les cartes topographiques à l'échelle de 1:250,000 aux annexes 9 à 13 (p. 51 à p. 96). On peut retrouver la localité des colonies sur les cartes à l'échelle de 1:250,000 (lesquelles donnent un aperçu général) ainsi que sur les cartes à l'échelle de 1:50,000 (pour une localité plus précise). On explique à l'annexe 8, l'organisation de ces cartes.

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1. INTRODUCTION

Birds that breed in a colony and that breed or feed in association with water are referred to as colonial waterbirds (Maehr and Rodgers 1985). Colonial waterbirds are of special concern to the Canadian Wildlife Service (CWS) because during the nesting season they are concentrated on their colony sites and are then highly vulnerable to predation and disturbance. In addition, as top predators in the food web, they may bioaccumulate contaminants that are present in their environment, and, therefore, they can be used to monitor contaminant levels and their bioeffects. In the Great Lakes, contaminant levels in Herring Gull eggs have been monitored routinely since the early 1970s (Mineau et al. 1984, Bishop et al. 1992). Furthermore, when gulls nest at large colonies in urban or industrial sites they may cause various problems to people (Blokpoel and Tessier 1985). An additional concern is that nesting gulls may encroach on the nesting habitat of other species (Courtney and Blokpoel 1983, Blokpoel and Tessier 1985).

Large-scale inventories of colonial waterbirds nesting on the Great Lakes did not begin until 1976. In 1976, and again in 1977, the U.S. portions of the Great Lakes were surveyed under contract for the U.S. Fish and Wildlife Service (USFWS) (Scharf et al. 1978). The Canadian portions of the Great Lakes were surveyed and censused in a more gradual fashion: Lake Ontario and the upper St. Lawrence River in 1976 (Blokpoel 1977), Lake Erie and adjacent waterbodies in 1977 (Blokpoel and McKeating 1978), Lake Superior in 1978 (Blokpoel et al. 1980) and Lake Huron, including Georgian Bay and the North Channel, in 1980 (Weseloh et al. 1986). During 1981-1988 certain areas were re-inventoried during one or more years (e.g. Blokpoel and Harfenist 1986, Weseloh et al. 1988).

A lakes-wide inventory of all colonial waterbird species on both sides of the Canada/US border was carried out during 1989-1991. The inventory was done in close cooperation between CWS and USFWS. In Canada the fieldwork was coordinated by CWS (Ontario Region) and was largely carried out by contractors with substantial assistance from the Ontario Ministry of Natural Resources and Parks Canada. Because of the large amount of work and cost involved in making an inventory of all the Great Lakes it was decided to attempt a 3-year effort with fieldwork as follows:

1989 - all "primary" species in the upper Great Lakes;
1990 - all "primary" species in the lower Great Lakes; and
1991 - all "secondary" species in all Lakes.

For the purpose of the inventory, "primary" species are species that nest primarily (or originally) on sparsely vegetated islands and off-shore structures, i.e. Double-crested Cormorant (Phalacrocorax auritus), Ring-billed Gull (Larus delawarensis), Herring Gull (L. argentatus), Great Black-backed Gull (L. marinus), Common Tern (Sterna hirundo) and Caspian Tern (S. caspia). "Secondary" species are species that nest primarily in marshes and on densely vegetated islands, i.e. Great Blue

Heron (Ardea herodias), Great Egret (Casmerodius albus), Cattle Egret (Bubulcus ibis), Little Blue Heron (Egretta caerulea), Snowy Egret (E. thula), Black-crowned Night-Heron (Nycticorax nycticorax), Forster's Tern (Sterna forsteri) and Black Tern (Chlidonias niger).

During the inventories of the "primary" species in 1989 and 1990, any colony of "secondary" species which was encountered was noted but in most cases no effort was made to count the number of nests. In 1991, when the "secondary" species were surveyed, it was impractical to re-survey Lake Superior again, except for the coast of Pukaskwa National Park.

We originally had planned to produce a detailed comprehensive atlas of Great Lakes colonial waterbirds jointly with our USFWS colleagues (Blokpoel and Tessier 1991). However, given the large number of colonies on both sides of the international border, the planned atlas was likely to become an unwieldy and expensive set of reports. In addition, we felt that many of the Canadian users would not be very interested in information for the US side, and vice versa. Thus, the idea of an atlas with detailed information for both sides of the border was modified, as follows. Detailed reports with complete information on colony locations are to be prepared by CWS for the Canadian portions of the Great Lakes and by the USFWS for the US portions. In Canada these reports will be published as CWS Technical Reports and the five planned Technical Reports listed on the Title Page will together constitute the "Atlas of Colonial Waterbirds nesting on the Canadian Great Lakes, 1989-1991". A somewhat similar process is envisaged by USFWS for the data collected in the US waters of the Great Lakes.

Once both CWS and USFWS have each published their inventory data in detailed Technical Reports, we hope to pull all information together in one or more jointly published reports that will deal with species and issues on both sides of the border, but will not repeat the detailed maps and tables that can be found in the Technical Reports.

This report constitutes Part 1 of the "Atlas of Colonial Waterbirds Nesting on the Canadian Great Lakes, 1989-1991". It has the following three purposes:

(1) to present the results of the 1989 inventory using the format that has been used by USFWS for several other atlases of colonial waterbirds;

(2) to present the results of the 1978 inventory using the USFWS format, and

(3) to compare the 1989 and 1978 results and discuss any changes.

Our intended readership consists of managers, planners, developers, park naturalists, people responding to oil spills and various other "users" of the Great Lakes and their natural resources, as well as biologists and interested lay people. We tried to present a large amount of information in a concise format and we recommend that readers read the following Methods section in order to access the information quickly.

2. STUDY AREA

The study area encompassed all the islands (except remote Caribou Island) and the mainland shoreline of Canadian Lake Superior, i.e. from the US/Canada border in the west, just southwest of Thunder Bay to Sault Ste. Marie in the east (Fig. 1). Going from west to east the area is covered by the following five 1:250,000 Topographical Map Sheets: 52A, 42D, 42C, 41N, 41K.

There is a large number of islands, islets, rocks and shoals all along the north shore of Lake Superior. Many of the smaller islands are unnamed. Most of the islands are relatively close to shore but the Slate Islands and Michipicoten Island are far out into the lake and can be visited by boat only during unusually good weather. Caribou Island located some 60 km off shore was not part of the Study Area. It was not visited in 1978 or 1989, but in 1981 and 1984 J.R. Nisbet visited Caribou Island, and made observations on the nesting of colonial waterbirds (Nisbet 1982, 1992). In 1993 the island was visited by J.L. Shutt (pers. comm.).

3. DEFINITIONS

For the purpose of this report, a colony consists of one or more breeding pairs of a species that usually nests in groups. Thus we consider a single Herring Gull nest as a colony. We refer to the place where a colony is located as the colony site. It is often difficult to determine the extent of a colony and thus that of a colony site. For example, if two small, bare, rocky islands, separated by only a few meters of water are each covered by Herring Gull nests one could argue that they form, biologically, one colony and that, therefore, the two islets constitute one colony site. In this report we generally present our findings for the smallest possible geographical unit (i.e. island or rock) except for two cases where the data were not recorded in sufficient detail (i.e. colony sites 42D069, the McDonald Islands, and 42D082, rocks South of Randle Point).

4. METHODS

Nest counts - Islands were reached by power boat, examined from the boat and, if nesting was evident or likely, field workers would go ashore and count all nests by searching the entire island. We refer to this method as Ground Count. For large colonies the colony site would be temporarily divided in "strips" using brightly coloured flexible plastic tapes. Field workers counted active nests within the strips using hand counters: all nests that had eggs and/or chicks, or that were clearly attended but held no egg or chicks were counted. Also, the geographical extent of nesting by the different species was indicated on simple sketch maps of the colony sites.

In some cases birds were obviously nesting but local conditions did not permit landing. In those cases the number of nests was estimated from the boat. We refer to these estimates as Boat Estimates.

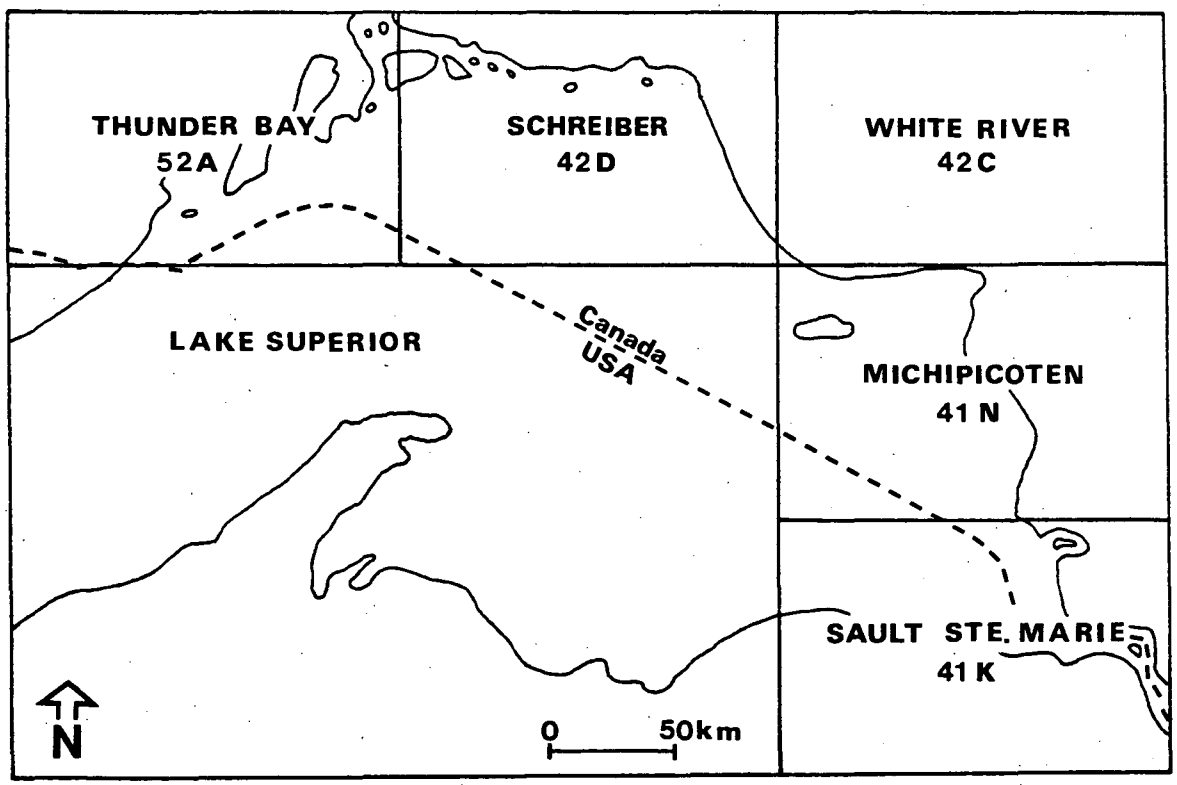

Fig. 1. Shoreline of Canadian Lake Superior and 1:250,000 topographical map sheets covering the study area.

Survey dates and survey participants - The time for the fieldwork is short: colonies should be visited late in incubation (to ensure that most birds are on eggs) but before or very early into hatching (to prevent chick mortality). This means that most field work should be carried out in a time-span of about two weeks. Because a large area had to be covered, the fieldwork had to be carried out by several teams of field workers with each team assigned a portion of the coastline. The Ontario Ministry of Natural Resources cooperated actively by providing boat transportation to the two-person teams of contractors hired and instructed by CWS. Pukaskwa National Park cooperated by carrying out the inventory of the park's coastline using its own staff and boat. The entire coastline was inventoried by OMNR district and Pukaskwa N.P., as detailed in Fig. 2. Names of survey participants and survey dates are given in Appendix 1.

Field instructions - Before the start of the fieldwork, one of us (GDT) visited the cooperating OMNR offices and Pukaskwa National Park to discuss the project with OMNR and Park staff and contractors, to provide written and oral instructions, and to issue navigation charts, field notebooks, data sheets, logbooks, hand counters, hard hats and earplugs.

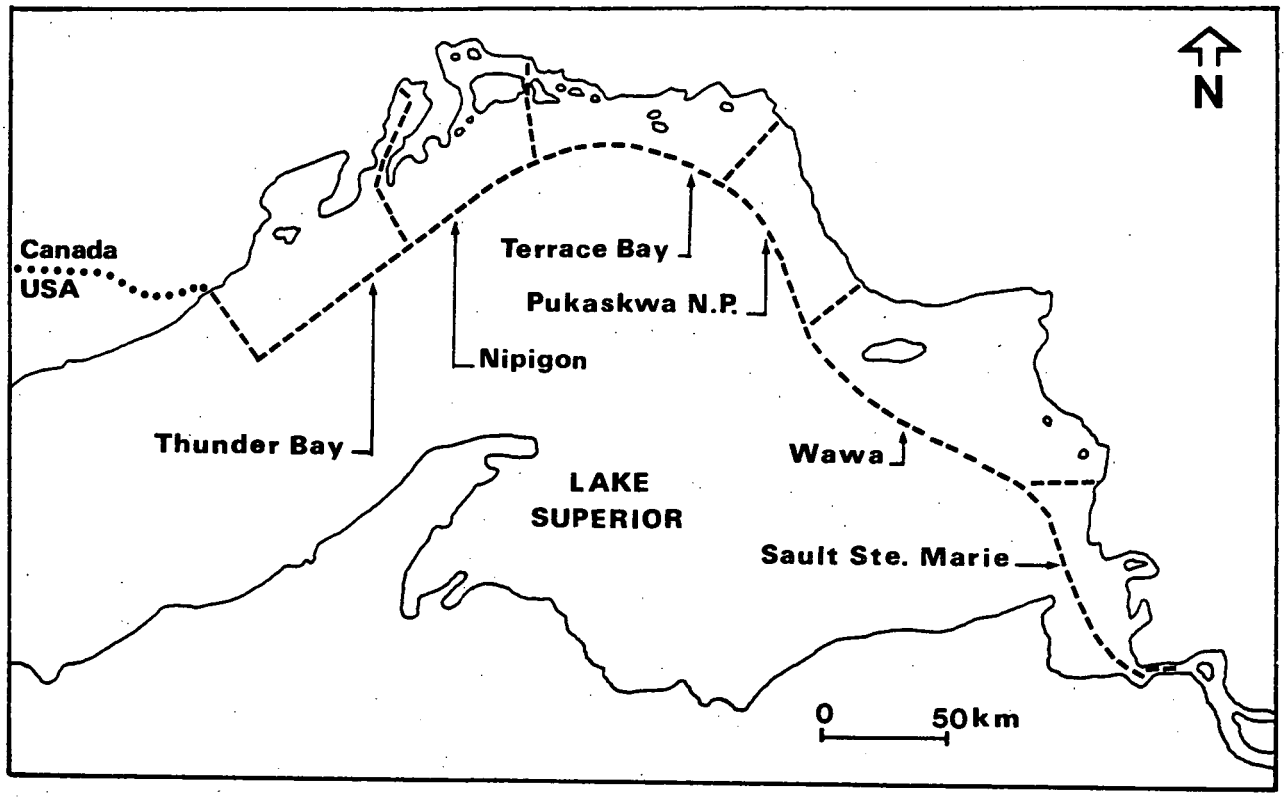

Fig. 2. Subdivision of Lake Superior coastline by OMNR districts and Pukaskwa National Park in 1989.

Preparation of maps - As mentioned in the Introduction, we followed the format used by the USFWS to present the results of waterbird inventories in USA (e.g. Erwin 1979, Speich and Wahl 1989).

The key elements of the format of USFWS atlases are: listing all colony sites by 1:250,000 map sheet, giving each colony site a unique identification number, plotting all colony sites on a 1:250,000 map (to provide overviews of colony distribution, and plotting colony sites on 1:24,000 USGS maps (to provide detailed colony locations). In the preparation for this report we used 1:250,000 and 1:50,000 maps prepared by the Geological Survey of Canada.

Because the USFWS format was not used when presenting the 1978 data for Canadian Lake Superior (Blokpoel et al. 1980) and because we wanted to compare the 1989 data with the 1978 material, we decided to republish the 1978 results in this report so that they conform to the format used for this atlas.

The unique identification numbers for the individual colony sites consist of a prefix (which is the number of the 1:250,000 topographical map that

covers the area where the colony site is located) and a 3-digit number. For example, Pinnacle Rock is covered by the 1:250,000 map "52A - Thunder Bay" and we assigned to it number 52A004 as its identification number (see Appendix 3, p.23). When assigning identification numbers we combined all the 1989 and 1978 colony sites and then worked our way from west to east along the shore of Lake Superior. All 1989 and 1978 sites are listed in Appendixes 3-7 by 1:250,000 Map Sheet and for the 1978 sites we provide the numbers they were given in the original report by Blokpoel et al. (1980). Further details on the organization of Appendices 3-7 is provided in Appendix 2.

Calculation of growth rate - The average annual rate of change (r) in a nesting population during 1978-1989 was calculated using the following formula:

$$r = \left(\sqrt[t]{\frac{N_t}{N_o}} - 1 \right) \times 100\% \text{ where } N_t \text{ and } N_o$$

are the numbers of nests in 1989 and 1978, respectively, and t is the number of years between 1978 and 1989.

5. RESULTS AND DISCUSSION

5.1 Overall numbers of colony sites and nesting pairs in 1989

Excluding Caribou Island and four other sites that could not be visited due to bad weather conditions (see below), there was in 1989 a total of 306 colony sites. These colony sites held a total of 20 colonies of Double-crested Cormorant (with a total of 895 nests), 12 colonies of Ring-billed Gull (4,981 nests), 299 colonies of Herring Gull (12,181 nests) and 1 colony of Common Tern (25 nests).

At several of the 306 colony sites, colonies of two or more species co-existed. As Table 1 shows, the great majority of the colony sites held only one colony of Herring Gulls.

The 1989 survey results are presented in detail in Appendices 3-7 (p.23 to p.47), which correspond to the five 1:250,000 Map Sheets that cover the study area. These appendices are essentially tables that run across two pages. The organization and layout of these appendices is explained in Appendix 2.

In addition to being listed in Appendices 3-7, the 1989 colony sites (together with those for 1978) are also plotted, again by the five 1:250,000 Map sheets, in Appendices 9-13 (p.51 - p.94). The colony sites are plotted both on 1:250,000 maps (to provide overviews) and on 1:50,000 maps to provide details of location. The organization of these maps is explained in Appendix 8.

In 1989 Michipicoten Island and surrounding islands could not be visited due to bad weather conditions. Thus colony sites 41N006-41N009 are

marked "not visited" in Appendix 6 (p.42) and colony sites 41N007-41N009 are indicated by the letters "NV" on the map of Appendix 12 (p.81).

Before presenting the results on a species-by-species basis, we have to discuss the comparability of the 1989 and 1978 data.

5.2 Comparability of 1989 and 1978 data in general

A comparison of the 1989 and 1978 data is likely biased because inventory methods were not the same in both years. In 1989 data for the entire area were collected using mainly Ground Counts or occasionally Boat Estimates (see Methods), but in 1978 data were collected in different ways for different parts (Survey Areas) of the coastline (Fig. 3). In Survey Area 1 (extending from the US/Canada border southwest of Thunder Bay to the northern border of Pukaskwa National Park) data were collected by visually estimating numbers of nesting birds from a Cessna-180 aircraft on floats. Survey Area 2 encompassed Pukaskwa N.P. and it was surveyed using Ground Counts. Survey Area 3 extended from the southern border of Pukaskwa N.P. to the southern border of Lake Superior Provincial Park and was surveyed partly from the air (Cessna-185 on floats) and partly by canoe to make Ground Counts. Survey Area 4 extended from the southern border of Lake Superior Provincial Park to Sault St. Marie and it was surveyed from the air (Cessna-180 on floats) while several colonies were also visited by boat to make Ground Counts (Blokpoel et al. 1980).

When making observations from the air one is more likely to miss birds nesting under cover than when doing Ground Counts. As mentioned earlier (Blokpoel et al. 1980), the most accurate method in 1978 was used in Survey Area 2 (Pukaskwa N.P.). Because the same method was used there again in 1989, it is obvious that 1989 vs. 1978 comparisons for that portion of coastline will be the most valid.

When presenting the 1978 data a small mistake was made in that one colony site was reported twice: colony 109 ("I.S. of Trapper Hbr.") with one Herring Gull nest was the same as colony 110 ("I. off mouth of Swallow R.") with one Herring Gull nest. This error means that in 1978 there were 148 Herring Gull colonies with 6,409 nests, not 149 colonies with 6,410 nests as reported by Blokpoel et al. (1980).

Another point is that 4 colony sites were not visited in 1989. To make 1989 vs. 1978 comparisons we discarded the 1989 and 1978 data for these 4 colony sites.

As mentioned in the Method section, some clusters of small islands which were considered as one colony site in the 1978 census were subdivided in 1989 thus creating an artificial increase in the number of colony sites.

Below we present and discuss the results on a species-by-species basis using the order of the AOU checklist (American Ornithologists' Union 1983).

Table 1. Number of colony sites with nesting by one or more colonial waterbird species in Canadian Lake Superior in 1989.

Nesting Species[a]	Number of Colony sites
HERG	249
GBHE	5
DCCO	2
HERG, GBHE	22
HERG, DCCO	14
HERG, RBGU	9
HERG, DCCO, GBHE	2
HERG, DCCO, RBGU	2
HERG, RBGU, COTE	1
Total	306

[a]HERG-Herring Gull, GBHE-Great Blue Heron, DCCO-Double-crested Cormorant, RBGU-Ring-billed Gull, COTE-Common Tern.

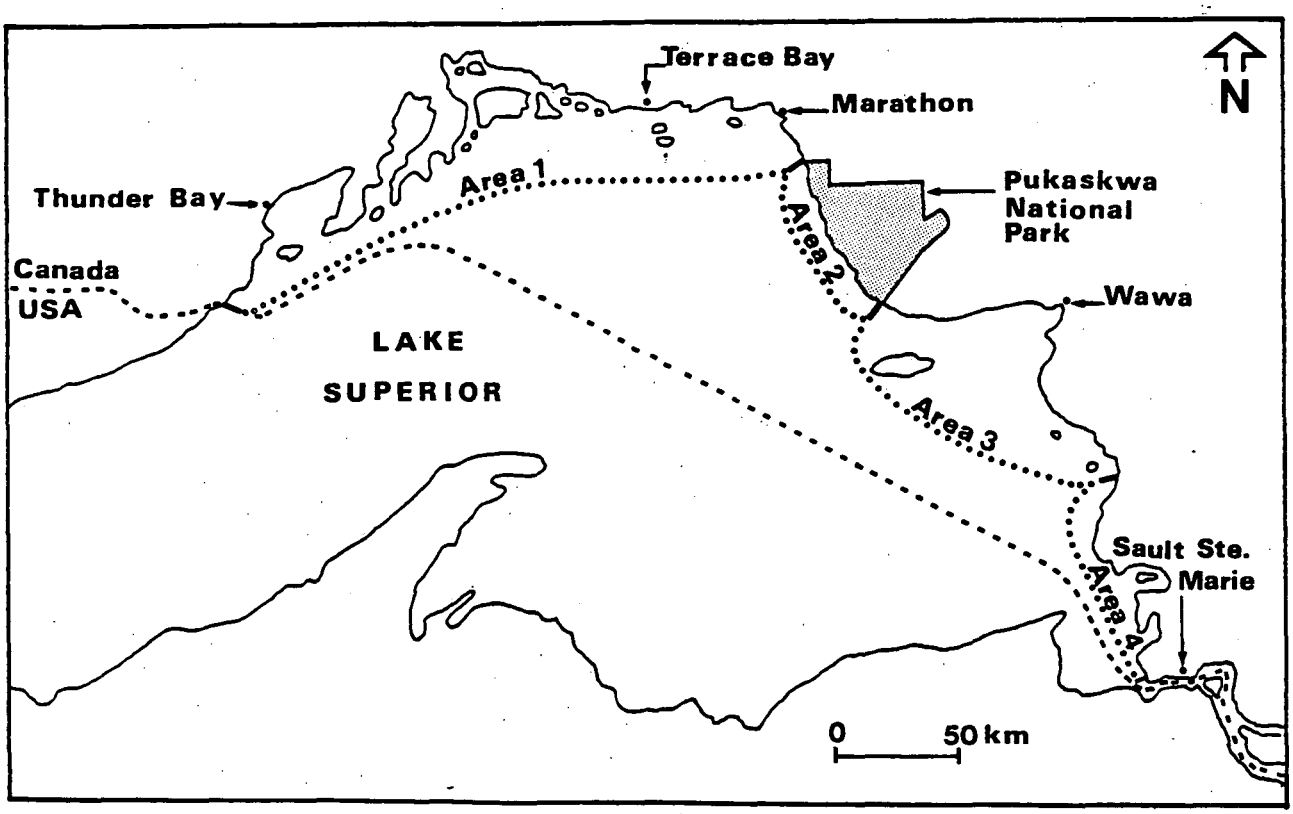

Fig. 3. The four Survey Areas used during the 1978 inventory of Canadian Lake Superior (from Blokpoel et al. 1980).

5.3 DOUBLE-CRESTED CORMORANT

The situation in 1989

There were 20 cormorant colonies in Canadian Lake Superior with a total of 895 nests. The majority of the colony sites were scattered along the coast of the western-most part of the study area (Fig. 4). We do not know whether cormorants were nesting on Caribou Island in 1989, but no cormorant nests were seen there in 1981 and 1984 (J.R. Nisbet, pers. comm.), and in 1993 (J.L. Shutt, pers. comm.).

Colony sizes ranged from 1 to 310 nests (Table 2). The average colony size was 47 nests. These nest numbers have to be treated carefully

Table 2. Double-crested Cormorant colony sites in 1989 and numbers of nests of cormorants and other colonial waterbirds.

Colony Site Ident. No.	Name of Colony Site	Double-crested Cormorant	Herring Gull	Ring-billed Gull	Great Blue Heron
52A007	1st i. S of Victoria Cove	3	70 [a]		
52A022	Steamboat I.	13	42 [a]		
52A024	Cone I.	52	115		
52A030	1st i. S of Welcome I.	73	229		
52A031	2nd i. S of Welcome I.	62	70		
52A040	Ship I.	8	67		
52A046	Clark I.	8	152		1
52A047	Carney Rk.	8	3		
52A048	Gravel I.	69	112		1
52A051	Granite I.	2	63	3,855	
52A052	i. NE of Granite I.	40			
52A065	E rk. of the Evelyn Rks.	80	45	34	
52A066	Mood I.	48	12		
52A079	rk. SW of Condon I.	310			
52A080	Condon I.	7	13		
42D015	Legault's Rk.	1	48		
42D016	Druid Rk.	10	53		
42D088	i. at W tip of Ogilvy Pt.	6	175		
41N069	Ella Islet	2	40		
41K009	Steamboat I.	93	68		
Total		895			

[a]Herring Gull nest numbers were reported as a total for two adjacent islands and the number presented here is half of that total.

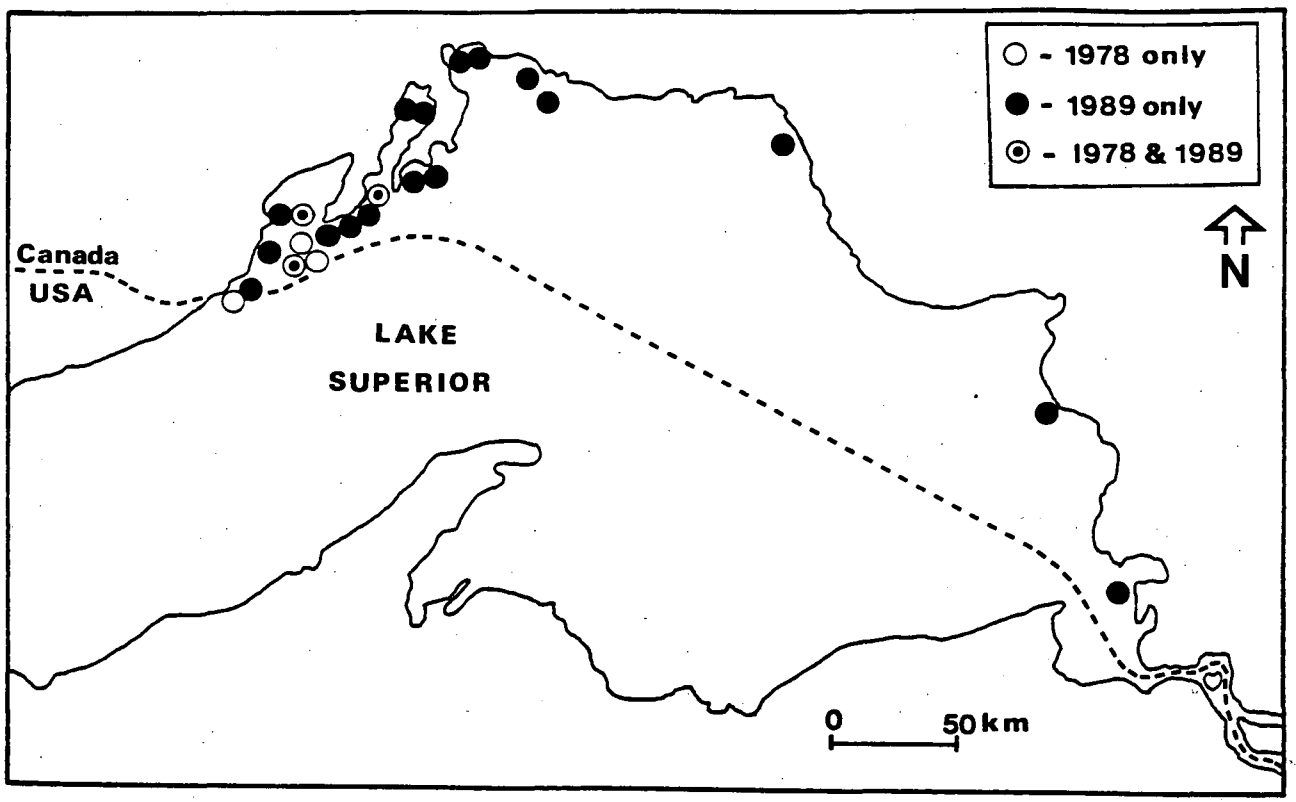

Fig. 4. Distribution of colony sites of Double-crested Cormorants on Canadian Lake Superior in 1978 and 1989.

because cormorants have nested rather asynchronously in the Canadian Great Lakes in recent years making it difficult to get valid nest numbers (Ewins et al. in prep.). This asynchrony is probably at least in part due to the enormous population increase (discussed below) which results in the presence of relatively large numbers of first breeders and prebreeders in the colonies. These younger birds tend to nest later in the season, thus causing nesting asynchrony and making it impossible to determine the total nesting population in one visit.

Cormorants usually shared the colony sites with other colonial waterbirds (Tables 1 and 2). At only two sites were they the only nesting species. One of these two sites (52A079, rk. SW of Condon I.) held the largest cormorant colony, i.e. 310 nests or 35% of the total for 1989. At 14 of the other 18 colony sites the only other nesting species was the Herring Gull and at the remaining 4 other colony sites, cormorants nested with Herring Gulls and either Ring-bills or Great Blue Herons (Tables 1 and 2). No cormorants were nesting on the mainland. Cormorants nested on the ground except at colony sites 52A030 (1st i. S of Welcome I.), 52A031 (2nd i. S of Welcome I.), and 52A066 (Mood I.).

Comparison of 1989 and 1978 data

Omitting Caribou Island and the four islands not visited in 1989, the nesting population grew from 6 colonies with 35 nests in 1978 to 20 colonies with 895 nests in 1989, or an average annual growth rate of 34.3% during 1978-1989 (Table 2). This rate of increase is in general agreement with the 38.4% average annual growth rate reported by Blokpoel and Scharf (1991) for Great Lakes cormorants in general during 1980-1987.

Despite the general reservations about the 1989 vs. 1978 comparability of the data and the difficulties associated with nesting asynchrony, it is likely that in the case of the Double-crested Cormorant the data are reasonably comparable. Cormorants are big black birds and they build large nests out in the open. They are therefore hard to miss from an aircraft, a boat or on the ground. In both years the colonies were visited when the majority of the birds were well into incubation.

In 1978 all colonies were in Survey Area 1 (Table 3) and that area experienced the largest increase during 1978-1989. However, as Fig. 4 and Table 3 show, by 1989 the cormorants had begun to colonize other parts of the lake as well.

Table 3. Number of colony sites and nests of Double-crested Cormorants in 1989 and 1978 by 1978 Survey Area.

1978	1989		1978	
Survey Area	# of colonies	# of nests	# of colonies	# of nests
1	18	800	6	35
2	0	0	0	0
3[a]	1	2	0	0
4	1	93	0	0
All Survey Areas[a]	20	895	6	35

[a] Excluding the four colony sites not visited in 1989.

5.4 RING-BILLED GULL

The situation in 1989

There were 12 colonies with a total of 4,981 nests. The colonies were scattered in the west and east portions of the study area with no nesting along the coastline of Pukaskwa National Park (Fig. 5). The great majority of nests (3,855 or 77.4% of the 4,981 nests) were found on just one island. The remaining 11 colonies were small, ranging from 1 to 362 nests with an average of 102 nests (Table 4). It is possible that the species nested in 1989 on Caribou Island because 25 and 105 nests were found there in 1981 and 1984, respectively (J.R. Nisbet, 1982, 1992). In 1993, however, Ring-billed Gulls were present but did not nest (J.L. Shutt, pers. comm.).

At all 12 colony sites in 1989, the ring-bills were nesting together with Herring Gulls. At three colony sites, there was one additional species with which the Ring-billed Gulls shared the colony sites. At all colony sites the ring-bills nested on the ground, usually in densely packed colonies.

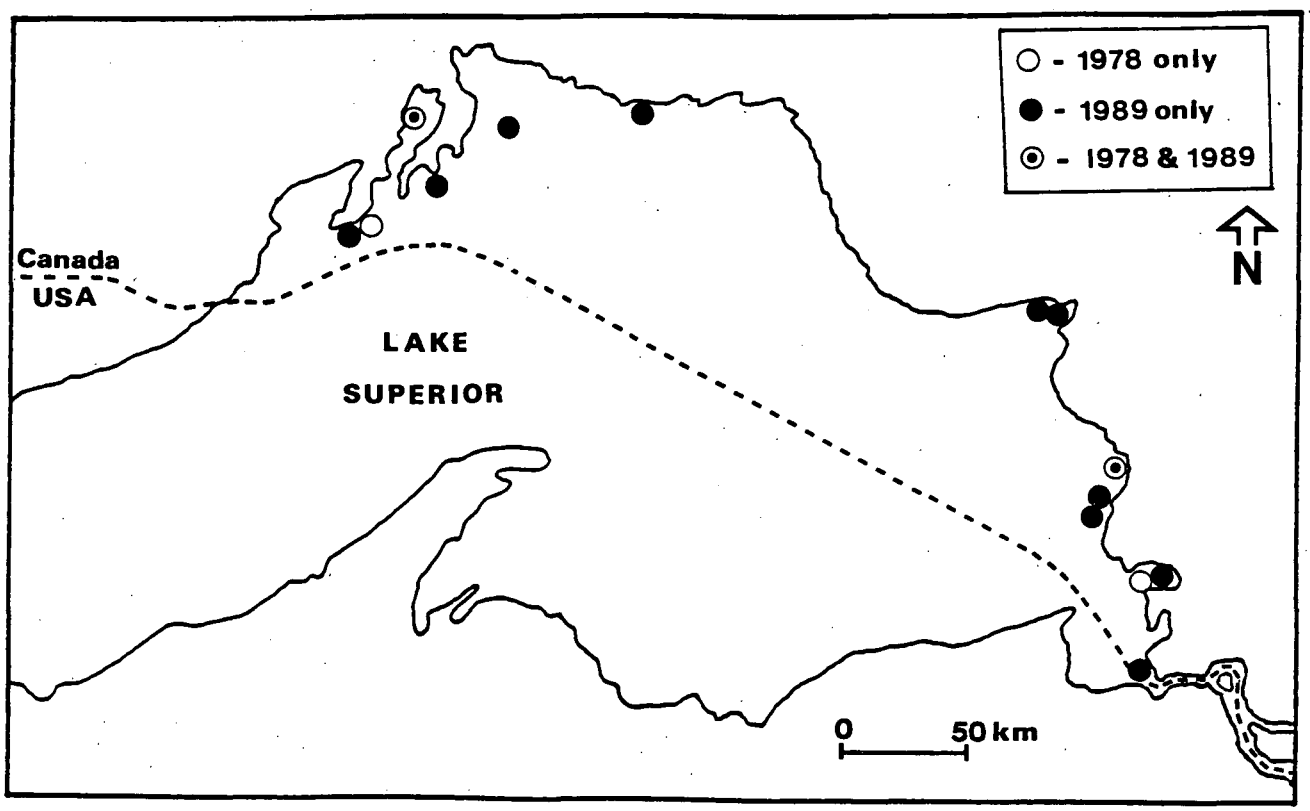

Fig. 5. Distribution of colony sites of Ring-billed Gulls on Canadian Lake Superior in 1978 and 1989.

Table 4. Ring-billed Gull colony sites in 1989 and numbers of nests of Ring-billed Gulls and other colonial waterbirds.

Colony Site Ident. No.	Name of Colony Site	Ring-billed Gull	Herring Gull	Double-crested Cormorant	Common Tern
52A043	Silver Islet	359	27		
52A051	Granite I.	3,855	63	2	
52A065	E rk. of the Evelyn Rks.	34	45	80	
42D001	rk. off NE tip of Longcroft I.	126	36		
42D058	rk. SW of mouth of Prairie R.	362	10		
41N026	i. in W part of Doré Bay	22	99		
41N030	i. in E side of Doré Bay, E of 41N029	1	1		
41N081	Vrooman I.	146	117		
41N087	3rd i. S of Cozens Cove	15	220		
41N091	Mamainse I.	6	17 [a]		
41K012	i. N of mouth of Harmony R.	42	1		25
41K020	i. W of Chene I.	13	291		
Total		4,981			

[a]Herring Gull nest numbers were reported as a total for two adjacent islands and the number presented here is half of that total.

Table 5. Number of colony sites and nests of Ring-billed Gulls in 1989 and 1978 by 1978 Survey Area.

1978 Survey Area	1989		1978	
	# of colonies	# of nests	# of colonies	# of nests
1	5	4,736	2	4,750
2	0	0	0	0
3[a]	3	169	1	168
4	4	76	1	17
All Survey Areas[a]	12	4,981	4	4,935

[a] Excluding the four colony sites not visited in 1989.

Comparison of 1989 and 1978 data

Omitting Caribou Island and the four islands not visited in 1989, the overall nesting population appears to have changed very little: from 4,935 nests in 4 colonies in 1978 to 4,981 nests in 12 colonies in 1989 (Table 5). The nesting distribution changed somewhat in that both the west and east end of the study area had more colonies over a wider area in 1989 than in 1978. However, the remote, central portion of the study area had no nesting Ring-billed Gulls in either 1978 or 1989 (Fig. 5).

As Table 5 shows, the number of nests in each of the four Survey Areas of 1978 changed very little during 1978–1989, but the number of colonies increased. It is highly unlikely that small colonies in Survey Area 2 would have been missed in 1978, because it was inventoried using Ground Counts. It is, however, likely that during the 1978 survey any small colony (fewer than 10 nests) could have been missed during the air survey of Survey Areas 1, 3 and 4. Nevertheless the observed change from two to seven colonies during 1978–1989 in Survey Areas 3 and 4 probably reflects an actual change in the breeding distribution.

It is unknown why the large colony (2,750 nests) on colony site 52A048 (Gravel I.) in 1978 was reduced to zero by 1989. It is possible that the birds on Gravel Island suffered from heavy depredation by American Crows (Corvus brachyrhynchos) and Common Ravens (C. corax), as was reported by Ewins (1991) for gull colonies in Lake Huron. It seems likely that many gulls of that colony site either moved to colony site 52A051 (Granite I.) or established the new colonies, especially in the west end of the study area.

5.5 HERRING GULL

The situation in 1989.

Herring Gulls were the most numerous species with 12,181 nests in 299 colonies (App. 3-7). They were also the most widespread species with colonies along the entire coastline of the study area (App. 9-13). Of the 306 colony sites with colonial waterbirds nesting in 1989, 299 had Herring Gulls nesting on them. At 50 of the 299 colony sites, Herring Gulls shared the site with one or more other species but at 249 sites they were the only nesting species (Table 1).

Although we did not visit Caribou Island in 1989, it is likely that Herring Gulls nested there in that year because 180 and 219 Herring Gull nests were counted in 1981 and 1984, respectively (Nisbet 1982, 1992) and nesting was also observed in 1993 (J.L. Shutt, pers. comm.).

All Herring Gulls nested on islands, except for 10 cases where the birds were nesting on the mainland. In 5 of these 10 cases the gulls were reported to nest on cliffs. It is noteworthy that the majority of cliff-nesting gulls were reported in the Wawa area (Fig. 2). Cliff nesting by Herring Gulls has also been observed in the gorge of the Niagara River (Blokpoel and McKeating 1978).

In 1989 Herring Gulls were also nesting on roofs of buildings in Thunder Bay (3 nests on the Federal Building) and Sault Ste. Marie (354 nests on five roofs at the Algoma Steel Complex, and one nest on the roof of Station Mall) (Blokpoel et al. 1990).

Comparison of 1989 and 1978 data.

Overall, the nesting population appears to have increased from 6,386 nests in 1978 to 12,181 nests in 1989, or an average annual growth rate of 6.0%.

The 1978-1989 population changes varied widely among the four 1978 Survey Areas: the population increased by 117% in Survey Area 1, declined by 14% in Survey Area 2 and increased by 130% and 50% in Survey Area 3 and 4, respectively (Table 6).

To help interpret these changes we determined the frequency distribution of different sized colonies in each of the Survey Areas, both in 1978 and 1989. To do so we used the data in App. 3-7, but we used only those colony sites for which the number of nests was individually known. In other words, colony sites such as the three Cloud Islands (52A001-52A003) for which only a total nest count was reported, were not included. Similarly, the colony sites 42D069 and 42D082, which each consisted of more than one island were omitted. In addition, the four colony sites that were not visited in 1989 were omitted from the 1989 and 1978 data.

The results of this somewhat truncated data set are presented in Table 7. Survey Area 1 experienced large increases in the number of both small (1-5 nests) and large (21 or more nests) colonies, while medium-sized

Table 6. Comparison of results of inventories of Herring Gulls nesting on Canadian Lake Superior in 1978 and 1989, by 1978 Survey Area.

1978 Survey Area	Number of nests in 1978	Number of nests in 1989	Overall change in nest numbers	Average annual rate of change
1	3,430	7,440	+117%	+7.3%
2	785	677	- 14%	-1.3%
3[a]	1,007	2,315	+130%	+7.9%
4	1,164	1,749	+50%	+3.8%
All Survey Areas[a]	6,386	12,181	+91%	+6.0%

[a]Excluding the four colony sites not visited in 1989.

Table 7. Comparison of results of inventories of Herring Gulls nesting on Canadian Lake Superior in 1978 and 1989, by 1978 Survey Area and by colony size. See text for details.

Colony Size	Survey Area 1		Survey Area 2		Survey Area 3		Survey Area 4		All Survey Areas	
	'78	'89	'78	'89	'78	'89	'78	'89	'78	'89
1	0	8	22	7	0	18	3	4	25	37
2-5	4	6	5	3	2	5	3	5	14	19
6-20	15	16	5	5	3	12	3	2	26	35
21-100	15	49	8	6	6	25	13	11	42	91
≥101	2	10	0	0	2	5	3	6	7	21
All colony sizes	36	89	40	21	13	65	25	28	114	203

colonies (6-20 nests) increased only marginally. In 1978 some of the smaller colonies, if any, may have gone unnoticed or unreported during the air survey of Survey Area 1, but colonies of 21 or more nests would not have been missed and the number of those colonies increased from 17 to 59 during 1978-1989. The large increase of small colonies may be a reflection of the general increase in nest numbers in Survey Area 1 and/or represent an artifact because some of the small colonies were missed in 1978.

For Survey Area 2, where the same method was used in both years, the data show a small decline in overall numbers but a much higher decline in the numbers of small colonies consisting of 1 to 5 nests (Table 7). This suggests that while most of the larger colonies were able to maintain themselves, many of the small colonies were unable to do so. The Pukaskwa N.P. coastline is a remote, harsh area and offers no sources of human-made food. The Herring Gulls apparently had difficulty maintaining their numbers, perhaps because feeding conditions worsened. It is noteworthy that during 1978-1989 neither cormorants nor Ring-billed Gulls colonized the park. In Survey Area 3 the numbers of colonies of all size classes increased greatly, whereas in Survey Area 4 there was an increase only in the number of small (1-5 nests) and very large ($\geq$ 101 nests) colonies.

McNicholl et al. (1983) reported that in 1982 and 1983 adult Herring Gulls at Agawa Rock (in Survey Area 3) apparently were unable to find enough food for their chicks and that chicks were often cannibalized by breeding neighbours. Weseloh et al. (in press) reviewed contaminant levels and reproductive parameters in Herring Gulls nesting on Lake Superior in 1983. They concluded that reduced availability of forage fish rather than contaminant burdens were the likely reason for the poor reproductive success observed in the early 1980s.

We have no doubt that the Herring Gull population of Canadian Lake Superior has greatly increased during 1978-1989 and we plan to address the problem of the different rates of change across the study area in another paper.

5.6. COMMON TERN

The situation in 1989

There was only one small (25 nests) Common Tern colony, on a sandbar at the mouth of a river in Batchawana Bay. At that colony site (41K012) there were also 42 Ring-billed Gull nests and one Herring Gull nest. In the lower Great Lakes many Common Tern colonies are overrun by Herring Gulls and especially Ring-billed Gulls (e.g. Blokpoel and Scharf 1991). We expect that this will also happen at this site.

Comparison of 1978 and 1989 data

There were no Common Tern colonies reported during the 1978 inventory. Common Terns normally readily take wing when their colonies are disturbed by aircraft, boats or visitors on the ground. It is therefore unlikely that they would have gone unnoticed, if they actually had nested in the study area in 1978. Thus the colony found in 1989 represents colonization of a new site and the colonizers were probably birds from the extreme eastern tip of the US portion of Lake Superior where terns nested in 1977 (Scharf et al. 1978) or from nearby colonies in the St. Marys River or the North Channel.

During his visits to Caribou Island in 1981 and 1984, J.R. Nisbet (pers. comm.) saw no Common Terns. Similarly, J.L. Shutt (pers. comm.) saw no terns there in 1993.

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Appendix 1. Areas covered, and people involved in the fieldwork of the 1989 inventory of Lake Superior's coastline.

District/Area	Local Cooperators	CWS Contractors	Dates of Fieldwork
Thunder Bay Dist.	R. Chessel S. O'Donnell	L. Wronoski S. O'Donnell	17 May - 3 June
Nipigon Dist.	R. Swainson	M. Lamont D. Lewis	31 May - 6 June
Terrace Bay Dist.	L. Ferguson	T. Clark	23-31 May
Pukaskwa N. Park	D. Couchie S. Nabigon		30 May - 5 June
Wawa Dist.	G. Eason D. Doré S. Lebel	B. Bendell	21 May - 5 June
Sault Ste. Marie Dist.	S. Jones K. Oswald M. Nirkkola	C. Nirkkola	24 May - 7 June

Appendix 2. Explanation of the listing of the colony sites in Appendices 3-7

There are five 1:250,000 Topographical Maps that cover the coast of Canadian Lake Superior. Going from west to east these Maps are 52A, 42D, 42C, 41N and 41K. The results of the 1989 survey (together with those of the 1978 survey) are plotted by Topo Map. Information for the areas covered by Maps 52A, 42D, 42C, 41N and 41K are presented in App. 3, App. 4, App. 5, App. 6 and App. 7, respectively.

The Appendices run across two opposite pages and to help the reader we have repeated the colony site identification number on the right hand page.

Regarding the naming of colony sites, we have used Navigation Charts as the basis for island names and for describing unnamed islands, islets and rocks. Where the 1:50,000 Topo Maps show a different name, we have added this information in brackets. For example, colony site 52A016 E i. of the Sister Is. (= Windigo I., App. 3, p. 23) shows that the east island of the two Sister Islands is referred to as Windigo Island on the 1:50,000 Topo Map.

In Appendices 3-7 we use the following abbreviations for bird species: DCCO - Double-crested Cormorant, GBHE-Great Blue Heron, RBGU - Ring-billed Gull, HERG - Herring Gull, and COTE - Common Tern. The methods used for the 1989 inventory are shown under the column heading M where we use the following abbreviations: GC - Ground Count and BE - Boat Estimate.

In the Appendices we also present the results of the 1978 inventory to facilitate comparisons and to provide the 1978 colony sites with the same type of identification number as the one used for the 1989 inventory. The last column on the right hand page gives the old colony numbers, as used in the 1980 report to describe the 1978 results. In Appendices 3-7 we sometimes use names for 1978 colony sites that are different from the ones we used in 1980. For example the "Islands at south end of Thomson Island" (colony site 6 in the 1980 report) have now been separated and are referred to as "S-most i. of the Robertson Is." (52A010, "Moonshine I." (52A011) and "N i. of the Eva Is." (52A012).

In some cases, a small cluster of islets was considered as one colony in 1978 and/or 1989. In those cases we use a T (for total) and a bracket to indicate the total number of nests and of colony sites involved (for example, the Angus Islands, 52A025-52A028).

Appendix 3. Waterbird colonies present on Canadian Lake Superior in 1989 and/or 1978 in the area covered by 1:250,000 Map 52A. See Appendix 2 for explanation of Appendices 3-7.

Colony site ident. #	Name or description of colony site	Lat.	Long.
52A001	N i. of Cloud Is.	48°03'30"	89°24'48"
52A002	SW i. of Cloud Is.	48°03'12"	89°24'54"
52A003	SE i. of Cloud Is.	48°03'18"	89°24'36"
52A004	Pinnacle Rk.	48°03'48"	89°24'18"
52A005	Tiger I.	48°04'24"	89°21'42"
52A006	islet off W side of Tiger I.	48°04'24"	89°21'42"
52A007	1st i. S of Victoria Cove	48°04'36"	89°19'54"
52A008	2nd i. S of Victoria Cove	48°04'36"	89°19'48"
52A009	Slipper I.	48°08'18"	89°13'24"
52A010	S-most i. of the Robertson Is.	48°08'12"	89°12'54"
52A011	Moonshine I.	48°08'24"	89°12'36"
52A012	N i. of the Eva Is.	48°08'36"	89°12'42"
52A013	Anderson I.	48°10'42"	89°08'36"
52A014	Magee I.	48°10'48"	89°08'18"
52A015	McKellar I. (= South McKellar I.)	48°11'12"	89°07'36"
52A016	E i. of the Sister Is. (= Windigo I.)	48°09'30"	89°14'54"
52A017	W i. of the Sister Is. (= White I.)	48°09'36"	89°14'36"
52A018	Dog I. (= Singleton I.)	48°11'54"	89°15'30"
52A019	Flatland I.	48°13'06"	89°14'06"
52A020	Bonnet I.	48°13'30"	89°14'42"
52A021	Deadman I.	48°12'30"	89°11'24"
52A022	Steamboat I.	48°12'36"	89°11'06"
52A023	SE side of Pie I.	48°13'24"	89°04'24"
52A024	Cone I.	48°13'18"	89°01'42"
52A025	1st i. of the Angus Is.	48°13'54"	89°00'48"
52A026	2nd i. of the Angus Is.	48°14'06"	89°00'42"
52A027	3rd i. of the Angus Is.	48°14'12"	89°00'30"
52A028	4th i. of the Angus Is.	48°14'18"	89°00'24"
52A029	i. off NE side of Pie I.	48°15'42"	89°02'00"
52A030	1st i. S of Welcome Is.	48°21'12"	89°08'36"
52A031	2nd i. S. of Welcome Is.	48°21'00"	89°08'36"
52A032	Mutton I.	48°22'18"	89°11'24"

Colony site ident. #	1989 Results				1978 Results				Former # of colony site
	M	DCCO	HERG	OTHER	M	DCCO	HERG	OTHER	
52A001	GC	0	482 T	3 T GBHE	AE	6	25 T	0	1
52A002	GC	0	–	–	AE	0	–	0	1
52A003	GC	0	–	–	AE	0	–	0	1
52A004	GC	0	26	0	AE	6	15	0	2
52A005	BE	0	80 T	0	AE	0	60 T	0	3
52A006	BE	0	–	0	AE	0	–	0	3
52A007	GC	3	140 T	0	AE	0	50 T	0	4
52A008	GC	0	–	0	AE	0	–	0	4
52A009	GC	0	44	0	AE	0	18	0	5
52A010	GC	0	131	0	AE	0	150 T	0	6
52A011	GC	0	21	0	AE	0	–	0	6
52A012	GC	0	53	0	AE	0	–	0	6
52A013	GC	0	127 T	0	AE	0	27 T	0	7
52A014	GC	0	–	0	AE	0	–	0	7
52A015	GC	0	–	0	AE	0	–	0	7
52A016	GC	0	42 T	0	AE	0	25 T	20 T GBHE	8
52A017	GC	0	–	0	AE	0	–	–	8
52A018	BE	0	0	0	AE	0	0	3 GBHE	9
52A019	BE	0	0	0	AE	0	0	2 GBHE	10
52A020	BE	0	0	0	AE	0	4	0	11
52A021	GC	0	85 T	0	AE	0	46 T	0	12
52A022	GC	13	–	0	AE	0	–	0	12
52A023	BE	0	0	0	AE	0	5	0	13
52A024	GC	52	115	0	AE	10	75	0	14
52A025	GC	0	115	0	AE	4 T	20 T	0	15
52A026	BE	0	104	0	AE	–	–	0	15
52A027	BE	0	11	0	AE	–	–	0	15
52A028	GC	0	11	0	AE	–	–	0	15
52A029	GC	0	26	0	AE	6	50	0	16
52A030	GC	BE 73	229	0	AE	1 T	400 T	0	17
52A031	BE	62	70	0	AE	–	–	0	17
52A032	GC	0	133	0	AE	0	50	0	18

Colony site ident. #	Name or description of colony site	Lat.	Long.
52A033	N i. of the Papoose Is.	48°29'24"	89°02'12"
52A034	S i. of the Papoose Is.	48°29'36"	89°02'24"
52A035	Buck I.	48°31'18"	88°54'30"
52A036	islet E of Buck I.	48°31'24"	88°54'24"
52A037	Kent I.	48°32'00"	88°54'06"
52A038	Hare I.	48°19'18"	88°57'54"
52A039	Marvin I.	48°17'42"	88°51'42"
52A040	Ship I.	48°18'12"	88°51'24"
52A041	Shangoina I.	48°18'30"	88°50'00"
52A042	i. off NE tip of Shangoina I.	48°18'30"	88°49'12"
52A043	Silver Islet	48°19'18"	88°47'42"
52A044	E i. of Sand Is.	48°20'18"	88°45'48"
52A045	Skinaway I.	48°20'18"	88°45'48"
52A046	Clark I.	48°20'30"	88°43'24"
52A047	Carney Rk.	48°20'36"	88°42'54"
52A048	Gravel I.	48°21'12"	88°42'30"
52A049	Cranberry I.	48°21'54"	88°41'54"
52A050	Nuttall I.	48°39'36"	88°31'36"
52A051	Granite I.	48°43'18"	88°27'42"
52A052	i. NE of Granite I.	48°43'24"	88°27'06"
52A053	Delaney I.	48°48'18"	88°22'36"
52A054	Dreadnought I.	48°20'36"	88°37'42"
52A055	Monk I.	48°21'48"	88°36'48"
52A056	Sybil I.	48°23'42"	88°34'48"
52A057	shoal ENE of Sybil I.	48°23'48"	88°34'36"
52A058	2nd i. E of Magnet Pt.	48°24'36"	88°32'24"
52A059	Tunnel I.	48°27'24"	88°27'36"
52A060	St. Andrew I.	48°24'42"	88°28'06"
52A061	rock E of E i. of the Barclay Is.	48°27'30"	88°27'30"
52A062	rock SE of E i. of the Barclay Is.	48°27'24"	88°27'24"
52A063	Nest I.	48°26'42"	88°25'54"
52A064	Coates I.	48°27'42";	88°24'12"

Colony site ident. #	1989 Results				1978 Results				Former # of colony site
	M	DCCO	HERG	OTHER	M	DCCO	HERG	OTHER	
52A033	GC	0	150	0	AE	0	[100 T	0	19
52A034	GC	0	44	0	AE	0	[–	0	19
52A035	GC	0	142	17 GBHE	AE	0	[70 T	[14 T GBHE	20
52A036	GC	0	38	0	AE	0	[–	[–	20
52A037	GC	0	135	0	AE	0	50	0	21
52A038	GC	0	252	0	AE	0	18	0	22
52A039	GC	0	215	0	AE	0	[50 T	0	23
52A040	GC	8	67	0	AE	0	[–	0	23
52A041	BC	0	[139 T	0	AE	0	[60 T	0	24
52A042	GC	0	[–	0	AE	0	[–	0	24
52A043	GC	0	27	359 RBGU	AE	0	25	0	25
52A044	GC	0	56	5 GBHE	AE	0	30	0	26
52A045	GC	0	57	0	AE	0	10	0	27
52A046	GC	8	152	1 GBHE	AE	0	15	2 GBHE	28
52A047	BC	8	3	0	AE	0	0	0	–
52A048	GC	69	112	1 GBHE	AE	8	0	2750 RBGU	29
52A049	GC	0	62	0	AE	0	0	1 GBHE	30
52A050	BC	0	4	0	AE	0	0	22 GBHE	31
52A051	GC	2	63	3855 RBGU	AE	0	150	2000 RBGU	32
52A052	BC	40	0	0	AE	0	0	0	–
52A053	BC	0	0	12 GBHE	AE	0	0	8 GBHE	33
52A054	GC	0	85	0	AE	0	0	0	–
52A055	GC	0	14	0	AE	0	15	0	35
52A056	GC	0	8	0	AE	0	[14 T	0	34
52A057	GC	0	21	0	AE	0	[–	0	34
52A058	BC	0	1	0	AE	0	0	0	–
52A059	BC	0	10	0	AE	0	0	8 GBHE	36
52A060	GC	0	47	0	AE	0	25	0	37
52A061	GC	0	[7 T	0	AE	0	[5 T	0	38
52A062	GC	0	[–	0	AE	0	[–	0	38
52A063	GC	0	78	0	AE	0	0	0	–
52A064	GC	0	30	0	AE	0	10	0	39

Colony site indent. #	Name or description of colony site	Lat.	Long.
52A065	E rk. of the Evelyn Rks.	48°29'18"	88°20'18"
52A066	Mood I.	48°31'18"	88°25'36"
52A067	rk. off S tip of Borden I.	48°30'06"	88°21'18"
52A068	Lowrey I.	48°33'48"	88°17'36"
52A069	Hawk I.	48°34'30"	88°12'42"
52A070	rk. SW of S tip of Lamb I.	48°35'54"	88°08'48"
52A071	Cedar I.	48°37'36"	88°06'12"
52A072	1st rk. off NE tip of Bill & Jim Is.	48°38'24"	88°04'48"
52A073	2nd rk. off NE tip of Bill & Jim Is.	48°38'30"	88°04'42"
52A074	Tremblay I.	48°38'30"	88°04'12"
52A075	rk. off W side of Fluor I.	48°40'54"	88°06'06"
52A076	1st rk. off Newash Pt., St. Ignace I.	48°41'18"	88°45'36"
52A077	2nd rk. off Newash Pt., St. Ignace I.	48°41'12"	88°45'30"
52A078	3rd rk. off Newash Pt., St. Ignace I.	48°41'18"	88°45'24"
52A079	rk. SW of Condon I.	48°59'18"	88°06'12"
52A080	Condon I.	48°59'24"	88°05'54"

Colony site ident. #	1989 Results				1978 Results				Former # of colony site
	M	DCCO	HERG	OTHER	M	DCCO	HERG	OTHER	
52A065	GC	80	45	34 RBGU	AE	0	48	0	40
52A066	GC	48	12	0	AE	0	0	18 GBHE	41
52A067	BC	0	25	0	AE	0	0	0	-
52A068	GC	0	67	0	AE	0	35	0	42
52A069	BC	0	106	8 GBHE	AE	0	50	16 GBHE	43
52A070	GC	0	63	0	AE	0	0	0	-
52A071	GC	0	51	0	AE	0	15	1 GBHE	44
52A072	GC	0	35	0	AE	0	0	0	-
52A073	GC	0	15	0	AE	0	0	0	-
52A074	GC	0	21	0	AE	0	0	5 GBHE	45
52A075	BC	0	0	0	AE	0	0	1 GBHE	46
52A076	GC	0	15	0	AE	0	95 T	0	47
52A077	GC	0	31	0	AE	0	-	0	47
52A078	GC	0	39	0	AE	0	-	0	47
52A079	GC	310	0	0	AE	0	0	0	-
52A080	GC	7	13	0	AE	0	0	0	-

Appendix 4. Waterbird colonies present on Canadian Lake Superior in 1989 and/or 1978 in the area covered by 1:250,000 Map 42D. See Appendix 2 for explanation of Appendices 3-7.

Colony site ident. #	Name or description of colony site	Lat.	Long.
42D001	rk. off NE tip of Longcroft I.	48°41'24"	87°58'36"
42D002	rk. off NE tip of Paradise I.	48°43'06"	87°57'36"
42D003	i. NW of Nest I.	48°44'36"	87°56'00"
42D004	Nest I.	48°44'30"	87°55'42"
42D005	Burnet I.	48°44'42"	87°52'54"
42D006	Reid I.	48°43'48"	87°52'18"
42D007	1st rock W of McNab Hrbr.	48°44'36"	87°50'30"
42D008	2nd rock W of McNab Hrbr.	48°44'30"	87°50'30"
42D009	i. NW of Grotto Pt.	48°45'24"	87°45'24"
42D010	Quigley I.	48°45'36"	87°45'06"
42D011	Dunmore I.	48°44'36"	87°43'24"
42D012	1st i. between Beetle Pt. & McKay Cove	48°44'24"	87°39'18"
42D013	2nd i. between Beetle Pt. & McKay Cove	48°44'24"	87°39'12"
42D014	rk. between Simpson I. & Legault's Rk.	48°44'42"	87°38'06"
42D015	Legault's Rk.	48°44'24"	87°37'42"
42D016	Druid Rk.	48°54'24"	87°50'06"
42D017	i.W of West Anguros I.	48°51'18"	87°36'54"
42D018	Battle I.	48°45'06"	87°33'00"
42D019	i. NW of Cobinosh I.	48°45'42"	87°30'36"
42D020	i. W of Cobinosh I.	48°45'06"	87°30'06"
42D021	south shore of Cobinosh I.	48°44'36"	87°28'54"
42D022	west i. of the Cat Is.	48°49'06"	87°26'06"
42D023	east i. of the Cat Is.	48°48'48"	87°25'36"
42D024	rk. S of Copper I.	48°45'18"	87°23'48"
42D025	i. W of Collingwood Bay (= Flint I.)	48°47'48"	87°20'54"
42D026	1st rk in W Collingwood Bay	48°47'48"	87°19'18"
42D027	2nd rk in W Collingwood Bay	48°47'54"	87°19'12"
42D028	mainld. SE of Worthington Creek	48°45'36"	87°14'24"
42D029	i. E of Worthington Bay	48°45'30"	87°14'18"
42D030	rock W of largest of Les Petits Ecrits	48°45'06"	87°13'12"
42D031	S tip largest of Les Petits Ecrits	48°44'54"	87°13'00"
42D032	i. N of Chase Rk. (= Blain I.)	48°45'48"	87°08'48"

Colony site ident. #	1989 Results				1978 Results				Former # of colony site
	M	DCCO	HERG	OTHER	M	DCCO	HERG	OTHER	
42D001	GC	0	36	126 RBGU	AE	0	0	0	-
42D002	GC	0	4	0	AE	0	4	0	48
42D003	GC	0	71	0	AE	0	0	0	-
42D004	GC	0	43	8 GBHE	AE	0	350	8 GBHE	49
42D005	GC	0	42	0	AE	0	50	0	50
42D006	GC	0	15	0	AE	0	20	0	51
42D007	GC	0	21	0	AE	0	[35 T	0	52
42D008	GC	0	31	0	AE	0	[-	0	52
42D009	BC	0	1	0	AE	0	0	0	-
42D010	BC	0	1	0	AE	0	0	0	-
42D011	BC	0	7	0	AE	0	0	0	-
42D012	BC	0	4	0	AE	0	[40 T	[8 GBHE T	53
42D013	BC	0	10	0	AE	0	[-	[-	53
42D014	BC	0	9	0	AE	0	0	0	-
42D015	GC	1	48	0	AE	0	40	0	54
42D016	GC	10	53	0	AE	0	0	0	-
42D017	GC	0	38	0	AE	0	0	0	-
42D018	BC	0	8	0	AE	0	0	0	-
42D019	GC	0	49	0	AE	0	20	0	55
42D020	GC	0	65	1 GBHE	AE	0	0	0	-
42D021	BC	0	22	0	AE	0	15	0	56
42D022	BC	0	121	0	AE	0	[5 T	[8 GBHE T	57
42D023	BC	0	45	0	AE	0	[-	[-	57
42D024	BC	0	10	0	AE	0	0	0	-
42D025	GC	0	97	0	AE	0	48	0	58
42D026	BC	0	[12 T	0	AE	0	0	0	-
42D027	BC	0	[-	0	AE	0	0	0	-
42D028	GC	0	1	0	AE	0	0	0	-
42D029	GC	0	14	0	AE	0	0	0	-
42D030	BC	0	2	0	AE	0	[40 T	0	59
42D031	GC	0	149	1 GBHE	AE	0	[-	0	59
42D032	GC	0	56	0	AE	0	0	0	-

Colony site ident. #	Name or description of colony site	Lat.	Long.
42D033	1st i. S of Blain I.	48°45'48"	87°08'54"
42D034	2nd i. S of Blain I.	48°45'42"	87°08'48"
42D035	3rd i. S of Blain I.	48°45'48"	87°08'42"
42D036	i. NE of Chase Rk. (= Rock I.).	48°45'42"	87°08'36"
42D037	i. N of Chase Rk.	48°45'36"	87°08'48"
42D038	Chase Rk.	48°45'30"	87°08'48"
42D039	large i. NE of Chase Rk. (=Douglas I.)	48°45'48"	87°08'18"
42D040	i. E of 42D039	48°45'42"	87°07'36"
42D041	i. W of Almos Shingle	48°46'18"	87°04'54"
42D042	pt. on mainld. W of Almos Shingle	48°46'24"	87°04'18"
42D043	i. N of Almos Shingle	48°46'36"	87°03'36"
42D044	Frank Rk.	48°41'48"	87°01'42"
42D045	rk. between Mortimer I. & Patterson I.	48°39'42"	87°02'12"
42D046	rk. SE of 42D045	48°39'36"	87°02'06"
42D047	i. W of Leadman I (= Fish I)	48°40'42"	86°56'36"
42D048	i. N of 42D047	48°40'48"	86°56'42"
42D049	1st rock SE of Leadman I.	48°40'48"	86°55'48"
42D050	2nd rock SE of Leadman I.	48°40'42"	86°55'42"
42D051	Cody I.	48°47'54"	87°00'00"
42D052	1st i. N of Cody I.	48°48'06"	87°00'00"
42D053	2nd i. N of Cody I.	48°48'12"	87°00'00"
42D054	rk. NE of 42D051 (= Bare Rk.)	48°48'18"	86°59'36"
42D055	i. NE of 42D051 (= Bennett I.)	48°48'18"	86°59'36"
42D056	south shore of St. Patrick I.	48°47'18"	86°58'48"
42D057	south shore of Lawson I.	48°45'24"	86°54'48"
42D058	rk. SW of mouth of Prairie R.	48°46'30"	86°47'24"
42D059	rk. NW of Fitzsimmons Rks.	48°46'24"	86°45'54"
42D060	W rock of the Fitzsimmons Rks.	48°46'06"	86°45'30"
42D061	E rock of the Fitzsimmons Rks.	48°46'12"	86°45'18"
42D062	i. N of Fitzsimmons Rks.	48°46'24"	86°45'24"
42D063	N-most rk. in NE part of McKell. Hrbr.	48°48'36"	86°42'24"
42D064	north i. of the Barclay Is.	48°46'18"	86°41'30"

Colony site ident. #	1989 Results				1978 Results				Former # of colony site
	M	DCCO	HERG	OTHER	M	DCCO	HERG	OTHER	
42D033	GC	0	22	0	AE	0	0	0	-
42D034	GC	0	1	0	AE	0	0	0	-
42D035	GC	0	48	0	AE	0	0	0	-
42D036	GC	0	60	0	AE	0	0	0	-
42D037	GC	0	11	0	AE	0	37 T	0	60
42D038	GC	0	38	0	AE	0	-	0	60
42D039	BC	0	1	0	AE	0	0	0	-
42D040	GC	0	113	0	AE	0	100	0	61
42D041	GC	0	87	0	AE	0	70	0	62
42D042	GC	0	1	0	AE	0	0	0	-
42D043	GC	0	31	0	AE	0	9	0	63
42D044	BC	0	3	0	AE	0	0	0	-
42D045	BC	0	10	0	AE	0	0	0	-
42D046	BC	0	5	0	AE	0	0	0	-
42D047	GC	0	50	0	AE	0	180 T	0	67
42D048	GC	0	25	0	AE	0	-	0	67
42D049	GC	0	17	0	AE	0	-	0	67
42D050	GC	0	8	0	AE	0	-	0	67
42D051	GC	0	16	0	AE	0	5	0	64
42D052	BC	0	1	0	AE	0	0	0	-
42D053	BC	0	6	0	AE	0	0	0	-
42D054	GC	0	13	0	AE	0	10 T	0	65
42D055	GC	0	22	0	AE	0	-	0	65
42D056	BC	0	7	0	AE	0	0	0	-
42D057	GC	0	28	8 GBHE	AE	0	30	0	66
42D058	GC	0	10	362 RBGU	AE	0	0	0	-
42D059	GC	0	4	0	AE	0	15 T	0	68
42D060	GC	0	74	0	AE	0	-	0	68
42D061	GC	0	61	0	AE	0	-	0	68
42D062	GC	0	8	0	AE	0	-	0	68
42D063	GC	0	30	0	AE	0	0	0	-
42D064	GC	0	19	0	AE	0	90 T	7 T GBHE	69

Colony site ident. #	Name or description of colony site	Lat.	Long.
42D065	centre i. of the Barclay Is.	48°46'18"	86°41'36"
42D066	south i. of the Barclay Is.	48°46'12"	86°41'36"
42D067	i. NW of Allouez I.	48°41'12"	86°36'54"
42D068	south shore of Allouez I.	48°40'54"	86°36'42"
42D069	McDonald Is.	48°42'42"	86°35'24"
42D070	west i. of the Sullivan Is.	48°43'06"	86°32'54"
42D071	north i. of the Sullivan Is.	48°43'12"	86°32'36"
42D072	south i. of the Sullivan Is.	48°42'54"	86°32'30"
42D073	Slyboots Rk.	48°43'00"	86°31'42"
42D074	east shore of Detention I.	48°43'54"	86°30'54"
42D075	1st rk. N of Detention I.	48°44'18"	86°31'12"
42D076	2nd rk. N of Detention I.	48°44'24"	86°31'18"
42D077	i. WNW of Monmouth I. (= Glasgow I.)	48°45'54"	86°27'06"
42D078	i. WNW of Monmouth I. (= Good Hope I.)	48°45'48"	86°26'18"
42D079	SE tip of Hawkins I.	48°43'18"	86°25'48"
42D080	SE tip of Blondin I.	48°44'06"	86°24'42"
42D081	Skin I.	48°43'36"	86°23'36"
42D082	rks. S of Randle Pt.	48°38'54"	86°21'18"
42D083	1st i. in S end of Heron Bay	48°38'06"	86°19'54"
42D084	2nd i. in S end of Heron Bay	48°38'06"	86°19'54"
42D085	i. in bay S of 42D084	48°37'48"	86°19'42"
42D086	i. in mouth of bay N of Ogilvy Pt.	48°36'54"	86°20'30"
42D087	i. in bay N. of Ogilvy Pt.	48°36'54"	86°20'18"
42D088	i. at W tip of Ogilvy Pt.	48°36'36"	86°20'48"
42D089	i. SSW of mouth of Pic R.	48°35'18"	86°18'48"
42D090	mainld. off Playter Hrbr. (= Campbell Pt.)	48°34'42"	86°17'54"
42D091	i. in SW end of Playter Hrbr.	48°34'24"	86°16'54"
42D092	i. S of 42D091	48°34'12"	86°16'48"
42D093	i. S of 42D092 (= Picture I.)	48°34'00"	86°16'36"
42D094	i. SW of 42D093	48°33'48"	86°16'42"
42D095	i. S of 42D093	48°33'42"	86°16'36"
42D096	i. in the first bay N of mouth of White R.	48°33'42"	86°16'18"

Colony site ident. #	1989 Results				1978 Results				Former # of colony site
	M	DCCO	HERG	OTHER	M	DCCO	HERG	OTHER	
42D065	GC	0	45	0	AE	0	-	-	69
42D066	GC	0	100	0	AE	0	-	-	69
42D067	GC	0	57	0	AE	0	0	0	-
42D068	GC	0	21	0	AE	0	0	0	-
42D069	GC	0	0	0	AE	0	200	0	70
42D070	GC	0	25	0	AE	0	0	0	-
42D071	GC	0	59	0	AE	0	45 T	1 GBHE	71
42D072	GC	0	61	1 GBHE	AE	0	-	0	71
42D073	GC	0	22	0	AE	0	0	0	-
42D074	GC	0	22	0	AE	0	0	0	-
42D075	GC	0	49	0	AE	0	11 T	0	72
42D076	GC	0	15	0	AE	0	-	0	72
42D077	BC	0	0	0	AE	0	11	0	73
42D078	BC	0	0	0	AE	0	0	1 GBHE	74
42D079	BC	0	62	0	AE	0	0	0	-
42D080	BC	0	27	0	AE	0	0	0	-
42D081	GC	0	48	0	AE	0	15	0	75
42D082	BC	0	0	0	AE	0	25	0	76
42D083	GC	0	5	0	AE	0	0	0	-
42D084	GC	0	32	0	AE	0	0	0	-
42D085	GC	0	29	0	AE	0	0	0	-
42D086	GC	0	48	0	AE	0	0	0	-
42D087	GC	0	21	0	AE	0	0	0	-
42D088	BC	6	175	0	AE	0	0	0	-
42D089	GC	0	1	0	GC	0	1	0	77
42D090	BC	0	0	0	GC	0	1	0	78
42D091	GC	0	15	0	GC	0	22	0	79
42D092	BC	0	0	0	GC	0	15	0	80
42D093	BC	0	0	0	GC	0	1	0	81
42D094	BC	0	0	0	GC	0	1	0	82
42D095	BC	0	0	0	GC	0	3	0	83
42D096	BC	0	0	0	GC	0	1	0	84

Colony site ident. #	Name or description of colony	Lat.	Long.
42D097	i. S of mouth of White R.	48°32'06"	86°20'36"
42D098	i. S of mouth of Willow R.	48°29'36"	86°15'18"
42D099	i. S of 42D098	48°29'06"	86°14'48"
42D100	i. S of 42D099	48°29'06"	86°14'48"
42D101	i. S of 42D100 (= WSW of S Shot Watch C.)	48°27'48"	86°14'36"
42D102	large i. S of 42D101	48°27'24"	86°14'12"
42D103	i. W of 42D102	48°27'24"	86°14'24"
42D104	N-most rk. S of 42D103	48°26'36"	86°14'18"
42D105	central rk. S of 42D103	48°26'30"	86°14'24"
42D106	S-most rk. S of 42D103	48°26'36"	86°14'18"
42D107	i. in second bay N of Sewell Pt.	48°26'18"	86°14'12"
42D108	i. off Sewell Pt.	48°25'26"	86°14'24"
42D109	i. SSW of Sewell Pt.	48°24'54"	86°13'54"
42D110	i. in NW part of Oiseau Bay	48°23'42"	86°12'30"
42D111	i. E of 42D110	48°23'48"	86°12'18"
42D112	i. in SW part of Oiseau Bay	48°23'06"	86°12'06"
42D113	i. S of second bay S of Oiseaux B.	48°21'18"	86°11'36"
42D114	i. S of 42D113 (= i. NW of One Lake)	48°19'48"	86°11'30"
42D115	i. S of 42D114 (= i. W of One Lake)	48°19'36"	86°11'12"
42D116	i. S of mouth of White Gravel R.	48°17'24"	86°09'48"
42D117	6th i. N of Stench Rock	48°17'06"	86°09'42"
42D118	5th i. N of Stench Rock	48°17'06"	86°09'36"
42D119	i. N of Stench Rock	48°17'06"	86°09'42"
42D120	3rd i. N of Stench Rock	48°16'54"	86°09'36"
42D121	2nd i. N of Stench Rock	48°16'48"	86°09'36"
42D122	1st i. N of Stench Rock	48°16'48"	86°09'36"
42D123	i. S of White Spr. R. mouth	48°16'42"	86°09'18"
42D124	W-most i. in Simons Hrbr.	48°15'54"	86°09'12"
42D125	1st. i. S of Simons Hrbr.	48°15'00"	86°08'54"
42D126	2nd. i. S of Simons Hrbr.	48°14'54"	86°08'42"
42D127	i. SSE of English Fishery	48°12'36"	86°07'06"
42D128	i. S of 42D127 (= SW of Gr. Stevens Pd.)	48°11'24"	86°06'24"

Colony site ident. #	1989 Results				1978 Results				Former # of colony site
	M	DCCO	HERG	OTHER	M	DCCO	HERG	OTHER	
42D097	GC	0	25	0	GC	0	22	0	85
42D098	GC	0	35	0	GC	0	42	0	86
42D099	BC	0	0	0	GC	0	1	0	87
42D100	BC	0	0	0	GC	0	1	0	88
42D101	GC	0	17	0	GC	0	26	0	89
42D102	BC	0	0	0	GC	0	2	0	90
42D103	GC	0	12	0	GC	0	16	1 GBHE	91
42D104	GC	0	58 T	0	GC	0	75 T	0	92
42D105	GC	0	-	0	GC	0	-	0	92
42D106	GC	0	-	0	GC	0	-	0	92
42D107	BC	0	0	0	GC	0	1	0	93
42D108	GC	0	5	0	GC	0	6	0	94
42D109	GC	0	1	0	GC	0	0	0	-
42D110	GC	0	18	0	GC	0	11	0	95
42D111	GC	0	0	13 GBHE	GC	0	0	32 GBHE	96
42D112	GC	0	13	0	GC	0	4	0	97
42D113	GC	0	1	0	GC	0	1	0	98
42D114	BC	0	0	0	GC	0	1	0	99
42D115	GC	0	26	0	GC	0	39	0	100
42D116	BC	0	0	2 GBHE	GC	0	1	2 GBHE	101
42D117	GC	0	111 T	0	GC	0	110 T	0	102
42D118	GC	0	-	0	GC	0	-	0	102
42D119	GC	0	-	0	GC	0	-	0	102
42D120	GC	0	-	0	GC	0	-	0	102
42D121	GC	0	-	0	GC	0	-	0	102
42D122	GC	0	-	0	GC	0	-	0	102
42D123	BC	0	0	0	GC	0	1	0	103
42D124	GC	0	5	13 GBHE	GC	0	29	24 GBHE	104
42D125	BC	0	0	0	GC	0	6	0	105
42D126	GC	0	1	0	GC	0	1	0	106
42D127	GC	0	34	0	GC	0	22	0	107
42D128	GC	0	1	0	GC	0	0	0	-

Colony site ident. #	Name or description of colony site	Lat.	Long.
42D129	i. WNW of mouth of Swallow R.	48°10'30"	86°05'54"
42D130	i. in mouth of Swallow R.	48°10'24"	86°05'30"
42D131	4th i. NNW of Otter I.	48°07'00"	86°04'30"
42D132	3rd i. NNW of Otter I.	48°06'48"	86°04'24"
42D133	2nd i. NNW of Otter I.	48°06'48"	86°04'18"
42D134	1st i. NNW of Otter I.	48°06'42"	86°04'18"
42D135	1st i. W of Otter I.	48°06'06"	86°03'42"
42D136	2nd i. W of Otter I.	48°06'00"	86°03'36"
42D137	3rd i. W of Otter I.	48°05'54"	86°03'36"
42D138	W i. of is. W of Otter Head	48°04'54"	86°01'54"
42D139	i. E of 42D138	48°04'54"	86°01'42"
42D140	i. S of Otter Cove	48°04'12"	86°00'00"

Colony site ident. #	1989 Results				1978 Results				Former # of colony site
	M	DCCO	HERG	OTHER	M	DCCO	HERG	OTHER	
42D129	GC	0	67	0	GC	0	73	0	108
42D130	BC	0	0	0	GC	0	1	0	109 [a]
42D131	GC	0	106 T	0	GC	0	126 T	0	111
42D132	GC	0	–	0	GC	0	–	0	111
42D133	GC	0	–	0	GC	0	–	0	111
42D134	GC	0	–	0	GC	0	–	0	111
42D135	GC	0	57 T	0	GC	0	61 T	0	112
42D136	GC	0	–	0	GC	0	–	0	112
42D137	GC	0	–	0	GC	0	–	0	112
42D138	GE	0	0	5 GBHE	GC	0	0	32 GBHE	113
42D139	BC	0	0	0	GC	0	3	0	114
42D140	GC	0	61	0	GC	0	47	0	115

[a]This colony site was erroneously reported twice in CWS Progress Note 118: one time as colony site 109 and the second time as colony site 110.

Appendix 5. Waterbird colonies present on Canadian Lake Superior in 1989 and/or 1978 in the area covered by 1:250,000 Map 42C. See Appendix 2 for explanation of Appendices 3-7.

Colony site ident. #	Name or description of colony site	Lat.	Long.
42C001	2nd. i. N of 42C003	48°02'54"	85°57'54"
42C002	1st i. N of 42C003	48°02'48"	85°57'48"
42C003	N tip of main i. in Richardson Hrbr. (= Richards. I.)	48°02'42"	85°57'24"
42C004	i. S of 42C003	48°02'30"	85°57'06"
42C005	i. in first bay N of 42C006 (= Bonamie Cove)	48°02'24"	85°56'18"
42C006	i. N of La Canadienne Pt.	48°01'54"	85°56'30"
42C007	i. off La Canadienne Pt.	48°01'24"	85°56'42"
42C008	i. N of Davis I.	48°01'18"	85°54'54"
42C009	i. SE of Davis I.	48°01'06"	85°54'30"

Colony site ident. #	1989 Results				1978 Results				Former # of colony site
	M	DCCO	HERG	OTHER	M	DCCO	HERG	OTHER	
42C001	BC	0	0	0	GC	0	2	0	116
42C002	GC	0	1	0	GC	0	1	0	117
42C003	BC	0	0	0	GC	0	2	0	118
42C004	BC	0	0	0	GC	0	1	0	119
42C005	BC	0	0	0	GC	0	1	0	120
42C006	BC	0	0	0	GC	0	1	0	121
42C007	GC	0	5	0	GC	0	1	0	122
42C008	GC	0	1	0	GC	0	1	0	123
42C009	BC	0	0	0	GC	0	1	0	124

Appendix 6. Waterbird colonies present on Canadian Lake Superior in 1989 and/or 1978 in the area covered by 1:250,000 Map 41N. See Appendix 2 for explanation of Appendices 3-7.

Colony site ident. #	Name or description of colony site	Lat.	Long.
41N001	1st i. S of Pukaskwa R.	47°59'30"	85°53'06"
41N002	3rd i. S of Pukaskwa R.	47°59'12"	85°52'54"
41N003	i. NW of Crane I.	47°56'42"	85°47'18"
41N004	Crane I.	47°56'36"	85°47'06"
41N005	i. ESE of Crane I.	47°56'30"	85°46'42"
41N006	Michipicoten I.	47°45'00"	85°46'42"
41N007	Ship I.	47°41'42"	85°51'24"
41N008	Hope I.	47°41'48"	85°47'24"
41N009	i. off SE side of Michipocoten I.	47°44'18"	85°35'54"
41N010	i. E of Le Petit Mort Rks.	47°55'18"	85°39'36"
41N011	i. 2 km W of Cairn Pt.	47°55'12"	85°36'24"
41N012	i. 1.5 km W of Cairn Pt.	47°55'12"	85°39'36"
41N013	i. 1 km W of Cairn Pt.	47°55'06"	85°35'24"
41N014	i. W of Floating Heart Bay	47°54'54"	85°32'54"
41N015	i. E of Floating Heart Bay	47°55'06"	85°31'18"
41N016	i. in Tamarack Bay	47°57'18"	85°18'48"
41N017	i. E of Tamarack Bay	47°57'12"	85°16'54"
41N018	mainld. 4 km W of False Dog Hrbr.	47°57'06"	85°15'42"
41N019	i. S of False Dog Hrbr.	47°57'12"	85°12'54"
41N020	i. 1.7 km E of mouth of Dog R. (Univ).	47°57'30"	85°10'24"
41N021	i. 3 km E of mouth of Dog (= University) R.	47°57'24"	85°09'18"
41N022	1st i. E of mouth of Makwa R.	47°57'30"	85°03'30"
41N023	2nd i. E of mouth of Makwa R.	47°57'30"	85°03'30"
41N024	1st i. halfway between Makwa R. & Doré Pt.	47°57'30"	85°01'06"
41N025	2nd i. halfway between Makwa R. & Doré Pt.	47°57'30"	85°00'54"
41N026	i. in W part of Doré Bay	47°57'24"	84°57'54"
41N027	N i. of twin islands in central Doré Bay	47°57'30"	84°57'06"
41N028	S i. of twin islands in central Doré Bay	47°57'24"	84°57'06"
41N029	i. in E side of Doré Bay (= Seagull I.)	47°57'42"	84°56'30"
41N030	i. in E side of Doré Bay, E. of 41N029	47°57'24"	84°56'12"
41N031	i. in Oakes Cove	47°57'18"	84°54'30"
41N032	i. in Michipicoten B., S of 41N031	47°57'06"	84°54'24"

App. 6 (cont'd).

Colony site ident. #	1989 Results				1978 Results				Former # of colony site
	M	DCCO	HERG	OTHER	M	DCCO	HERG	OTHER	
41N001	GC	0	3	0	AE	0	0	0	-
41N002	GC	0	2	0	AE	0	0	0	-
41N003	GC	0	10	0	AE	0	0	0	-
41N004	GC	0	54	12 GBHE	AE	0	5	4 GBHE	125
41N005	GC	0	28	0	AE	0	0	0	-
41N006	-	-	not visited-		AE	0	0	8 GBHE	126
41N007	-	-	"	-	AE	0	6	0	127
41N008	-	-	"	-	AE	0	12	5 GBHE	128
41N009	-	-	"	-	AE	0	5	0	129
41N010	GC	0	26	3 GBHE	AE	0	2	0	130
41N011	GC	0	90	0	AE	0	0	0	-
41N012	GC	0	1	0	AE	0	0	0	-
41N013	GC	0	1	0	AE	0	0	0	-
41N014	GC	0	18	0	AE	0	0	0	-
41N015	GC	0	37	4 GBHE	AE	0	0	0	-
41N016	GC	0	41	0	AE	0	0	0	-
41N017	GC	0	20	0	AE	0	20	0	131
41N018	GC	0	33	0	AE	0	0	0	-
41N019	GC	0	1	0	AE	0	0	0	-
41N020	GC	0	8	0	AE	0	0	0	-
41N021	GC	0	30	0	AE	0	20	0	132
41N022	GC	0	10	0	AE	0	5 T	0	133
41N023	GC	0	17	0	AE	0	-	0	133
41N024	GC	0	9	0	AE	0	10 T	0	134
41N025	GC	0	33	0	AE	0	-	0	134
41N026	GC	0	99	22 RBGU	AE	0	0	0	-
41N027	GC	0	65	0	AE	0	0	0	-
41N028	GC	0	48	0	AE	0	0	0	-
41N029	GC	0	33	0	AE	0	20	0	135
41N030	GC	0	1	1 RBGU	AE	0	0	0	-
41N031	GC	0	1	0	AE	0	0	0	-
41N032	GC	0	1	0	AE	0	0	0	-

Colony site ident. #	Name or description of colony site	Lat.	Long.
41N033	i. in Michipicoten B., S of 41N032	47°57'00"	84°54'18"
41N034	1st i. in Michipicoten Hrbr.	47°57'36"	84°53'54"
41N035	2nd i. in Michipicoten Hrbr.	47°57'30"	84°53'54"
41N036	N i. of 3-i. chain in Michipicoten Bay	47°57'24"	84°53'00"
41N037	C i. of 3-i. chain in Michipicoten Hbr.	47°57'18"	84°52'54"
41N038	S i. of 3-i. chain in Michipicoten Hbr.	47°57'18"	84°52'54"
41N039	large i. in Michipicoten B.	47°57'18"	84°52'42"
41N040	large i. E of 41N039 in Mich. B.	47°57'18"	84°52'24"
41N041	1st i. to NW of 41N040	47°57'24"	84°52'36"
41N042	2nd i. to NW of 41N040	47°57'24"	84°52'42"
41N043	i. W of 41N040	47°57'18"	84°52'36"
41N044	i. S of 41N040	47°57'12"	84°52'24"
41N045	i. WNW of 41N046	47°57'18"	84°52'00"
41N046	i. N of mouth of Michipicoten R.	47°56'54"	84°51'18"
41N047	i. S of mouth of Michipicoten R.	47°54'54"	84°50'30"
41N048	cliff on mainld. N of Smoky Pt.	47°54'18"	84°51'42"
41N049	1st cliff on mainl. S of Smoky Pt.	47°54'18"	84°53'36"
41N050	2nd cliff on mainl. S of Smoky Pt.	47°54'12"	84°53'48"
41N051	i. off Brulé Pt.	47°49'06"	84°56'54"
41N052	Entrance I.	47°48'18"	84°56'12"
41N053	cliff on mainld. in S part of Old Woman Bay	47°46'48"	84°54'42"
41N054	cliff on mainld. N of Cape Chaillon	47°42'48"	85°00'06"
41N055	i. N of Ryan Pt.	47°39'06"	85°00'30"
41N056	Squaw I.	47°38'12"	85°01'24"
41N057	i. N of Chalfant I.	47°37'06"	85°01'12"
41N058	Devil's Chair I.	47°36'24"	85°02'30"
41N059	i. NNW of Jordan I.	47°35'24"	85°01'54"
41N060	i. N of Jordan I.	47°35'18"	85°01'42"
41N061	Jordan I.	47°35'12"	85°01'42"
41N062	i. SE of Jordan I.	47°35'06"	85°01'36"
41N063	i. W of Dixon I. (= Peerless I.)	47°34'30"	85°00'24"
41N064	i. off NW tip of Devil's Warehouse I.	47°34'18"	85°00'36"

Colony site ident. #	1989 Results				1978 Results				Former # of colony site
	M	DCCO	HERG	OTHER	M	DCCO	HERG	OTHER	
41N033	GC	0	6	0	AE	0	0	0	-
41N034	GC	0	1	0	AE	0	0	0	-
41N035	GC	0	1	0	AE	0	0	0	-
41N036	GC	0	1	0	AE	0	0	0	-
41N037	GC	0	36	0	AE	0	0	0	-
41N038	GC	0	2	0	AE	0	0	0	-
41N039	GC	0	17	0	AE	0	0	0	-
41N040	GC	0	52	0	AE	0	0	0	-
41N041	GC	0	1	0	AE	0	0	0	-
41N042	GC	0	1	0	AE	0	0	0	-
41N043	GC	0	11	0	AE	0	0	0	-
41N044	GC	0	1	0	AE	0	0	0	-
41N045	GC	0	141	0	AE	0	0	0	-
41N046	GC	0	140	0	AE	0	0	0	-
41N047	GC	0	3	0	AE	0	0	0	-
41N048	BC	0	18	0	AE	0	0	0	-
41N049	BC	0	10	0	AE	0	0	0	-
41N050	BC	0	15	0	AE	0	0	0	-
41N051	GC	0	22	0	AE	0	0	0	-
41N052	GC	0	181	8 GBHE	AE	0	0	14 GBHE	136
41N053	GC	0	1	0	AE	0	0	0	-
41N054	GC	0	1	0	AE	0	0	0	-
41N055	GC	0	1	0	AE	0	0	0	-
41N056	GC	0	88	0	GE	0	75	0	137
41N057	GC	0	0	9 GBHE	GE	0	0	9 GBHE	138
41N058	GC	0	28	0	AE	0	0	0	-
41N059	GC	0	1	0	AE	0	0	0	-
41N060	GC	0	2	0	AE	0	0	0	-
41N061	GC	0	69	0	GE	0	100	0	139
41N062	GC	0	25	0	GE	0	40	0	140
41N063	GC	0	9	0	AE	0	0	0	-
41N064	GC	0	30	0	GE	0	50	0	141

Colony site ident. #	Name or description of colony site	Lat.	Long.
41N065	NW tip of Devil's Warehouse I.	47°34'12"	85°00'24"
41N066	i. SE of Devil's Warehouse I.	47°33'54"	84°59'42"
41N067	pt. on mainld. NNW of Telegraph Rk.	47°30'24"	84°53'54"
41N068	Telegraph Rk.	47°29'54"	84°53'36"
41N069	Ella Islet	47°29'18"	84°55'36"
41N070	S tip of i. NE of 41N071	47°25'12"	84°48'42"
41N071	NE tip of South Lizard I.	47°25'00"	84°48'54"
41N072	i. S of South Lizard I.	47°23'18"	84°49'18"
41N073	N part of Barrett I.	47°23'18"	84°42'48"
41N074	i. NW of largest of the Agawa Is.	47°21'42"	84°42'06"
41N075	1st i. SW of largest of the Agawa Is.	47°21'12"	84°42'00"
41N076	2nd i. SW of largest of the Agawa Is.	47°21'12"	84°41'54"
41N077	3rd i. SW of largest of the Agawa Is.	47°21'12"	84°41'48"
41N078	i. SE of the largest of the Agawa Is.	47°21'24"	84°41'30"
41N079	i. E of 41N078	47°21'30"	84°41'24"
41N080	i. W of Agawa Pt.	47°21'36"	84°41'12"
41N081	Vrooman I.	47°18'06"	84°36'24"
41N082	1st i. S of MacGregor Cove	47°17'30"	84°35'42"
41N083	2nd i. S of MacGregor Cove	47°17'24"	84°35'36"
41N084	Ossifrage I.	47°10'30"	84°42'54"
41N085	1st i. S of Cozens Cove	47°07'36"	84°44'06"
41N086	2nd i. S of Cozens Cove	47°07'18"	84°43'48"
41N087	3rd i. S of Cozens Cove	47°07'12"	84°43'48"
41N088	i. in N end of Mica Bay	47°06'48"	84°43'12"
41N089	i. N of Mamainse Hrbr.	47°02'30"	84°47'06"
41N090	i. E of Mamainse I.	47°02'12"	84°47'06"
41N091	Mamainse I.	47°02'12"	84°47'12"
41N092	i. W of Mamainse I.	47°02'12"	84°47'18"
41N093	i. S of Mamainse I.	47°02'06"	84°47'06"
41N094	Hibbard Rk.	47°01'30"	84°44'06"

Colony site ident. #	1989 Results				1978 Results				Former # of colony site
	M	DCCO	HERG	OTHER	M	DCCO	HERG	OTHER	
41N065	GC	0	9	10 GBHE	AE	0	0	11 GBHE	142
41N066	GC	0	30	0	GE	0	50	0	143
41N067	GC	0	1	0	AE	0	0	0	-
41N068	GC	0	44	0	AE	0	0	0	-
41N069	GC	2	40	0	AE	0	60	0	144
41N070	GC	0	38	0	AE	0	0	0	-
41N071	GC	0	1	0	AE	0	0	0	-
41N072	GC	0	35	21 GBHE	AE	0	0	14 GBHE	145
41N073	GC	0	110	0	GC	0	128	0	146
41N074	GC	0	62	0	GC	0	247 T	2 T GBHE	147
41N075	GC	0	1	0	GC	0	-	-	147
41N076	GC	0	87	0	GC	0	-	-	147
41N077	GC	0	14	0	GC	0	-	-	147
41N078	GC	0	78	0	GC	0	-	-	147
41N079	GC	0	12	0	GC	0	-	-	147
41N080	GC	0	1	0	GC	0	-	-	147
41N081	GC	0	117	146 RBGU	GC	0	175	168 RBGU	148
41N082	GC	0	29	0	GC	0	0	0	-
41N083	GC	0	5	0	GC	0	0	0	-
41N084	GC	0	118	5 GBHE	APH	0	41	0	149
41N085	GC	0	84	0	AE	0	50	0	150
41N086	GC	0	90	0	AE	0	25	0	151
41N087	GC	0	220	15 RBGU	AE	0	25	0	152
41N088	BC	0	0	0	APH	0	1	0	153
41N089	BC	0	31	0	AE	0	30	0	154
41N090	GC	0	31	0	AE	0	25	0	155
41N091	GC	0	34 T	6 RBGU	AE	0	0	0	-
41N092	GC	0	-	0	AE	0	0	0	-
41N093	GC	0	67	0	AE	0	0	0	-
41N094	BC	0	1	0	APH	0	1	0	156

Appendix 7. Waterbird colonies present on Canadian Lake Superior in 1989 and/or 1978 in the area covered by 1:250,000 Map 41K. See Appendix 2 for explanation of Appendices 3-7.

Colony site ident. #	Name or description of colony site	Lat.	Long.
41K001	i. NNE of Copperm. Rk. (= Rousseau I.)	46°59'24"	84°47'36"
41K002	mainland across from 41K001	46°59'24"	84°47'12"
41K003	i. E of Coppermine Rock	46°59'18"	84°47'24"
41K004	Coppermine Rock	46°59'12"	84°47'54"
41K005	islet S of Coppermine Rock	46°59'12"	84°47'48"
41K006	i. S of Copperm. Pt.(= off Whiskey Pt.)	46°59'06"	84°56'54"
41K007	i. N of Whiskey Rk.	48°57'36"	84°44'48"
41K008	Whiskey Rk. = (I. W of Sawpit Bay)	48°57'30"	84°44'42"
41K009	Steamboat I.	46°50'42"	84°39'30"
41K010	North Sandy I.	46°50'00"	84°39'42"
41K011	South Sandy I.	46°48'36"	46°39'06"
41K012	i. N of mouth of Harmony R.	46°55'36"	84°26'30"
41K013	S i. of chain of 3 is. S of Batch. I.	46°52'10"	84°26'30"
41K014	middle i. of chain of 3 is. S of Batch. I.	46°52'15"	84°26'30"
41K015	N i. of chain of 3 is. S of Batch. I.	46°52'19"	84°26'30"
41K016	i. 0.5 km W of 41K013	46°52'12"	84°26'54"
41K017	i. 0.4 km S of 41K016	46°51'54"	84°26'54"
41K018	i. 0.6 km NW of 41K014	46°52'36"	84°26'54"
41K019	i. 1.7 km W of 41K014	46°52'24"	84°28'00"
41K020	i. W of Chene I.	46°30'24"	84°34'54"
41K021	Chene I.	46°30'06"	84°33'06"

Colony site ident. #	1989 Results M	DCCO	HERG	OTHER	1978 Results M	DCCO	HERG	OTHER	Former # of colony site
41K001	GC	0	112	0	APH	0	55	0	157
41K002	BC	0	1	0	APH	0	0	0	-
41K003	BC	0	0	0	APH	0	2	0	158
41K004	GC	0	108	0	APH	0	105	0	159[a]
41K005	GC	0	4	0	APH	0	2	0	160[a]
41K006	BC	0	2	0	AE	0	2	0	161
41K007	BC	0	1	0	APH	0	0	0	-
41K008	GC	0	42	0	APH	0	40	0	162
41K009	GC	93	68	0	GC	0	96	0	163
41K010	GC	0	5	0	GC	0	0	0	-
41K011	GC	0	56	0	GC	0	61	0	164
41K012	GC	0	1	25 COTE 42 RBGU	BC	0	0	0	-
41K013	BC	0	12	0	GC	0	33	6+ GBHE	165
41K014	BC	0	12	27 GBHE	GC	0	36	10+ GBHE	165
41K015	GC	0	41	5 GBHE	GC	0	17	0	165
41K016	BC	0	24	4 GBHE	GC	0	7	17 RBGU	165
41K017	GC	0	4	0	GC	0	50	0	165
41K018	BC	0	0	0	GC	0	1	0	165
41K019	BC	0	0	0	GC	0	17	0	165
41K020	GC	0	291	13 RBGU	GC	0	253	0	166
41K021	GC	0	255	0	GC	0	189	0	167

[a]In CWS Progress Note 117, Coppermine Rock (41K004) was erroneously referred to as 'I.N of Coppermine Rock' and islet S of Coppermine Rock (41K005) was erroneously referred to as 'Coppermine Rock'.

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Appendix 8. Explanation of the mapping of colony sites in Appendices 9-13

Going from west to east the following five 1:250,000 Maps cover the entire study area: 52A, 42D, 52C, 41N and 41K.

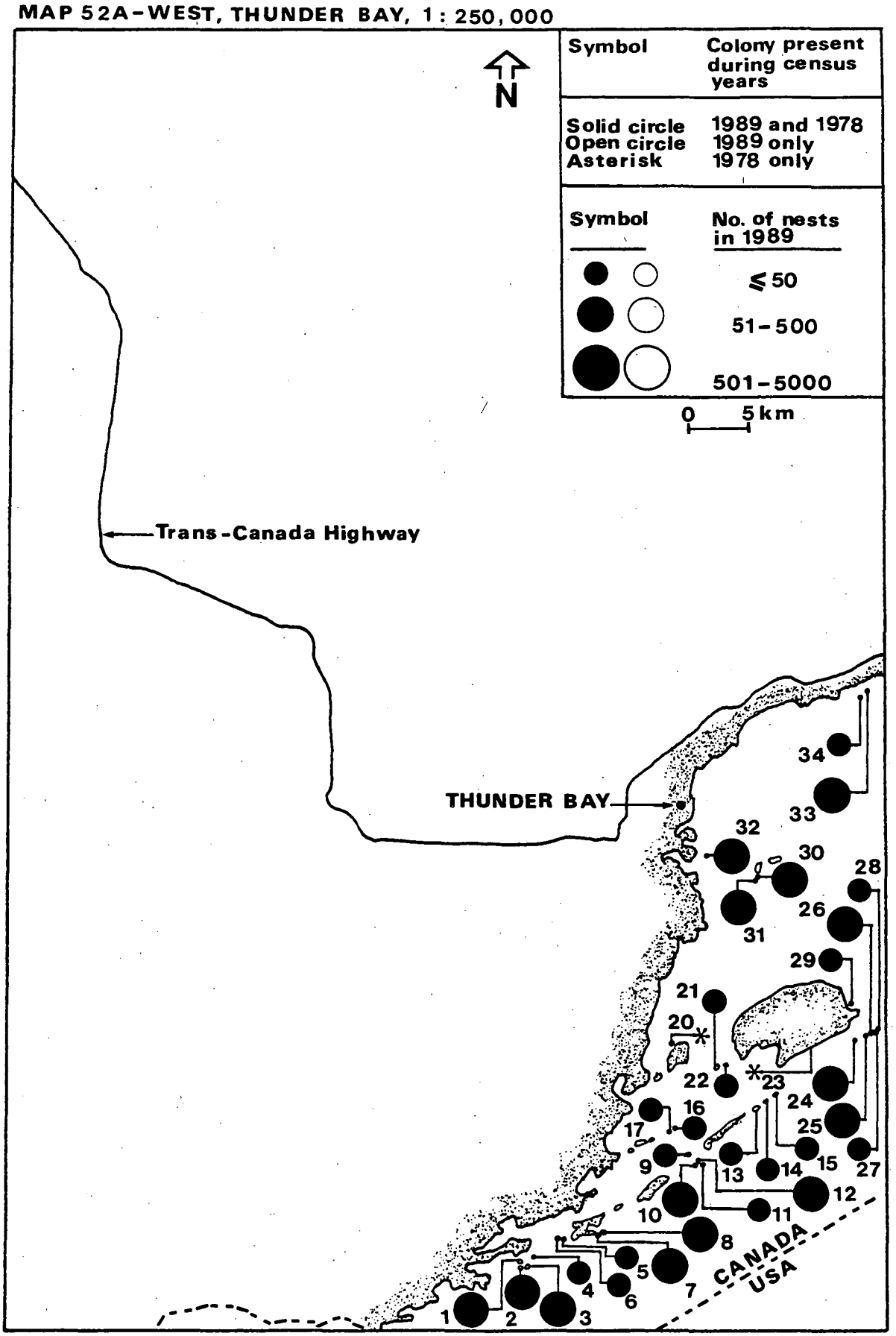
All colony sites active in 1989 and/or 1978 are plotted by 1:250,000 Map. Thus the colony sites in the area covered by Map 52A (which are listed in App. 3) are plotted on a number of maps, which together form Appendix 9. Similarly, colony sites in the area covered by Map 42D are listed in Appendix 4 and plotted on the maps of Appendix 10, and so on.

All colony sites are plotted both on 1:250,000 maps and on 1:50,000 maps. For example, Appendix 9 first shows an overview of the locations of all colony sites in the area covered by Map 52A and then continues to show their detailed locations.

To find the colony site identification number of a certain plotted colony, combine the Map number (given at the top of the page in case of 1:250,000 maps and in the boxes for the 1:50,000 maps) and the number in the circle associated with that colony. For example, the colony identification number of the island marked with a circle containing the number 9 on the map on page 53 is 52A009 and Appendix 3, which deals with sites covered by Map 52A, will then tell you the name of the island (Slipper Island). Similarly, the island marked by the circle containing the number 81 on page 72 is 42D081 (and Appendix 4 gives its name as Skin Island).

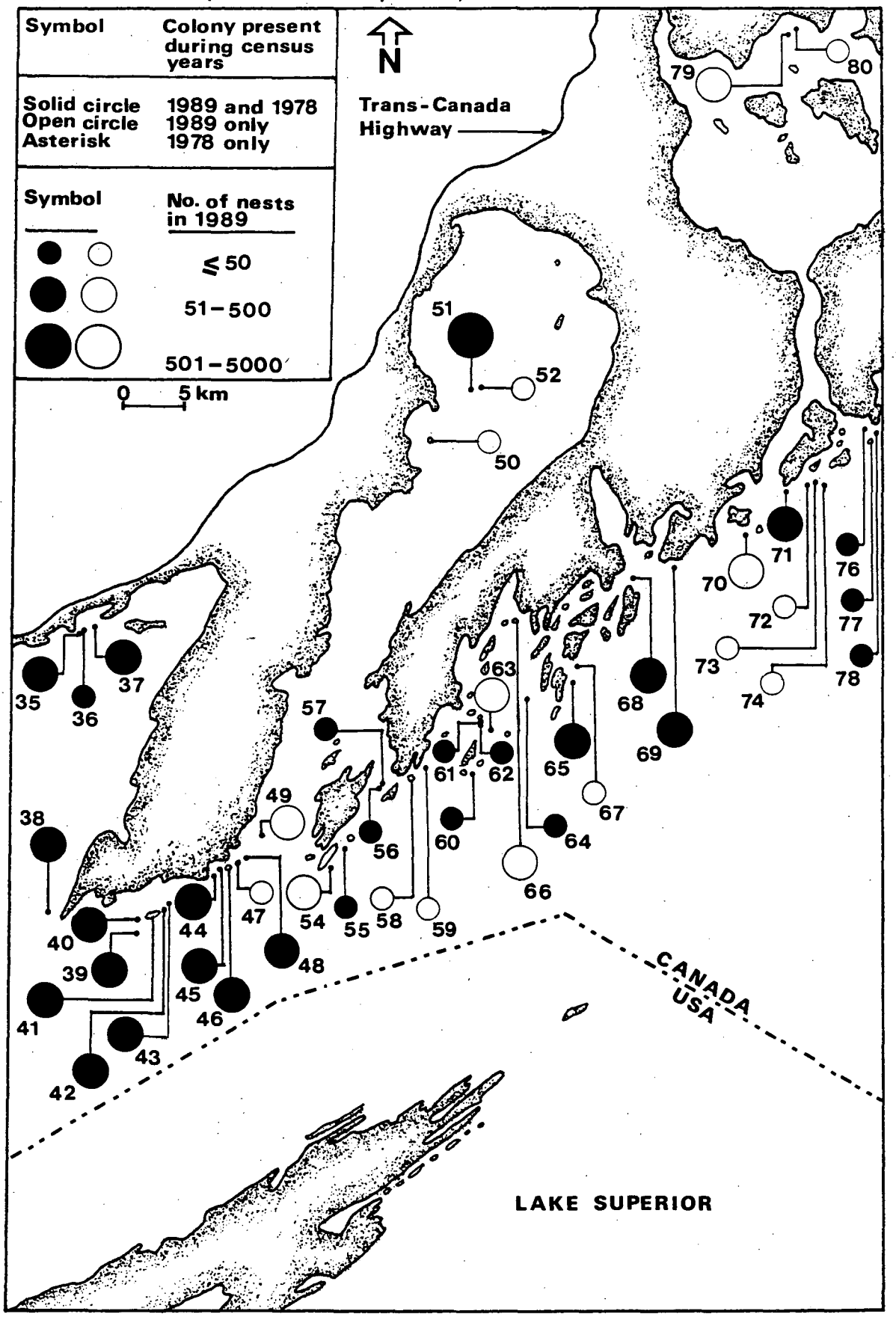
When plotting the colony sites we used three different-sized symbols to indicate three size classes of the waterbird colonies. These symbols are based on the total of nests of all cormorants, gulls and terns nesting at a colony site. In cases where only totals of nests counts for two or more colony sites were reported (marked by T and a bracket in App. 3-7), we arbitrarily divided the total number of nests by the number of colony sites to arrive at a colony size (and thus a size symbol) for each colony site.

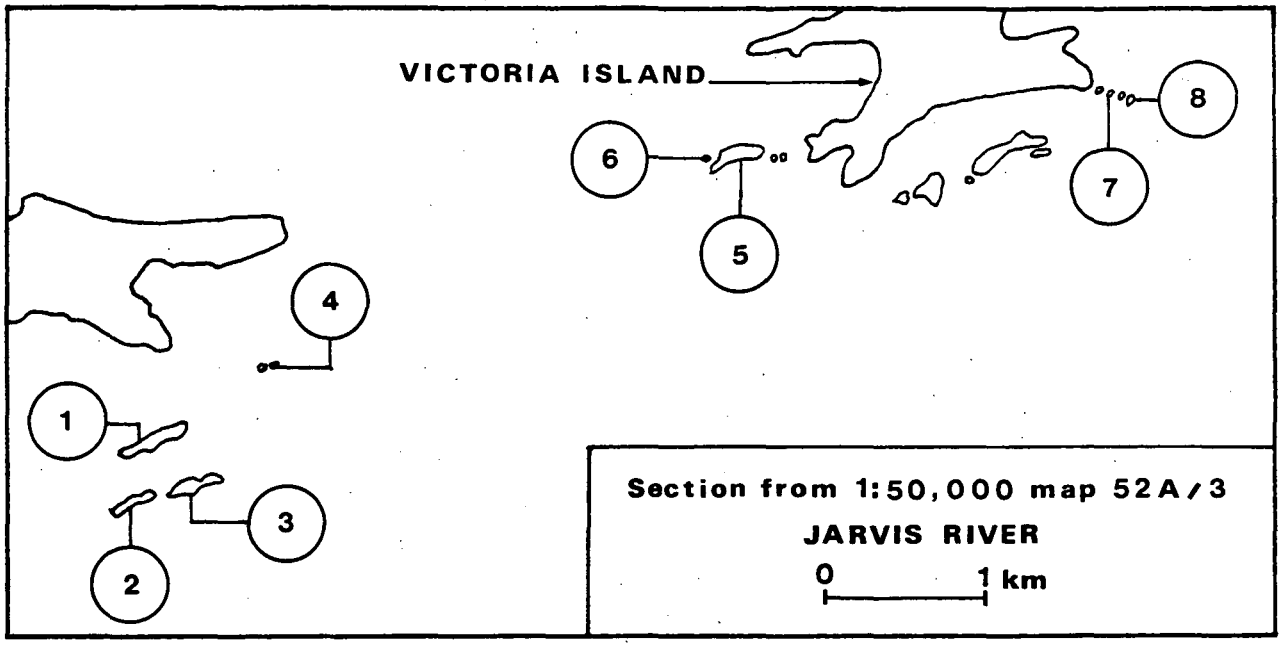
In 1978 the inventory also dealt with Great Blue Herons and there were several sites where herons, but no other birds, were nesting in that year. These sites are mentioned in Appendices 3-7, but we did not plot them on maps in this report unless there were cormorants, gulls or terns nesting on them in 1989. For example, Dog Island 52A018 with 3 heron nests in 1978 and no nests of cormorants, gulls and terns in 1989 (see Appendix 3, p. 24) was not plotted. The other colony sites that are mentioned in the Appendices but not plotted in this report are: 52A019, 52A053, 52A075, 42D078, 42D111, 42D138, 41N006 and 41N057.

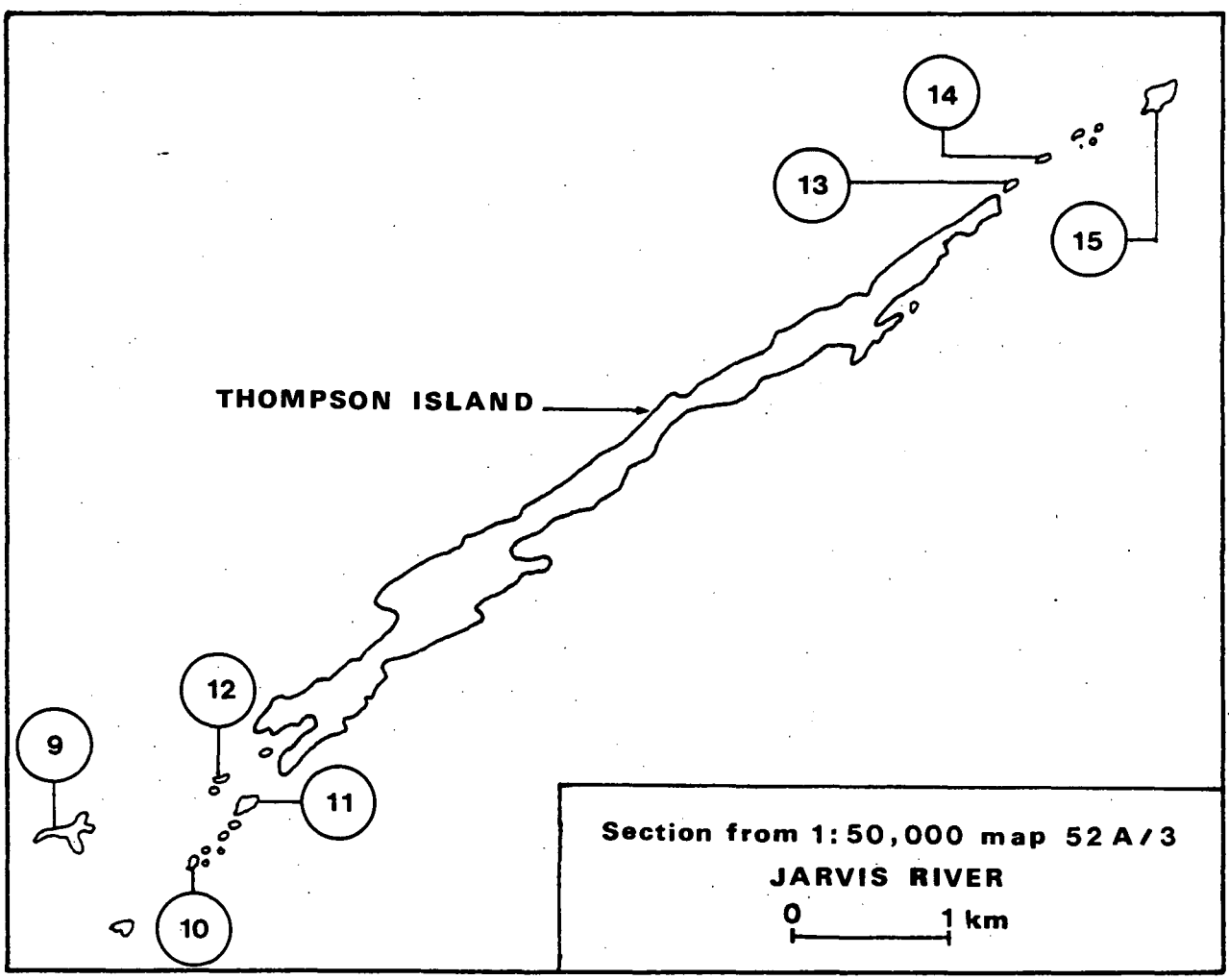


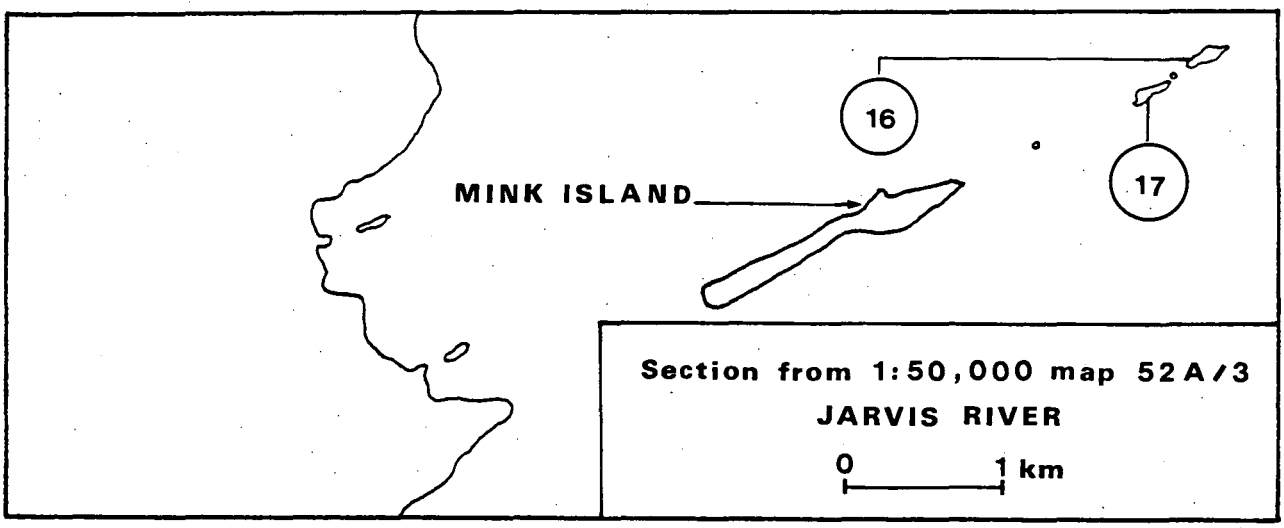
Appendix 9. Locations of colony sites in Canadian Lake Superior. See App. 8 for explanations of Appendices 9-13.

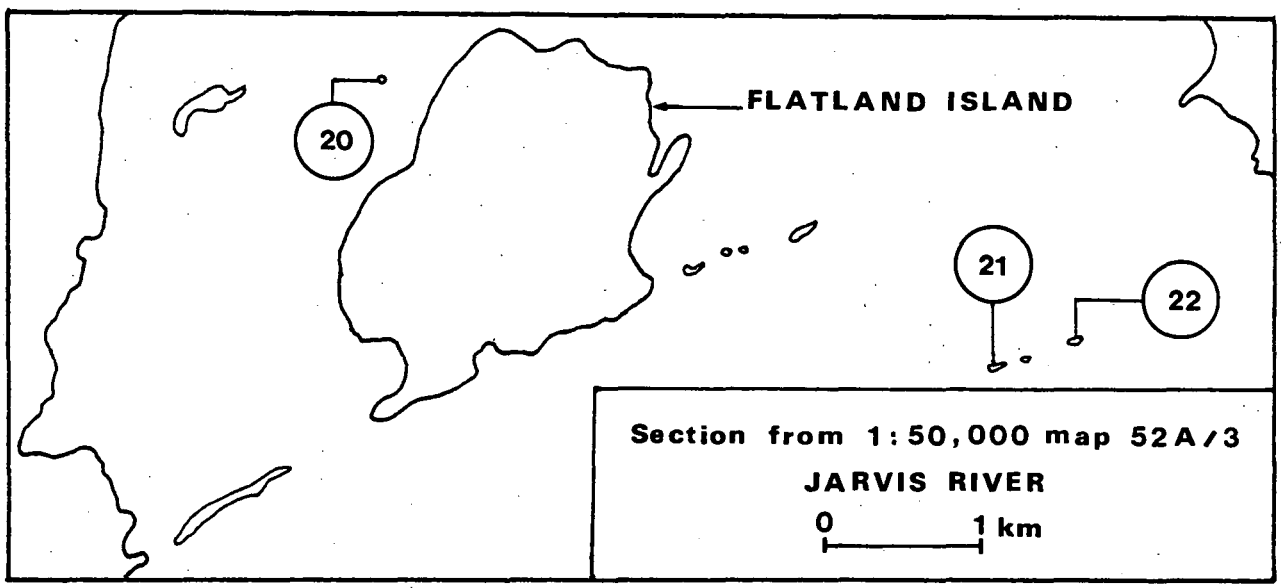
MAP 52A – EAST, THUNDER BAY, 1:250,000

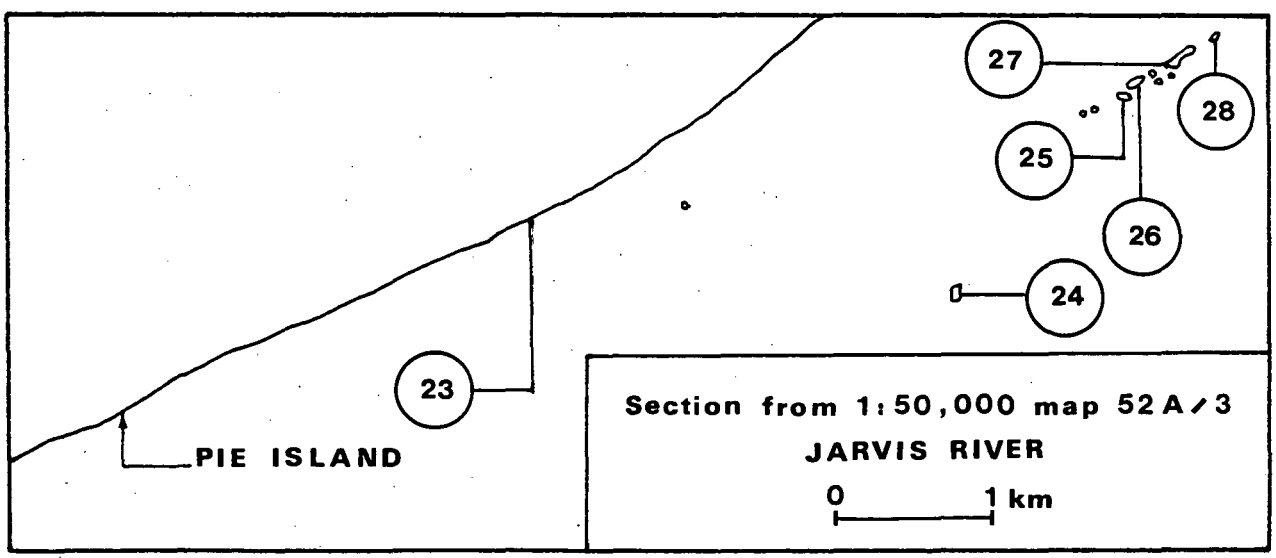


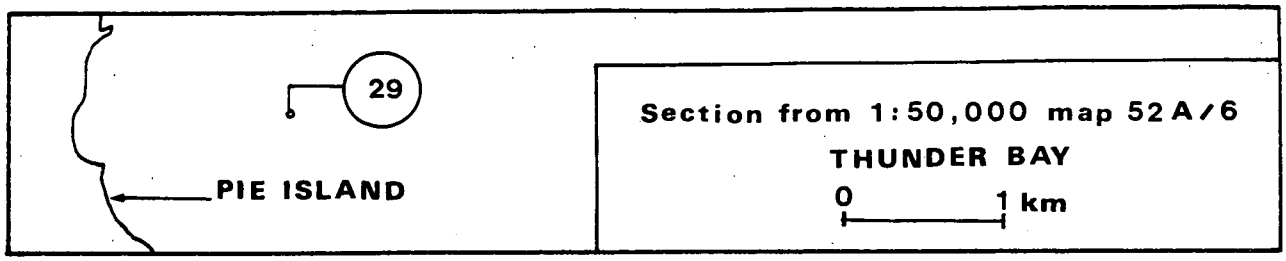

VICTORIA ISLAND
1
2
3
4
5
6
7
8
Section from 1:50,000 map 52A/3
JARVIS RIVER
0
1 km

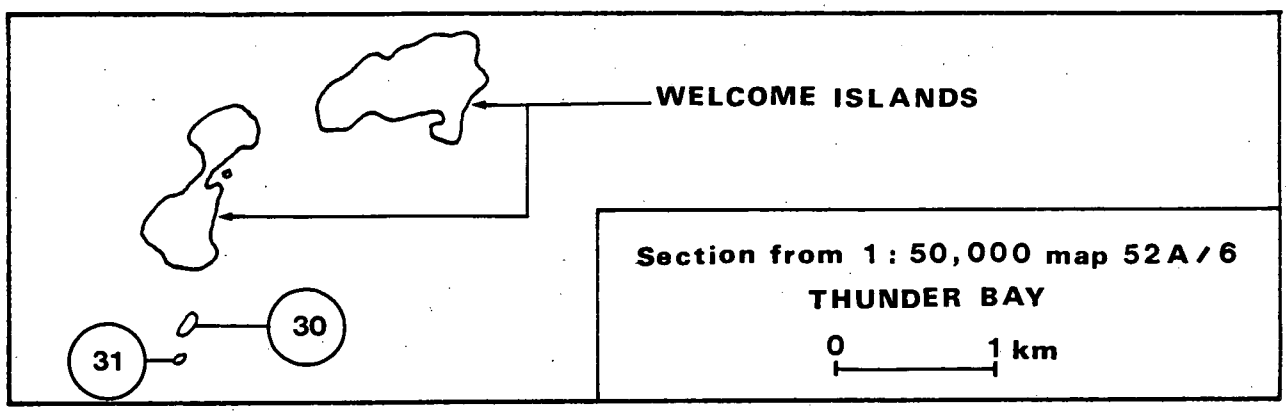

THOMPSON ISLAND
9
10
11
12
13
14
15
Section from 1:50,000 map 52A/3
JARVIS RIVER
0
1 km

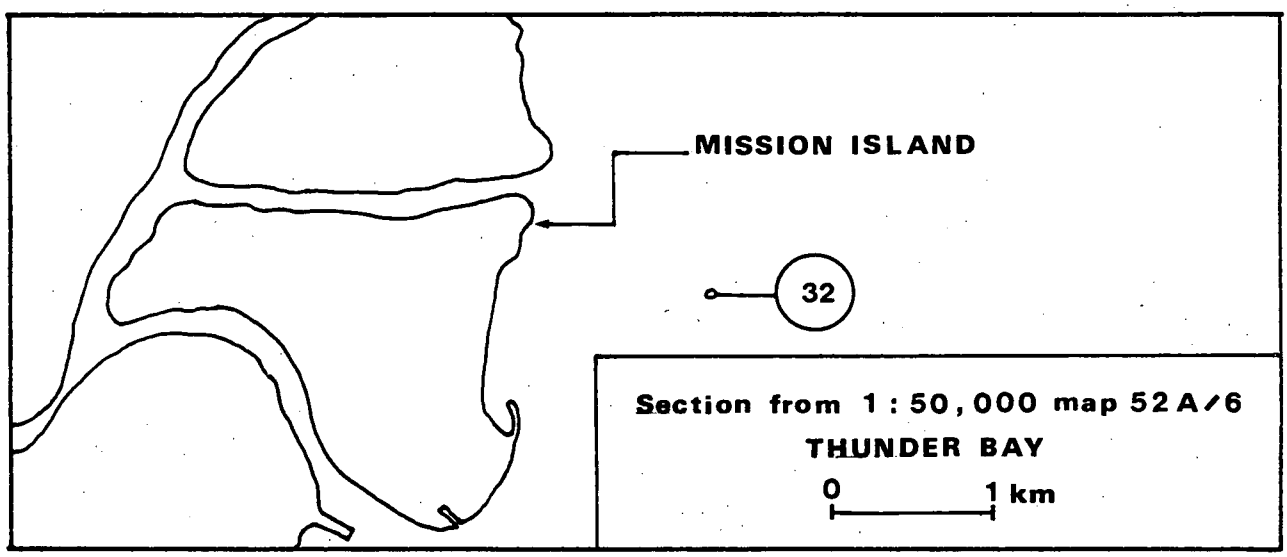

16
17
MINK ISLAND
Section from 1:50,000 map 52A/3
JARVIS RIVER
0
1 km

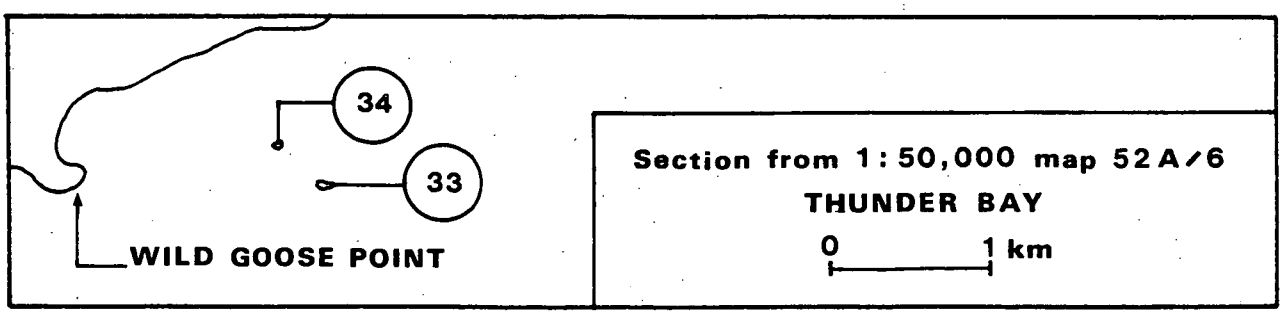

20
FLATLAND ISLAND
21
22
Section from 1:50,000 map 52A/3
JARVIS RIVER
0
1 km

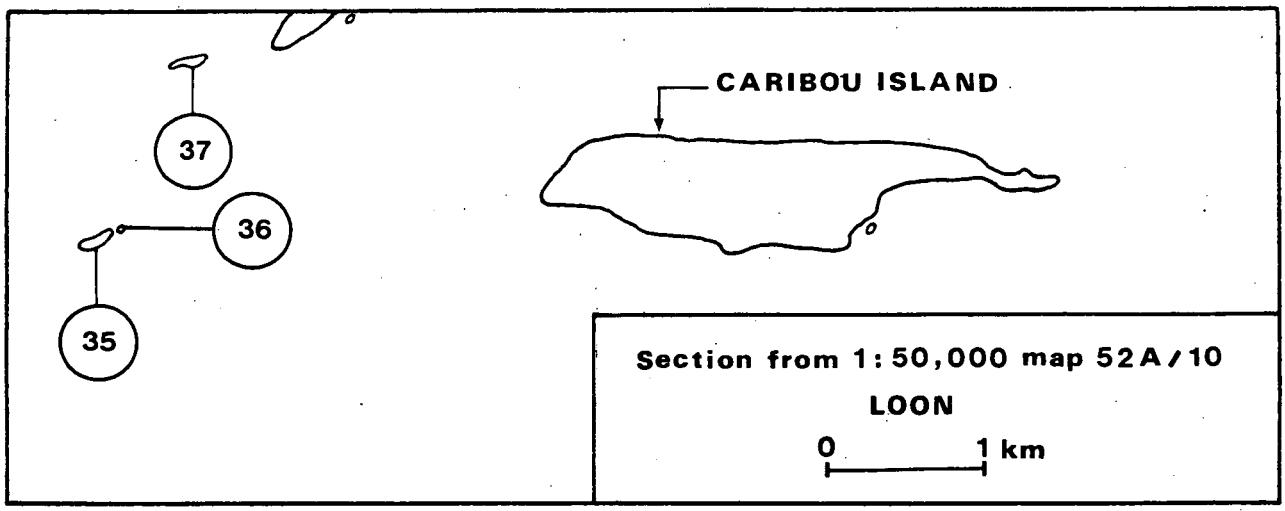

27
28
25
26
24
23
PIE ISLAND
Section from 1:50,000 map 52A/3
JARVIS RIVER
0
1 km

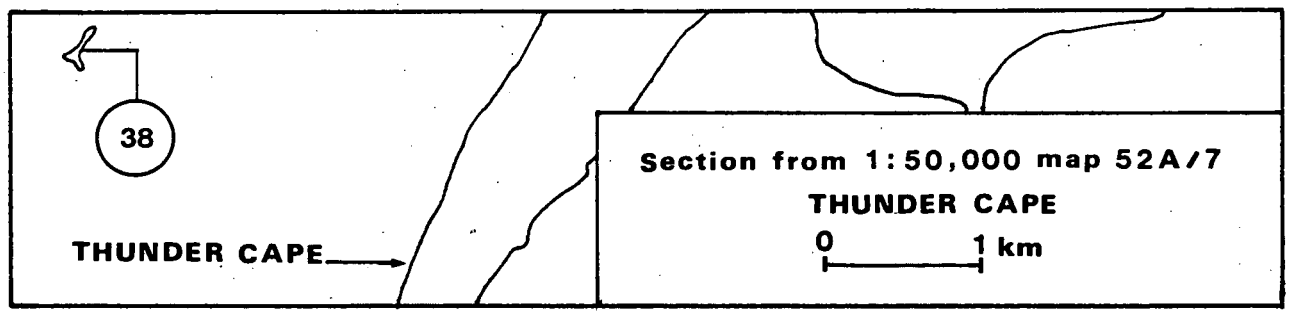

29
PIE ISLAND
Section from 1:50,000 map 52A/6
THUNDER BAY
0
1 km

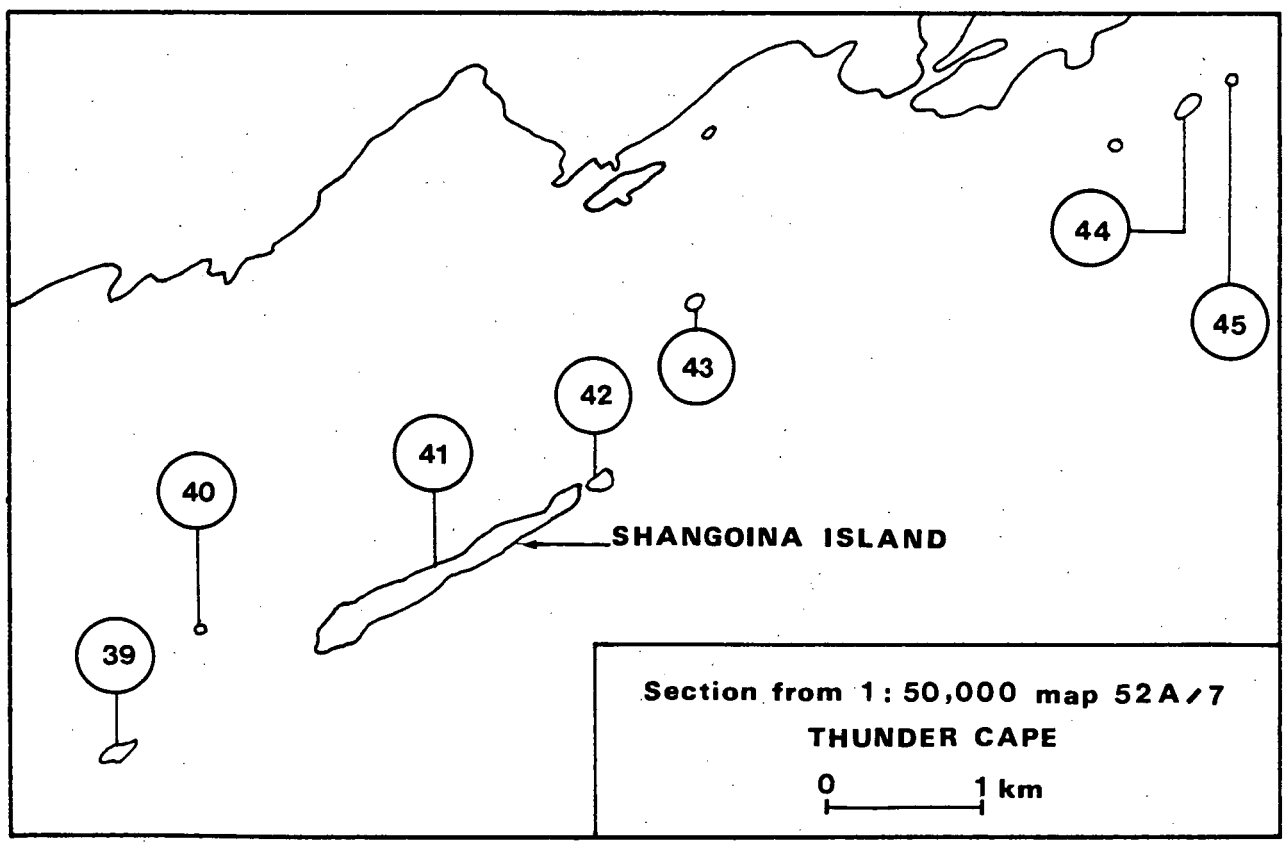

WELCOME ISLANDS
30
31
Section from 1:50,000 map 52A/6
THUNDER BAY
0
1 km

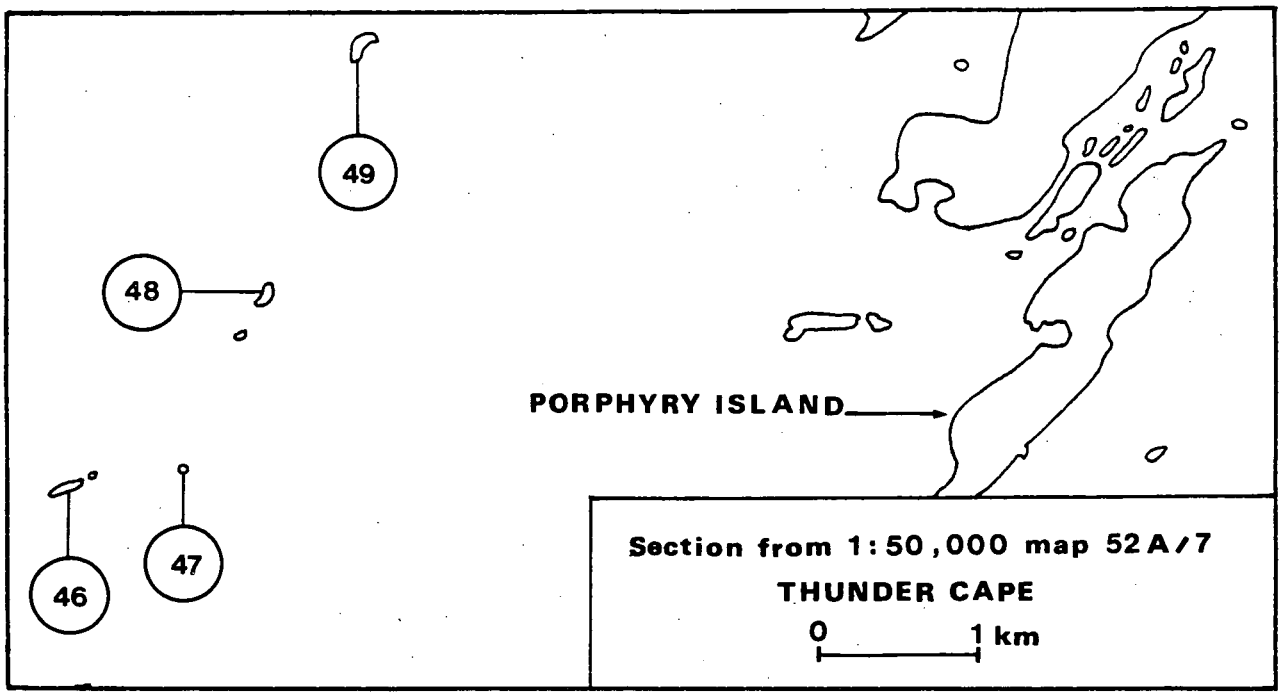

MISSION ISLAND
32
Section from 1:50,000 map 52A/6
THUNDER BAY
0
1 km

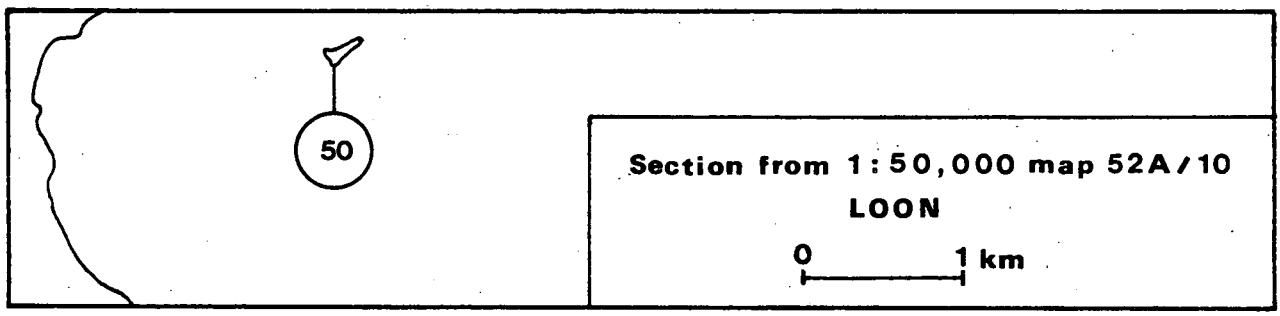

34
33
WILD GOOSE POINT
Section from 1:50,000 map 52A/6
THUNDER BAY
0
1 km

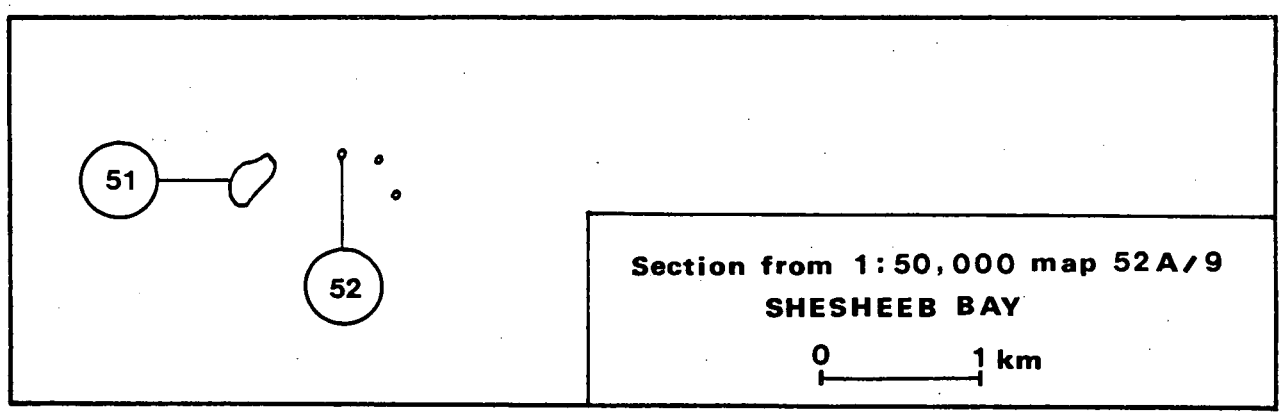

CARIBOU ISLAND
37
36
35
Section from 1:50,000 map 52A/10
LOON
0
1 km

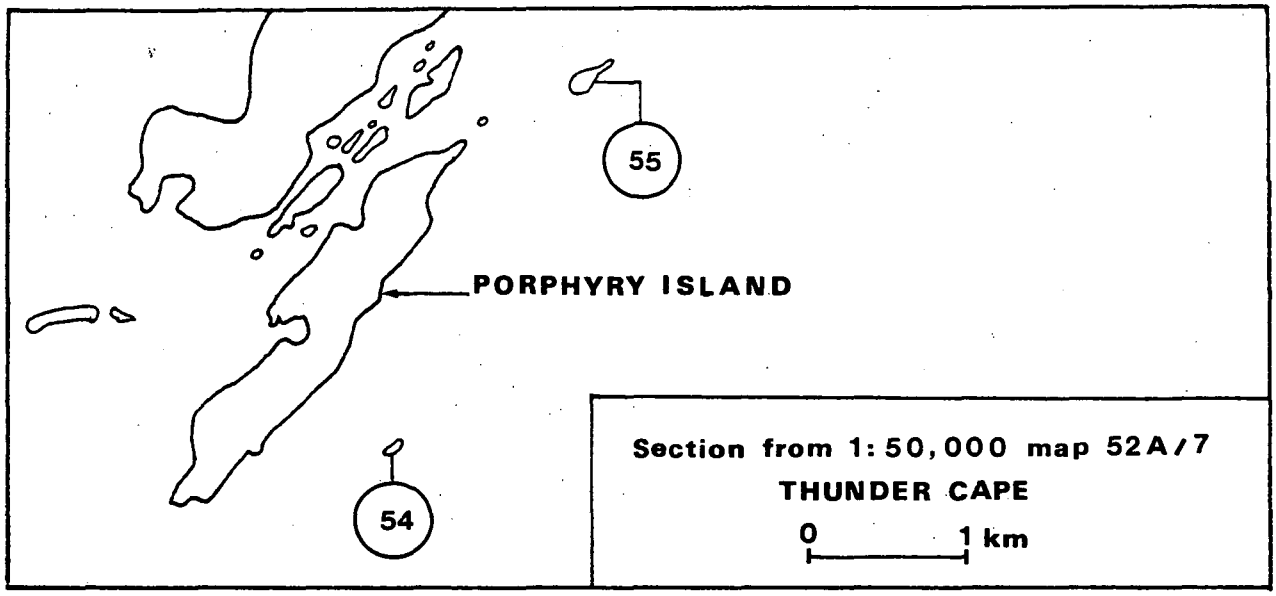

38
THUNDER CAPE
Section from 1:50,000 map 52A/7
THUNDER CAPE
0
1 km

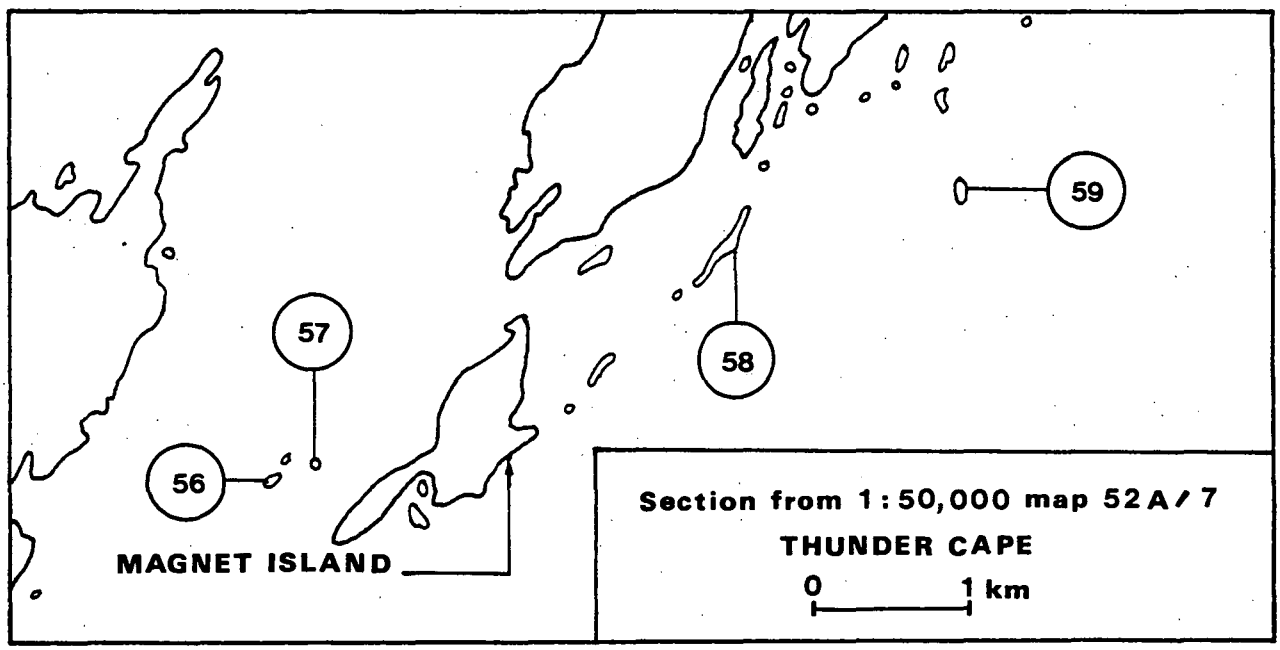

44
45
43
42
41
40
SHANGOINA ISLAND
39
Section from 1:50,000 map 52A/7
THUNDER CAPE
0
1 km

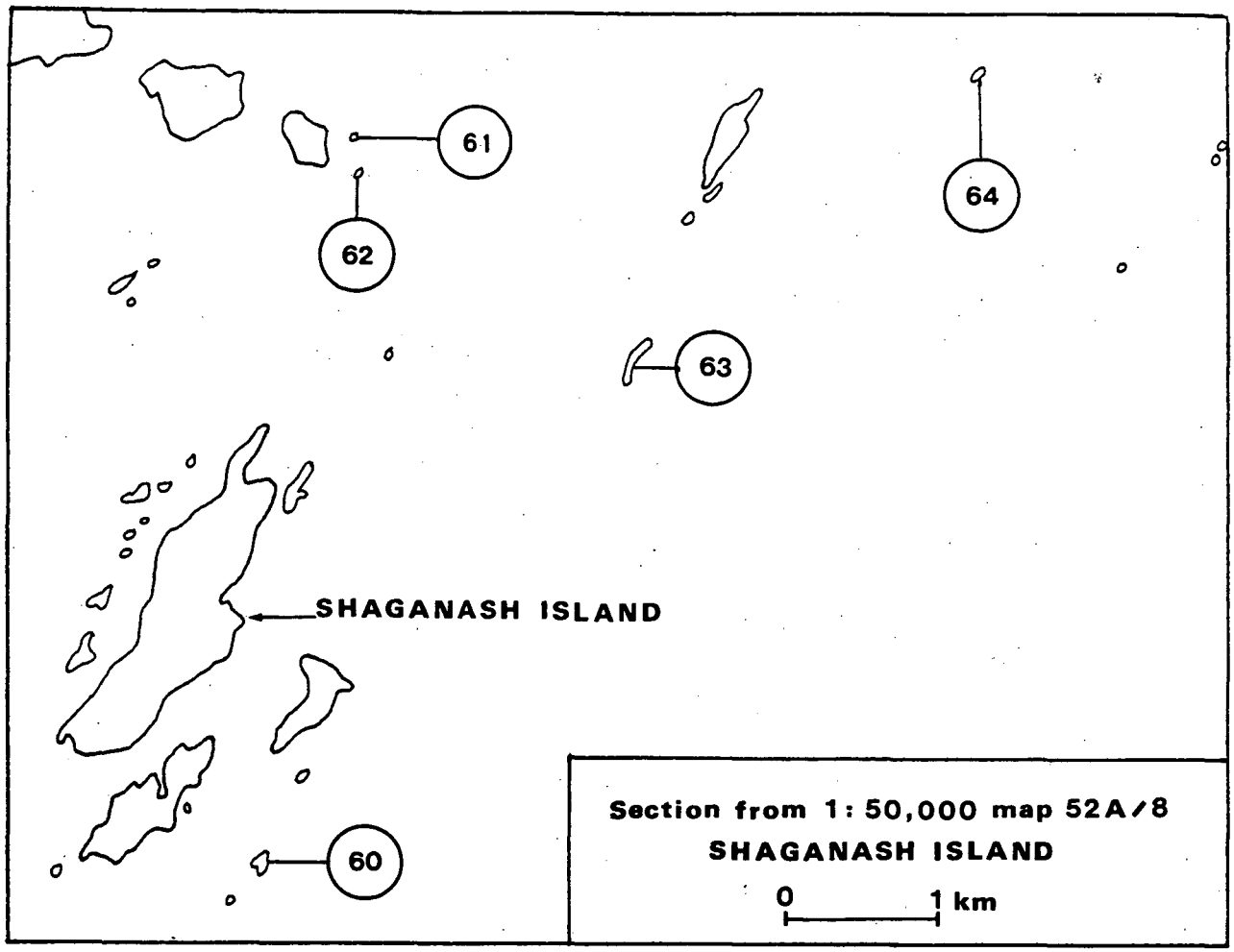

49
48
PORPHYRY ISLAND
46
47
Section from 1:50,000 map 52A/7
THUNDER CAPE
0
1 km

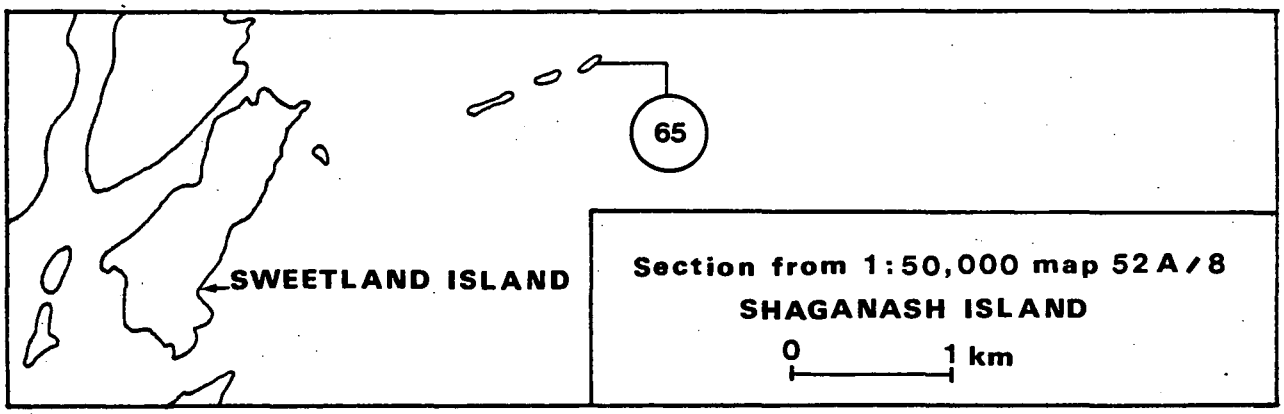

50
Section from 1:50,000 map 52A/10
LOON
0
1 km

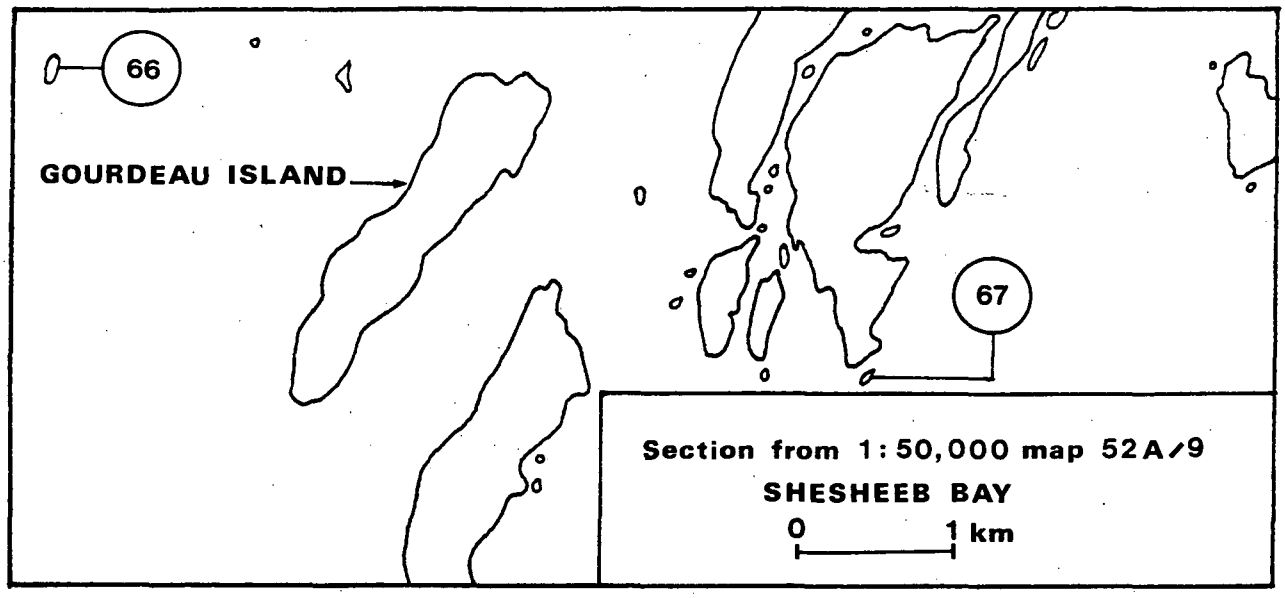

51
52
Section from 1:50,000 map 52A/9
SHESHEEB BAY
0
1 km

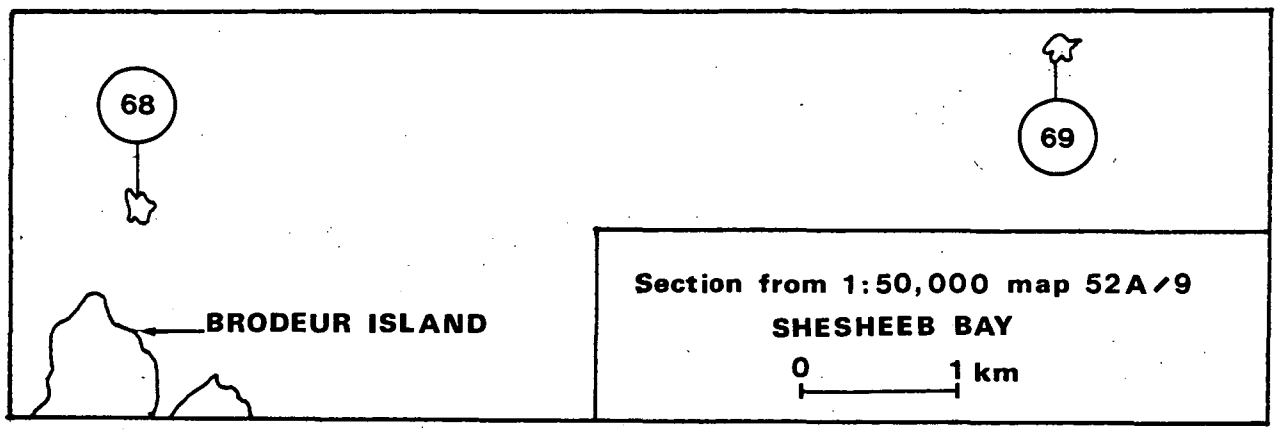

55
PORPHYRY ISLAND
54
Section from 1:50,000 map 52A/7
THUNDER CAPE
0
1 km

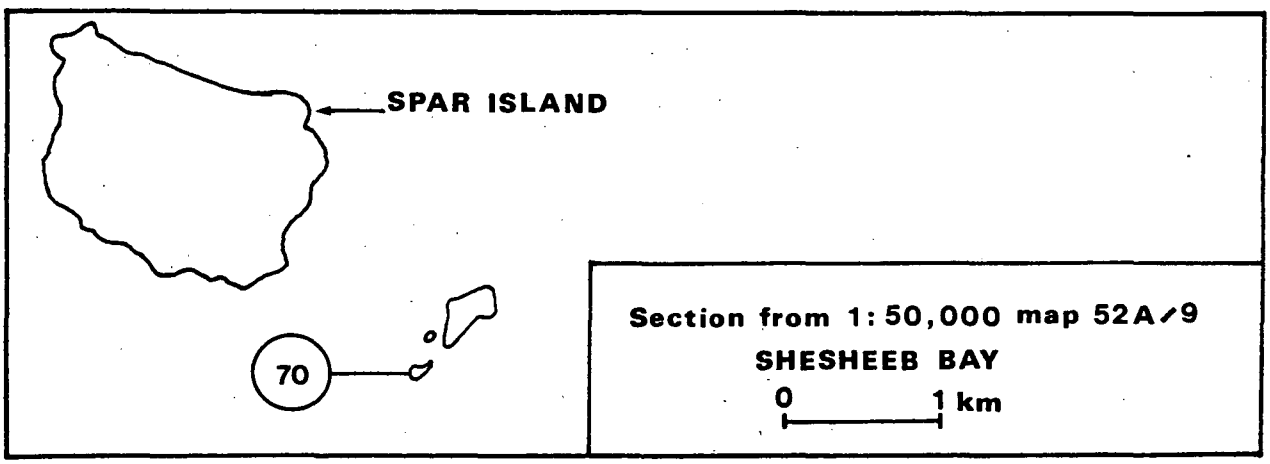

59
57
58
56
MAGNET ISLAND
Section from 1:50,000 map 52A/7
THUNDER CAPE
0
1 km

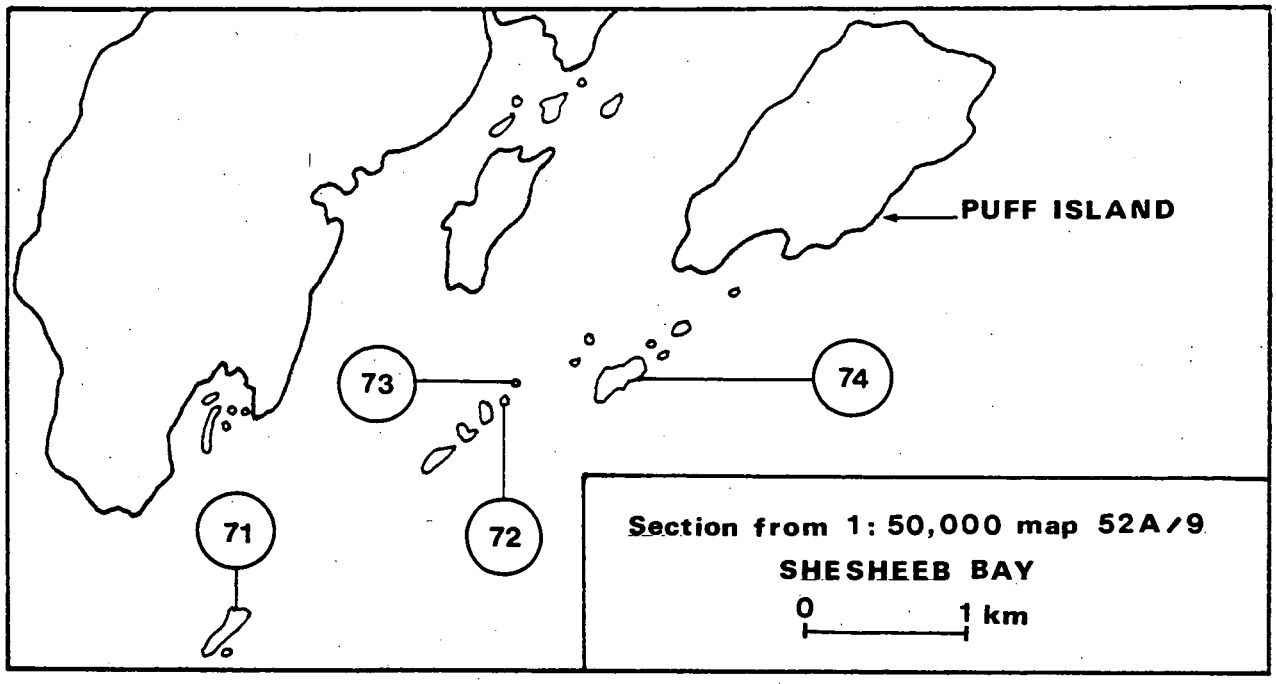

61
62
64
63
SHAGANASH ISLAND
60
Section from 1:50,000 map 52A/8
SHAGANASH ISLAND
0
1 km

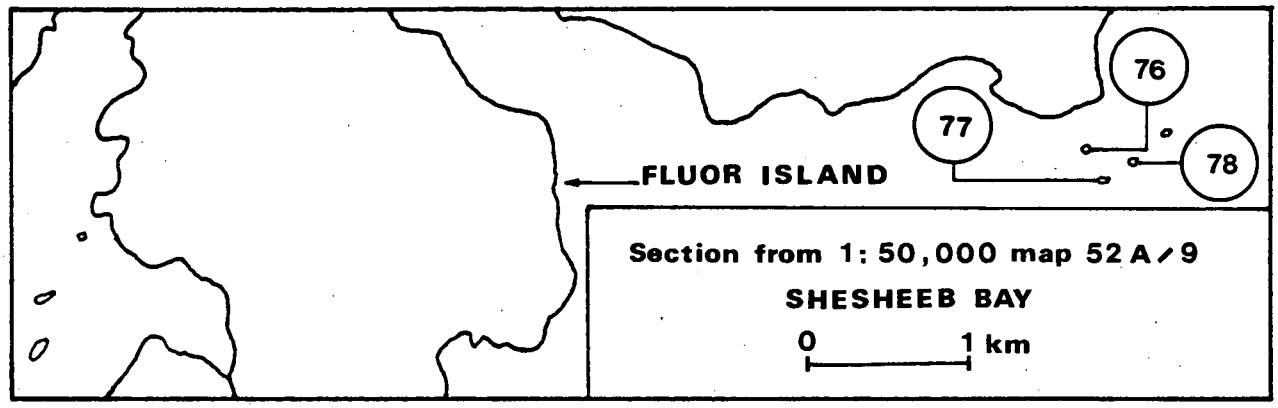

65
SWEETLAND ISLAND
Section from 1:50,000 map 52A/8
SHAGANASH ISLAND
0
1 km

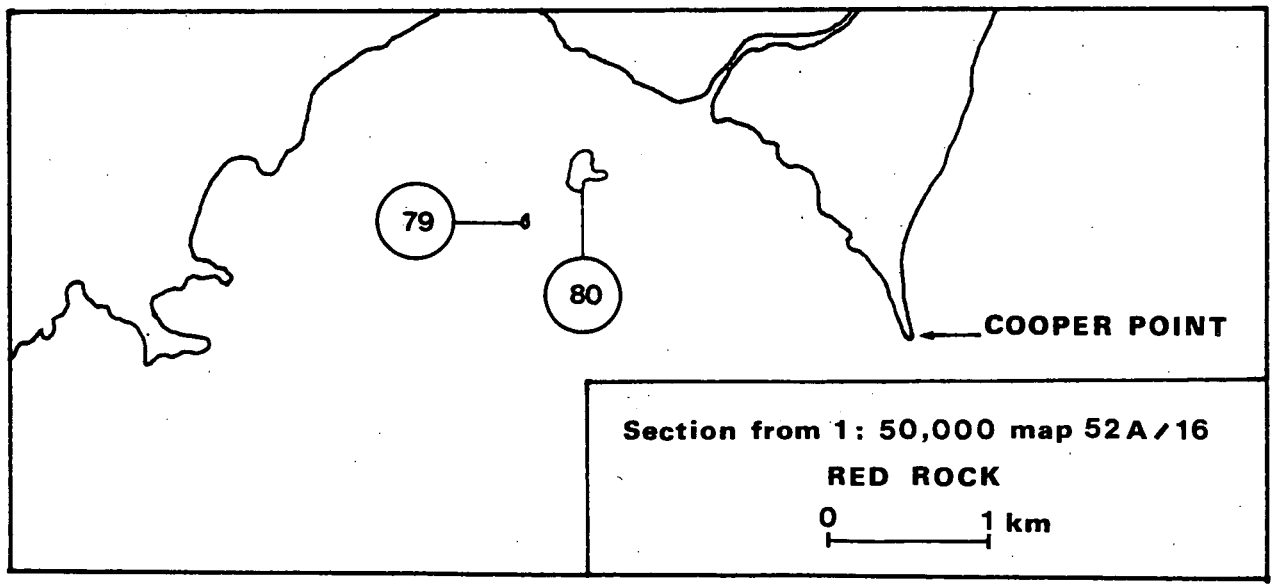

66
GOURDEAU ISLAND
67
Section from 1:50,000 map 52A/9
SHESHEEB BAY
0
1 km


68
69
BRODEUR ISLAND
Section from 1:50,000 map 52A/9
SHESHEEB BAY
0
1 km

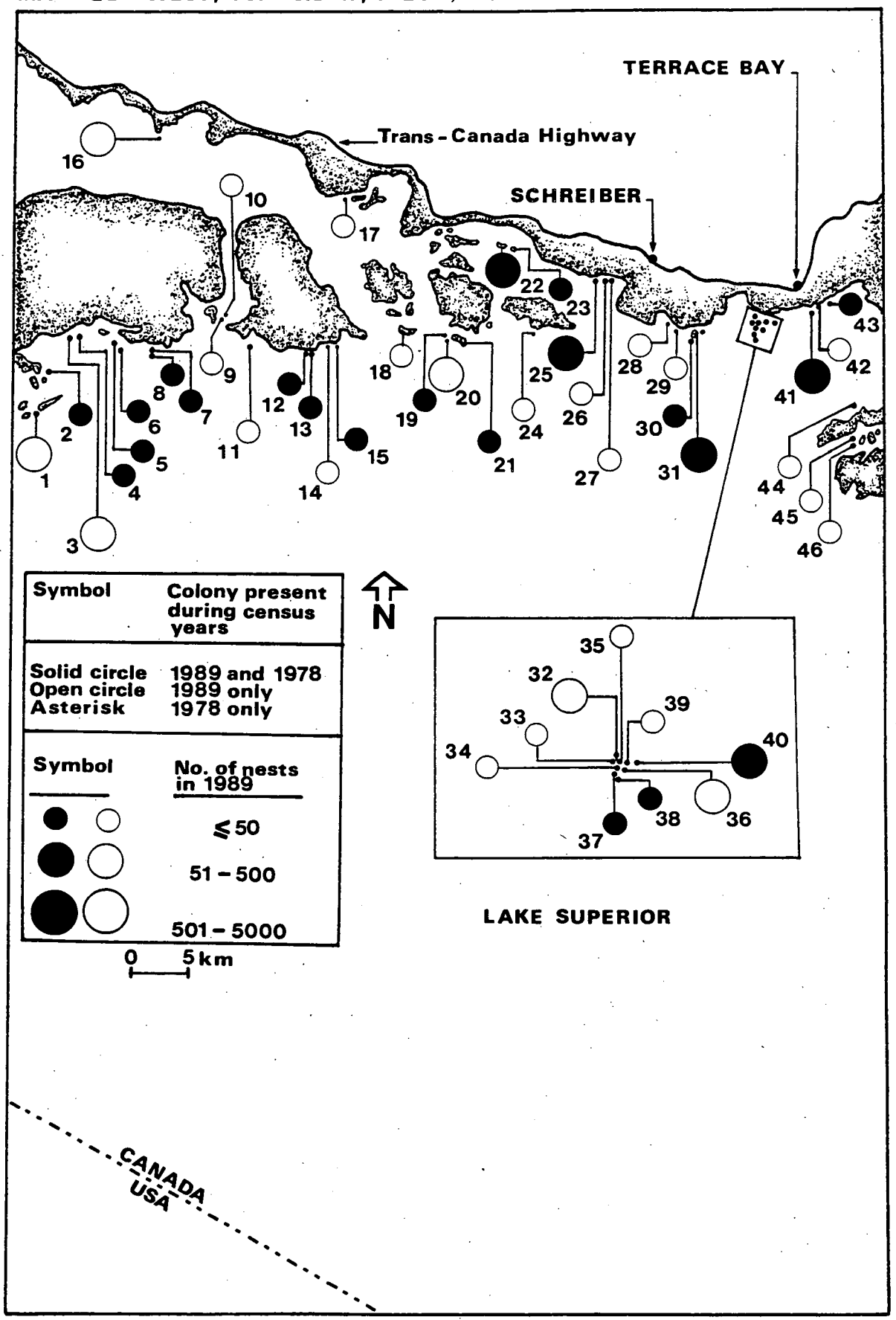

SPAR ISLAND
70
Section from 1:50,000 map 52A/9
SHESHEEB BAY
0
1 km


PUFF ISLAND
73
74
71
72
Section from 1: 50,000 map 52A/9
SHESHEEB BAY
0
1 km


76
77
78
FLUOR ISLAND
Section from 1: 50,000 map 52A/9
SHESHEEB BAY
0
1 km

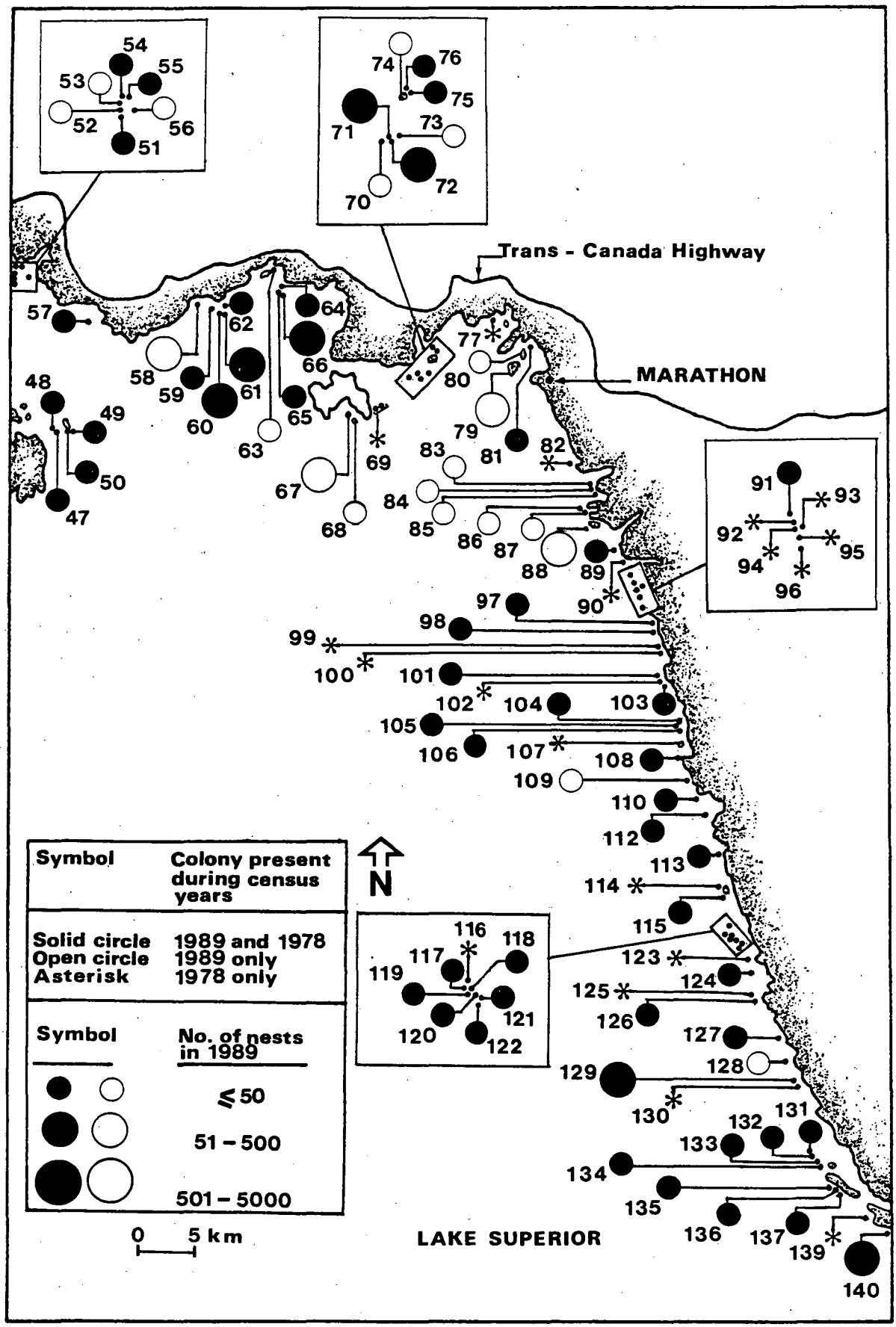

79
80
COOPER POINT
Section from 1: 50,000 map 52A/16
RED ROCK
0
1 km

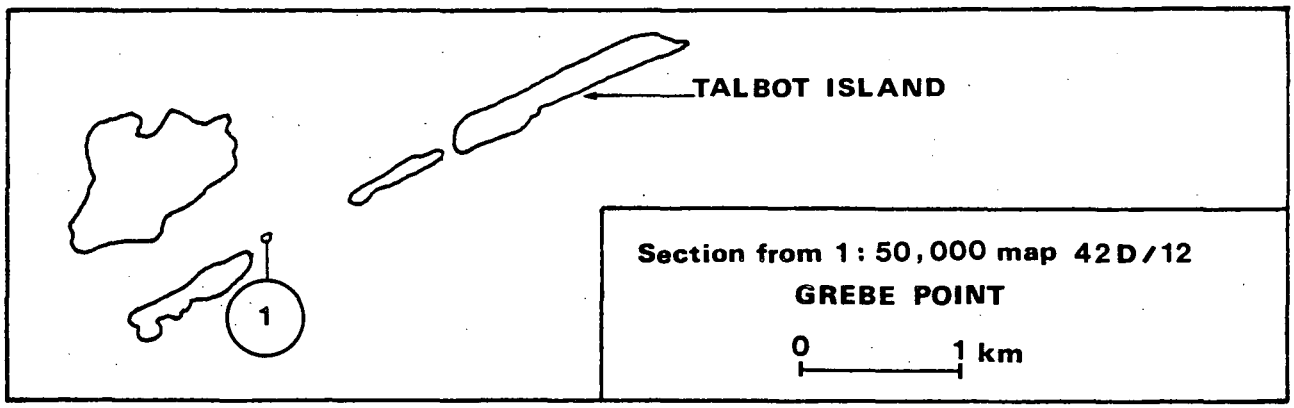
NOTE: This page was left blank intentionally.

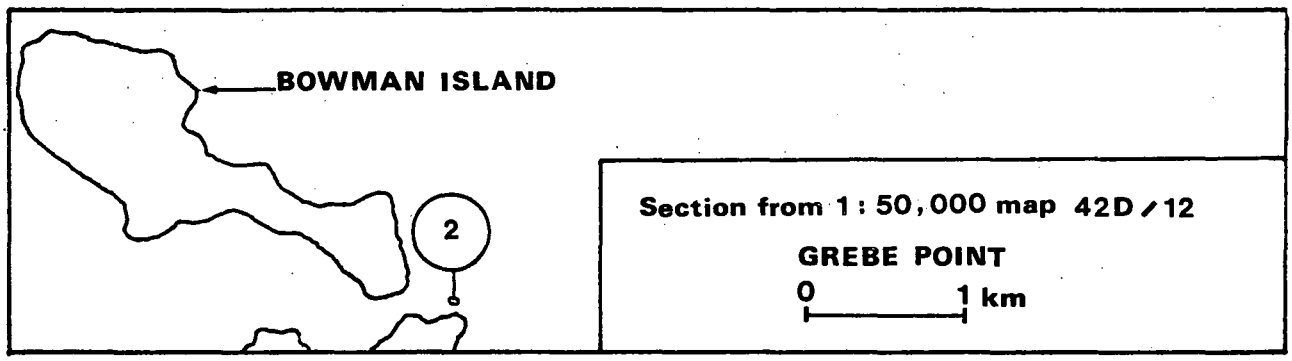


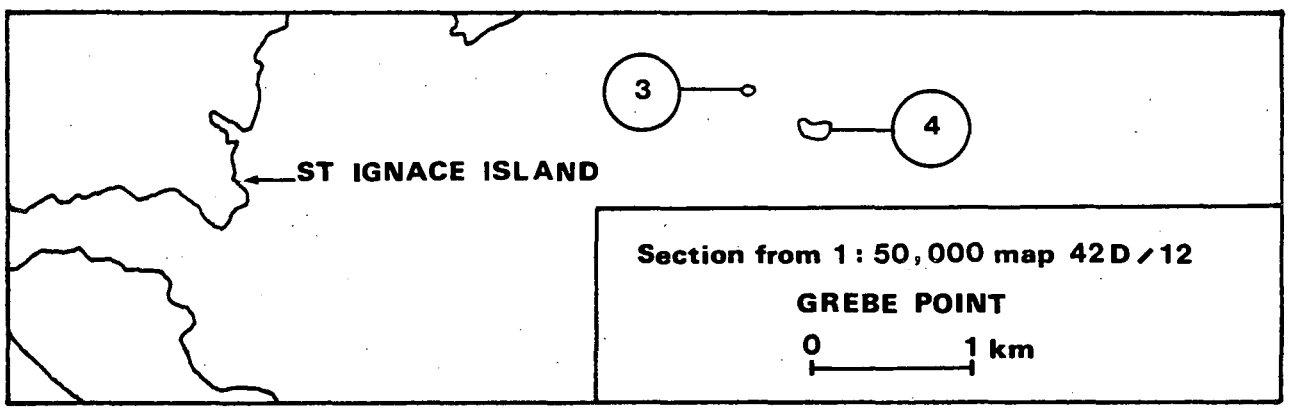
Appendix 10. Locations of colony sites in Canadian Lake Superior. See App. 8 for explanation of Appendices 9-13.

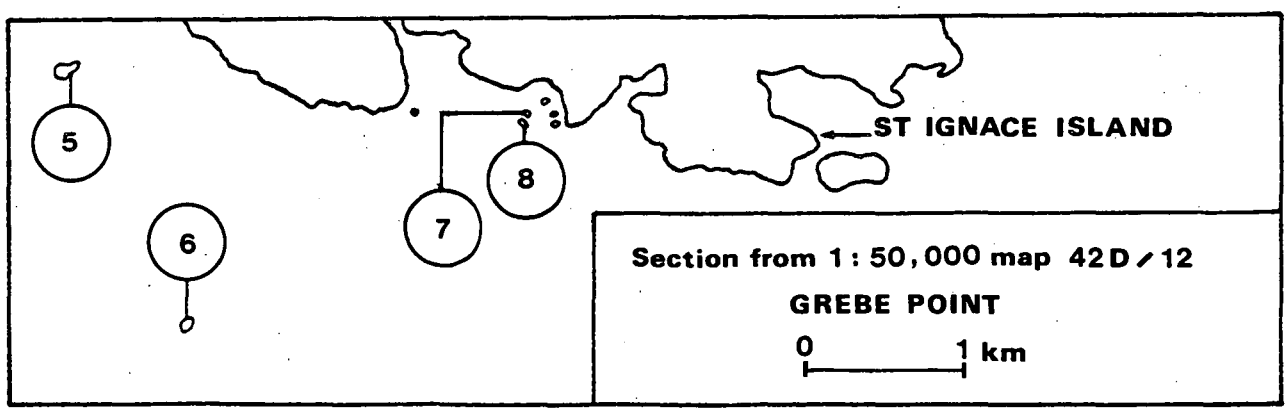
MAP 42 D - EAST, SCHREIBER, 1:250,000



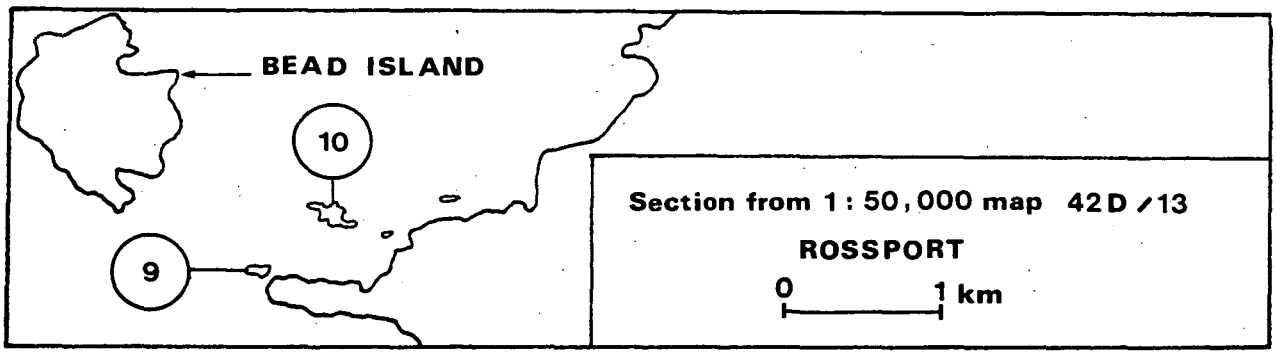

TALBOT ISLAND
1
Section from 1 : 50,000 map 42D/12
GREBE POINT
0
1 km

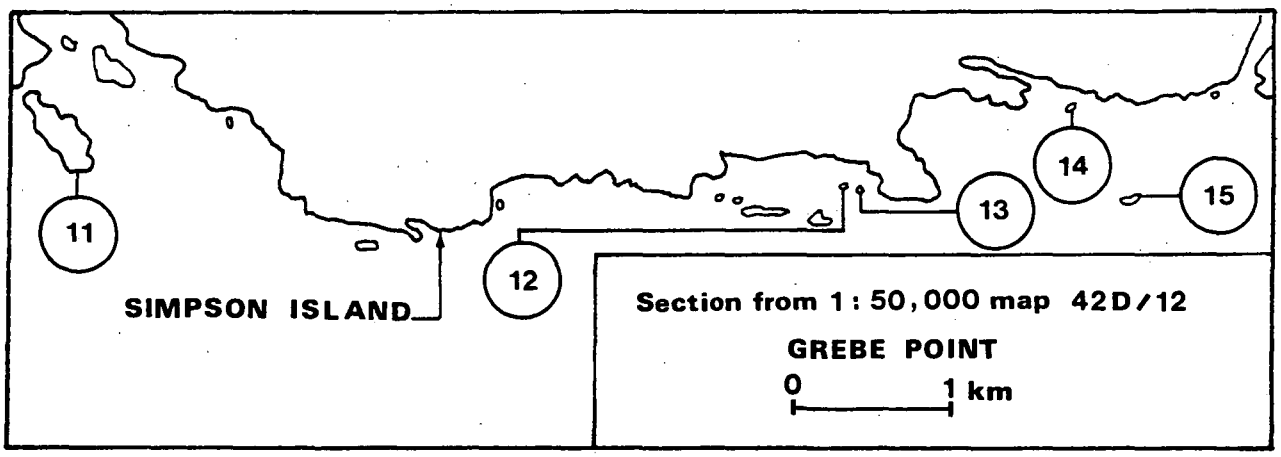

BOWMAN ISLAND
2
Section from 1 : 50,000 map 42D/12
GREBE POINT
0
1 km

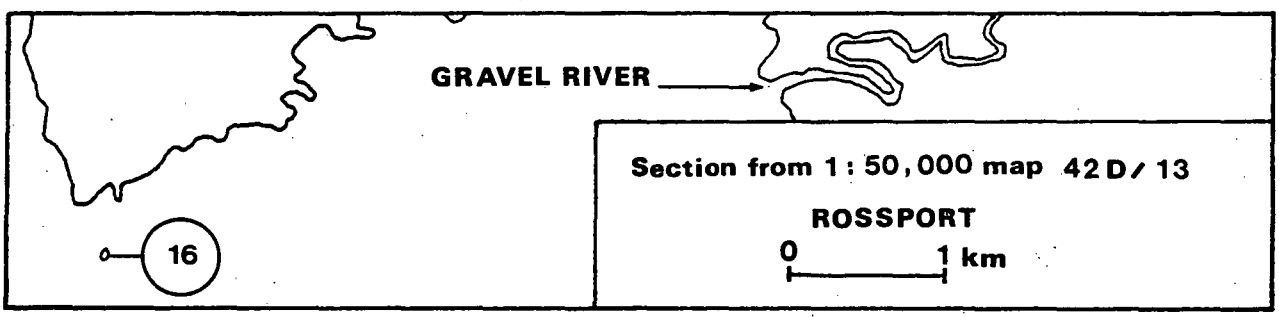

3
4
ST IGNACE ISLAND
Section from 1 : 50,000 map 42D/12
GREBE POINT
0
1 km

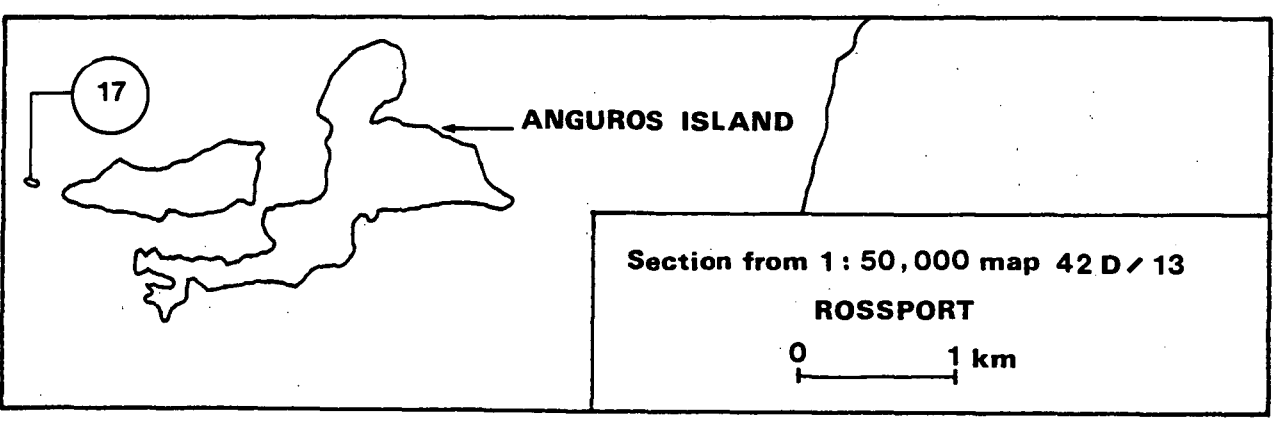

5
6
7
8
ST IGNACE ISLAND
Section from 1 : 50,000 map 42D/12
GREBE POINT
0
1 km

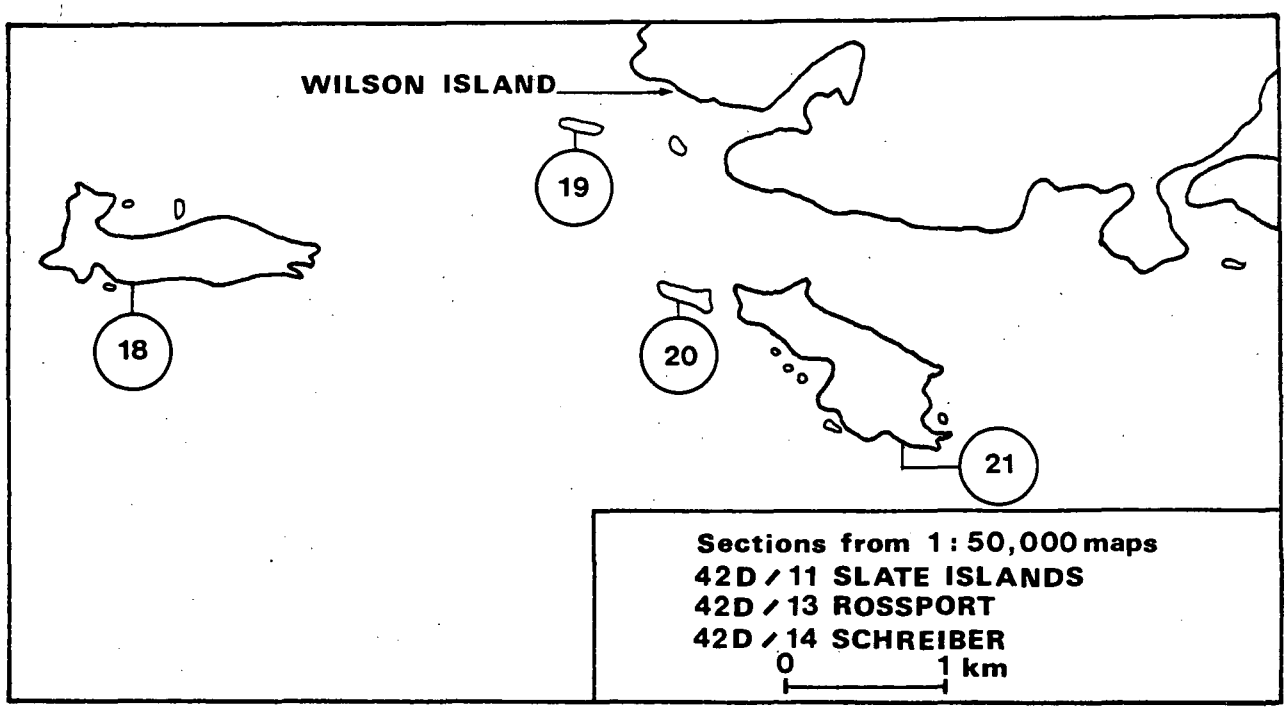
App. 10 (cont'd).

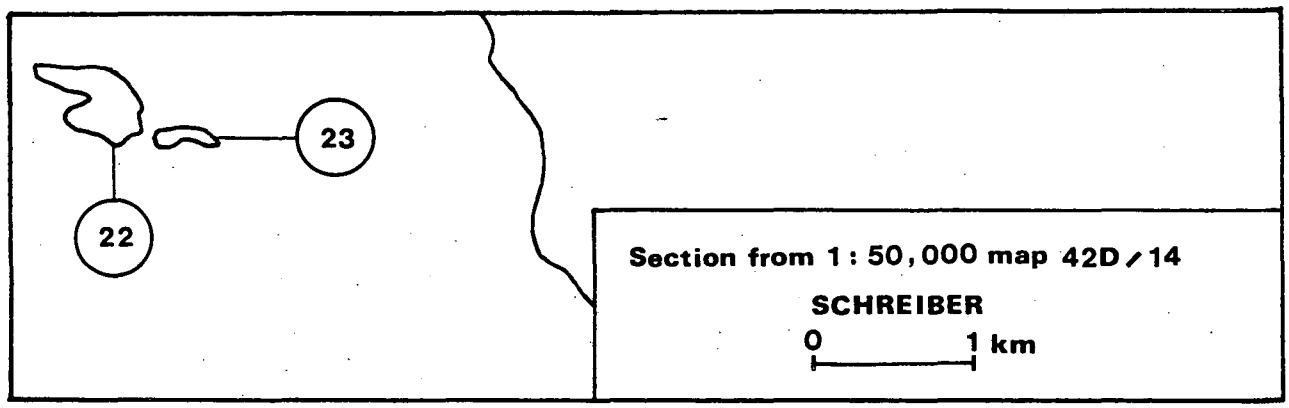

BEAD ISLAND
10
9
Section from 1 : 50,000 map 42D/13
ROSSPORT
0
1 km

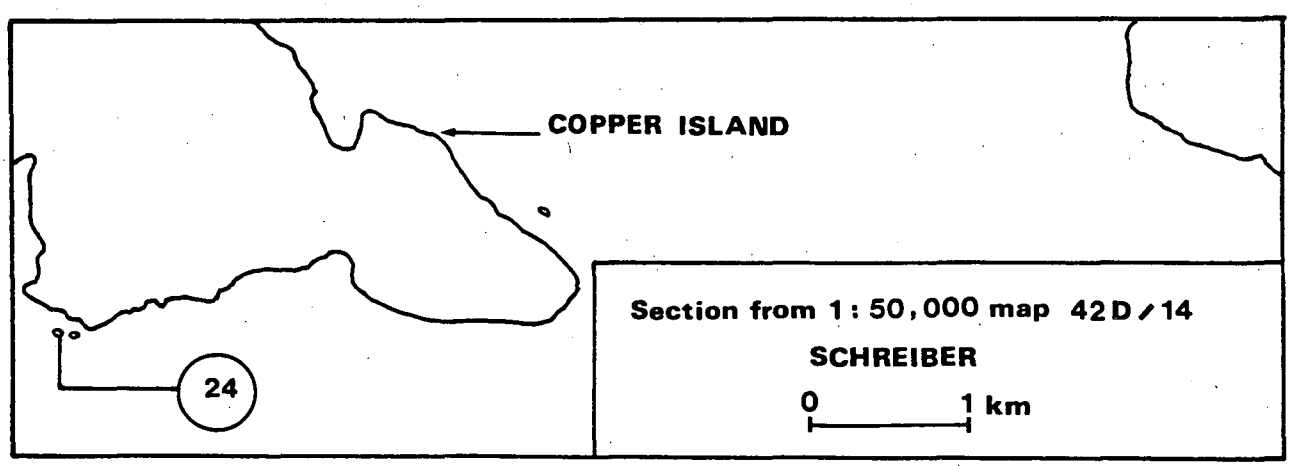

11
SIMPSON ISLAND
12
13
14
15
Section from 1 : 50,000 map 42D/12
GREBE POINT
0
1 km

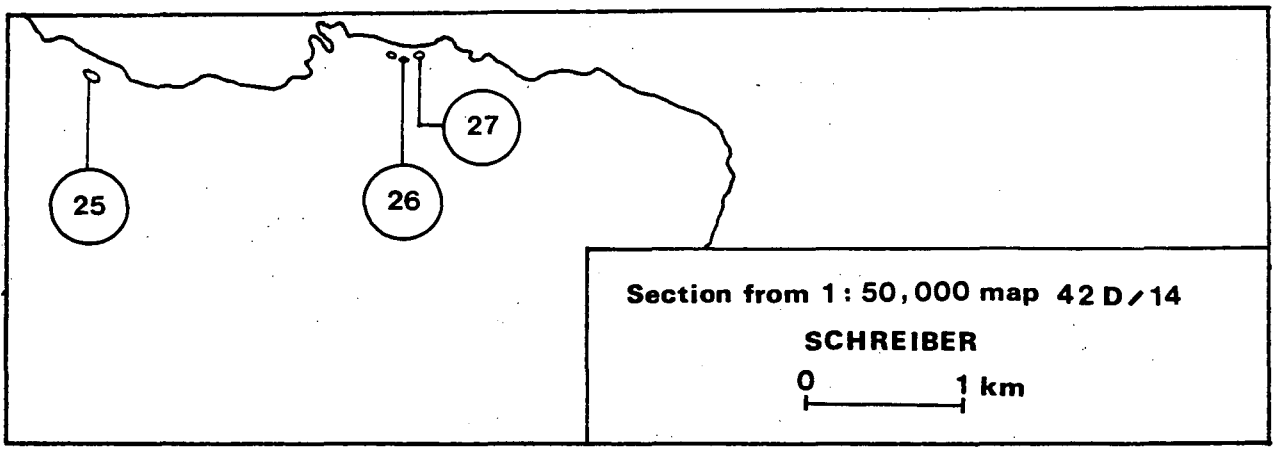

GRAVEL RIVER
16
Section from 1 : 50,000 map 42D/13
ROSSPORT
0
1 km

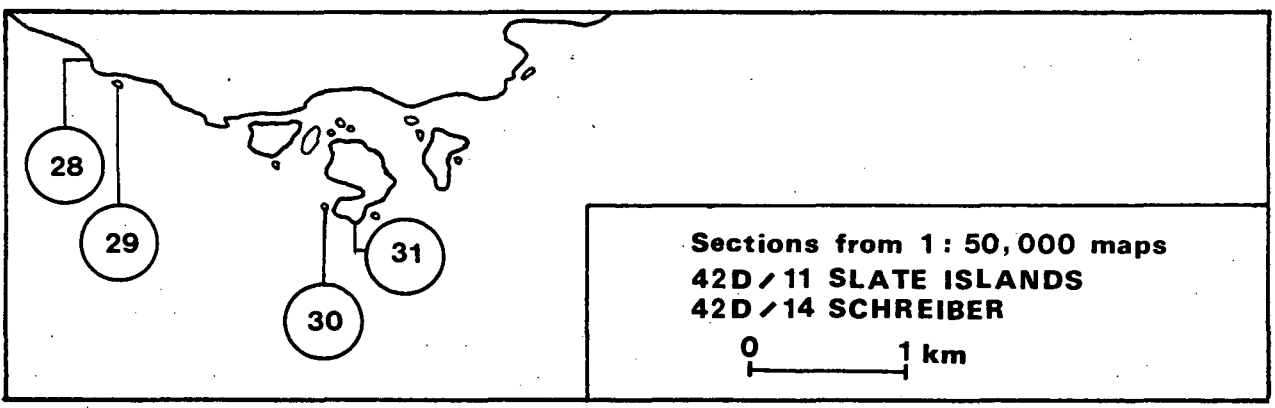

17
ANGUROS ISLAND
Section from 1 : 50,000 map 42D/13
ROSSPORT
0
1 km

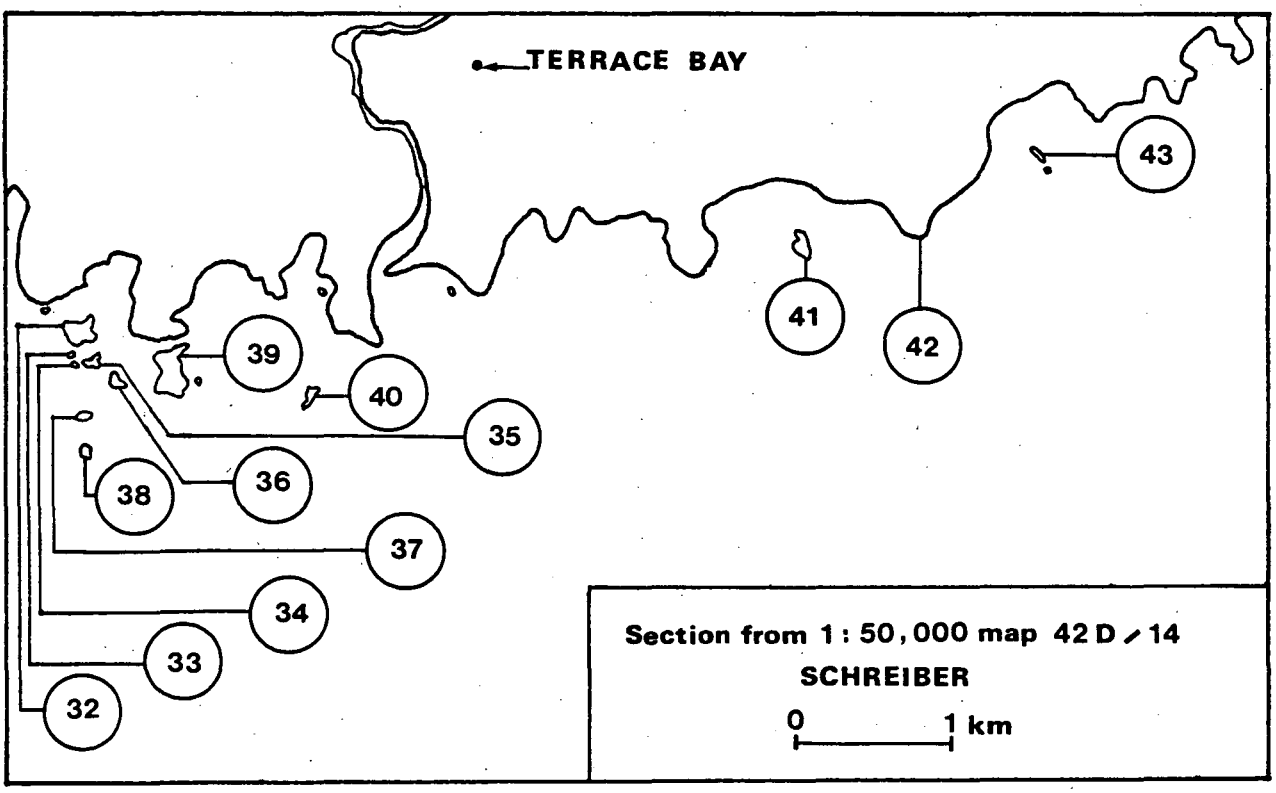

WILSON ISLAND
19
18
20
21
Sections from 1 : 50,000 maps
42D / 11 SLATE ISLANDS
42D / 13 ROSSPORT
42D / 14 SCHREIBER
0
1 km

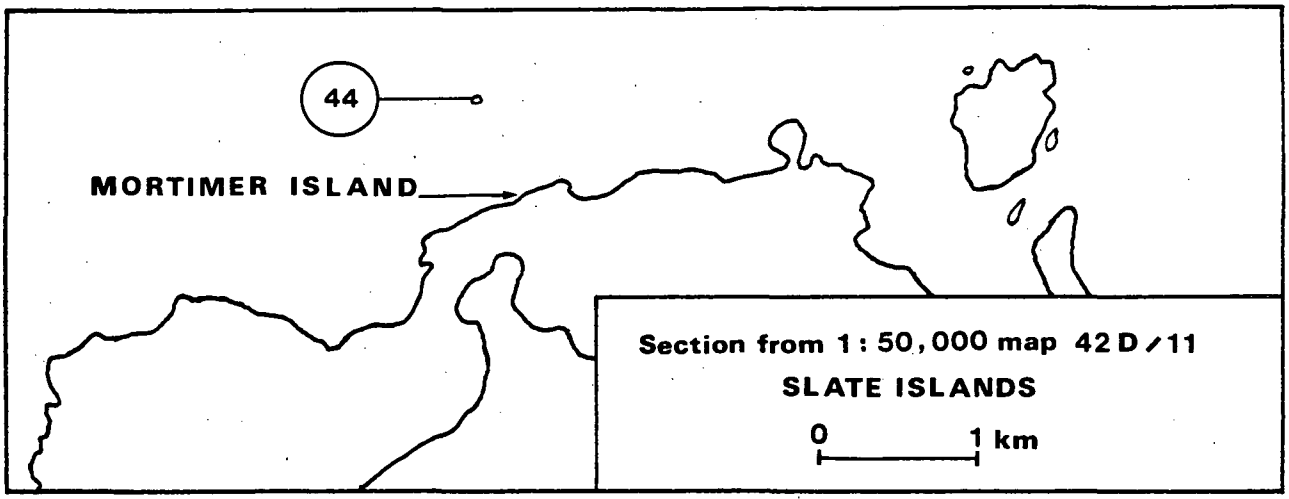

23
22
Section from 1 : 50,000 map 42D / 14
SCHREIBER
0
1 km

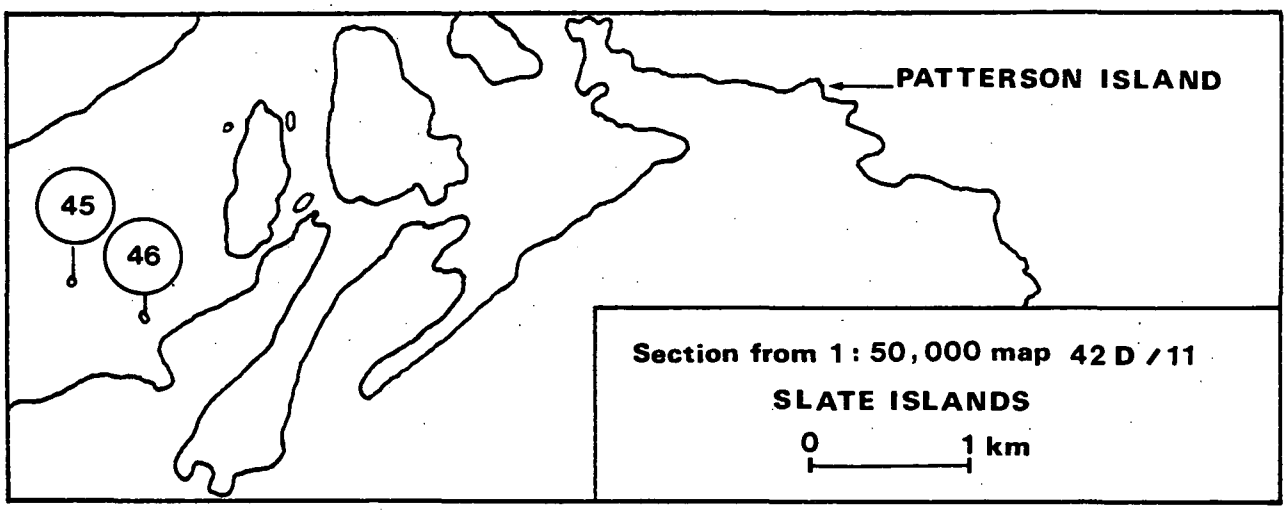

COPPER ISLAND
24
Section from 1 : 50,000 map 42D / 14
SCHREIBER
0
1 km

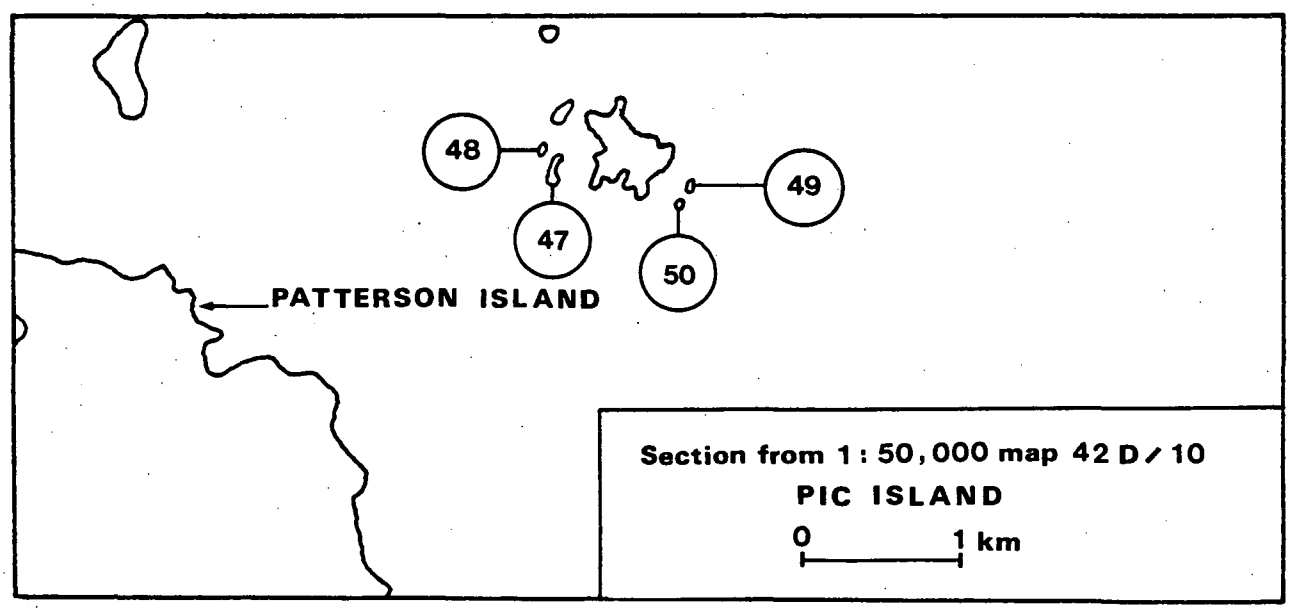

25
26
27
Section from 1 : 50,000 map 42 D / 14
SCHREIBER
0
1 km

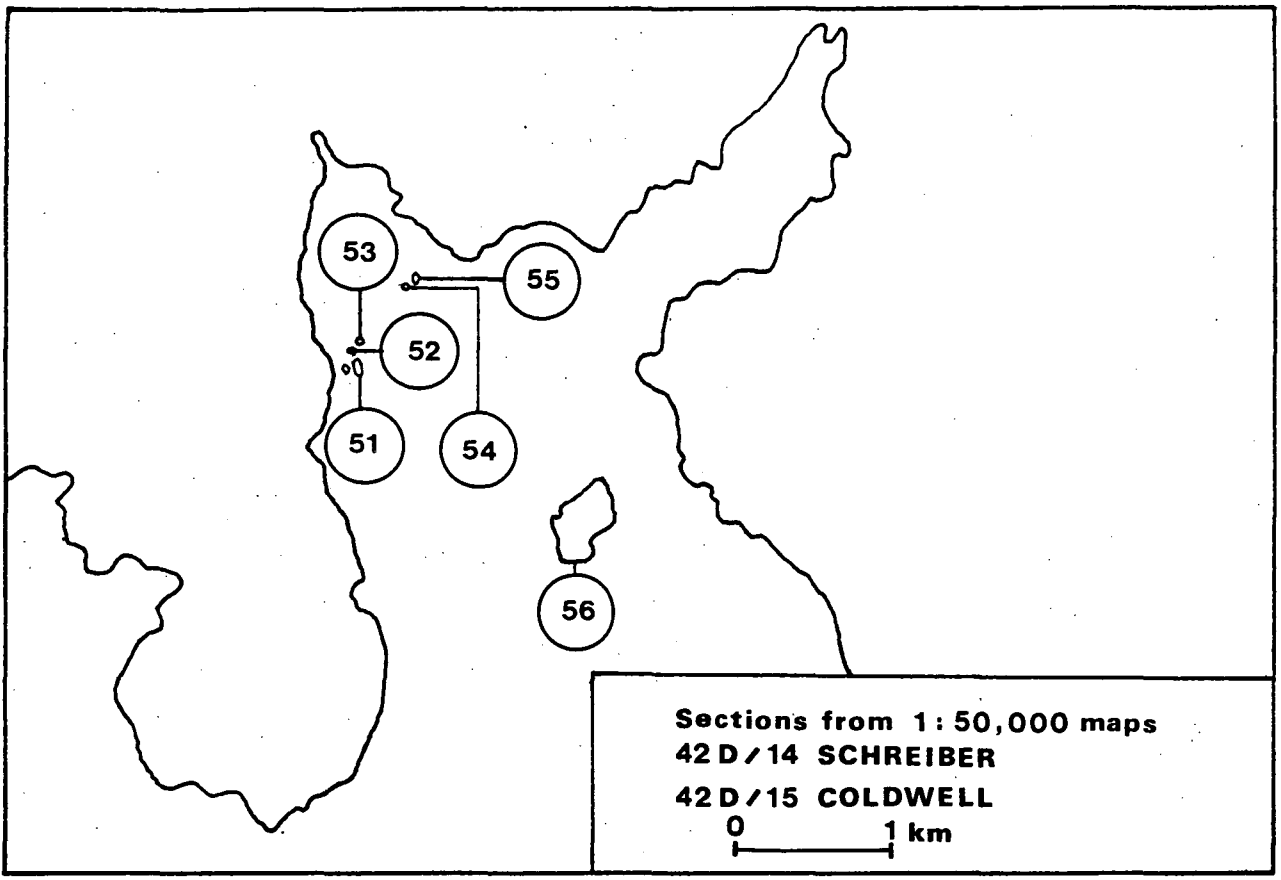

28
29
30
31
Sections from 1 : 50,000 maps
42D / 11 SLATE ISLANDS
42D / 14 SCHREIBER
0
1 km

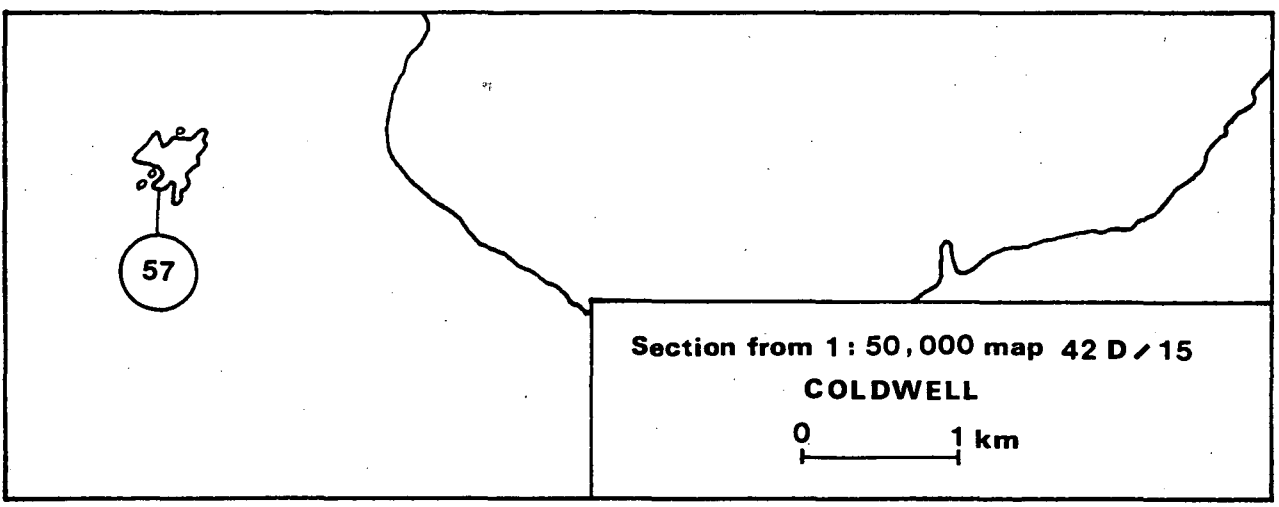

TERRACE BAY
32
33
34
35
36
37
38
39
40
41
42
43
Section from 1 : 50,000 map 42 D / 14
SCHREIBER
0
1 km

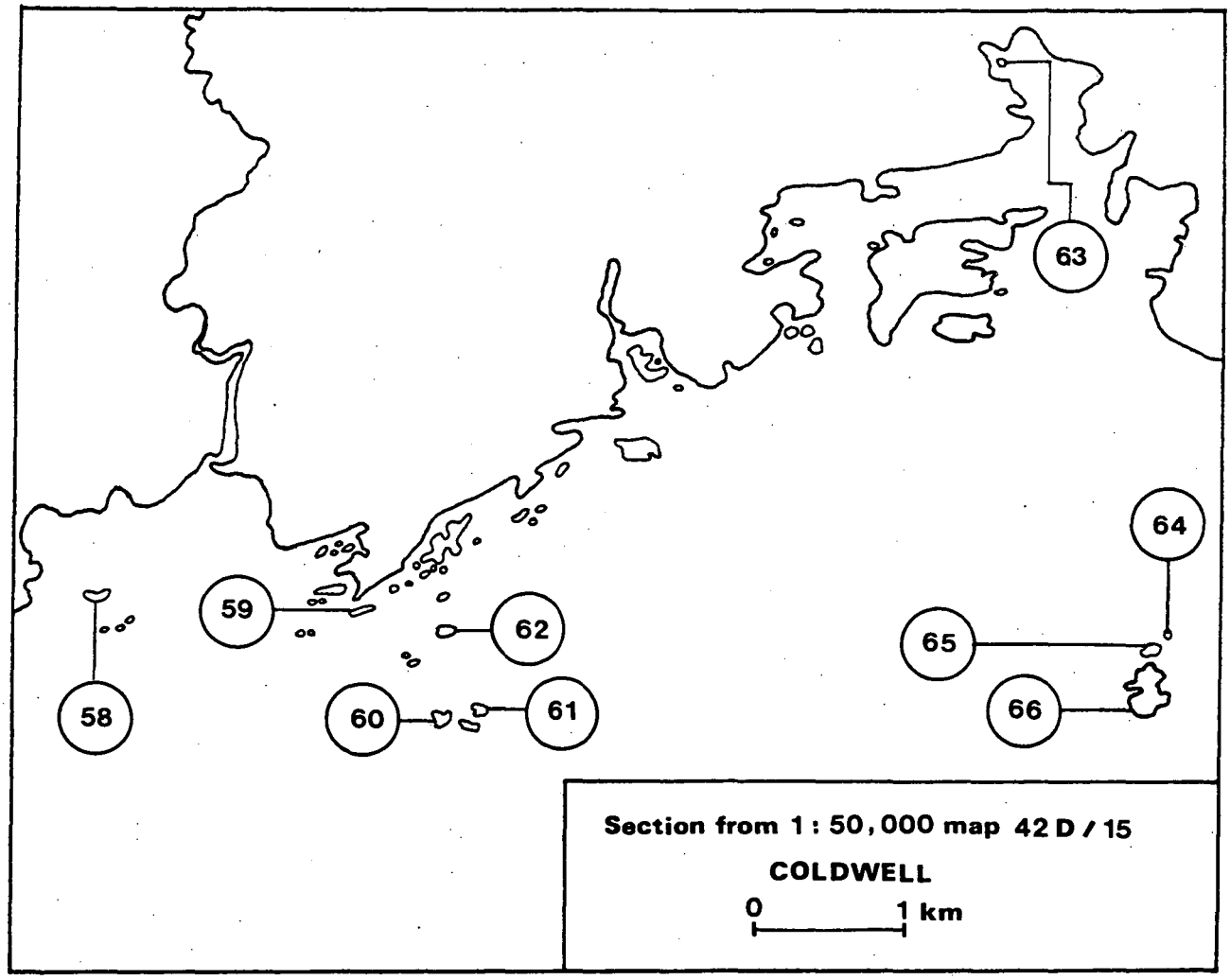

44
MORTIMER ISLAND
Section from 1 : 50,000 map 42 D / 11
SLATE ISLANDS
0
1 km

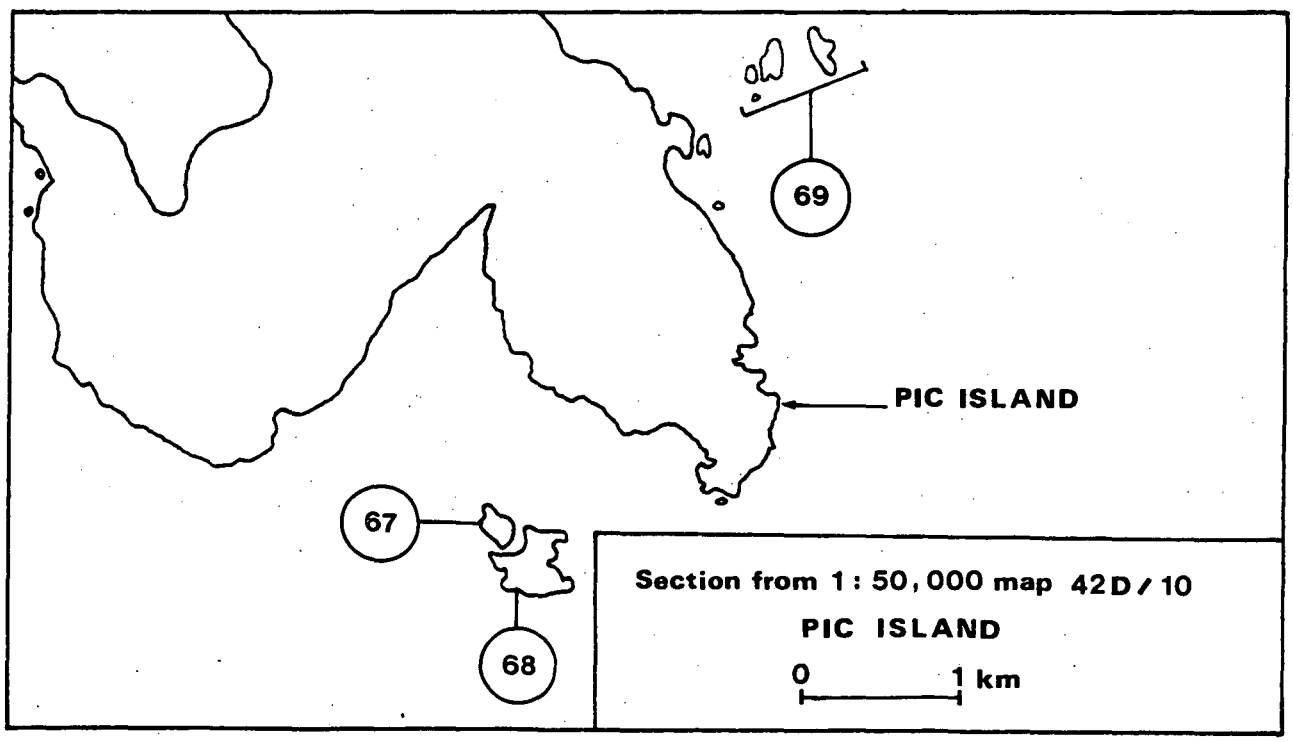

PATTERSON ISLAND
45
46
Section from 1 : 50,000 map 42 D / 11
SLATE ISLANDS
0
1 km

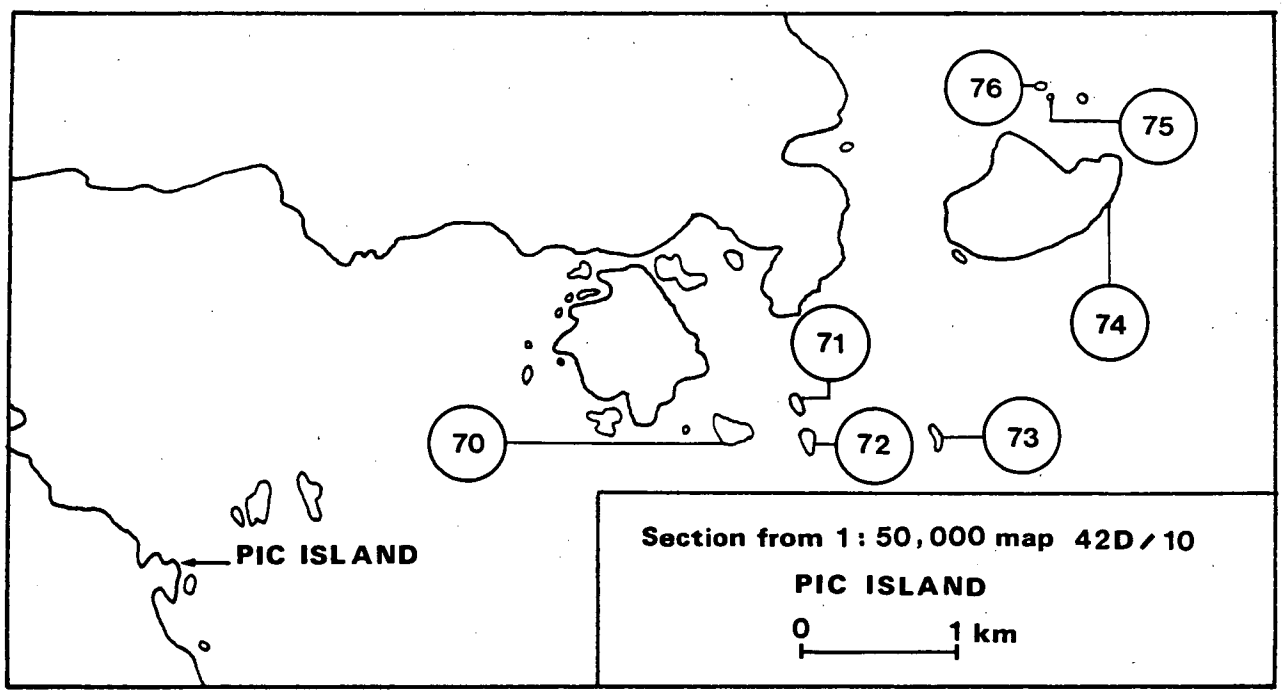

48
49
47
50
PATTERSON ISLAND
Section from 1 : 50,000 map 42 D / 10
PIC ISLAND
0
1 km

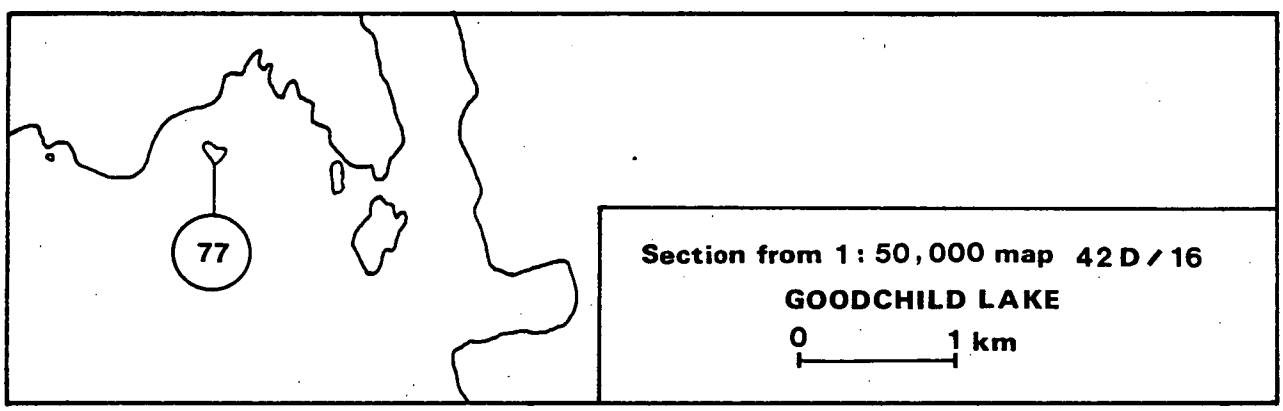

53
55
52
51
54
56
Sections from 1 : 50,000 maps
42 D / 14 SCHREIBER
42 D / 15 COLDWELL
0
1 km

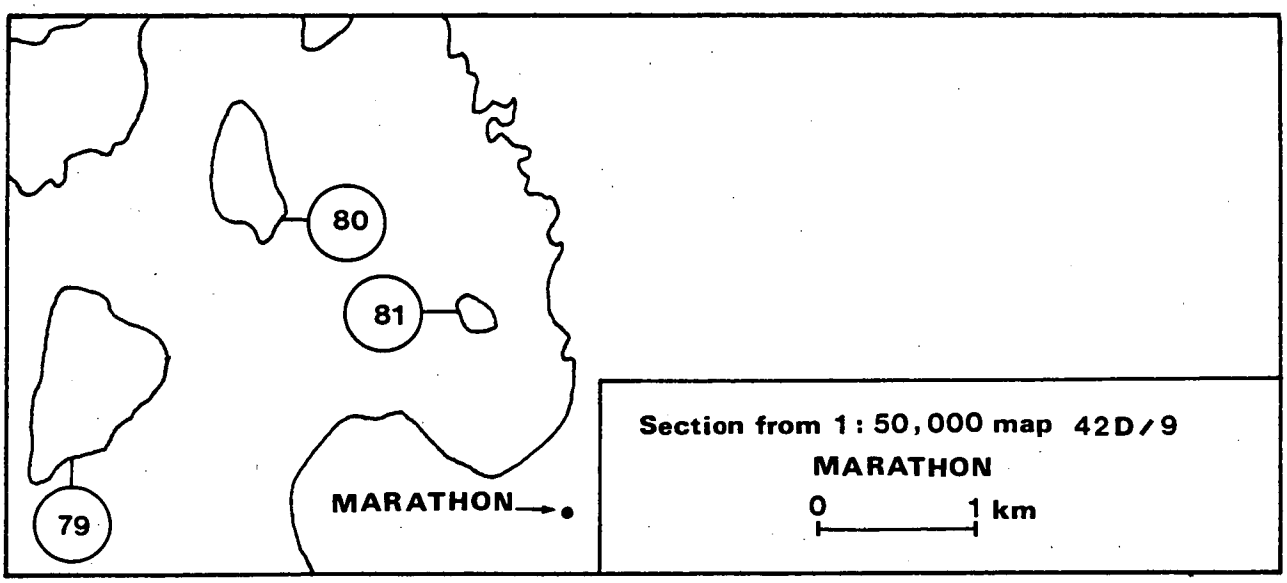

57
Section from 1 : 50,000 map 42 D / 15
COLDWELL
0
1 km

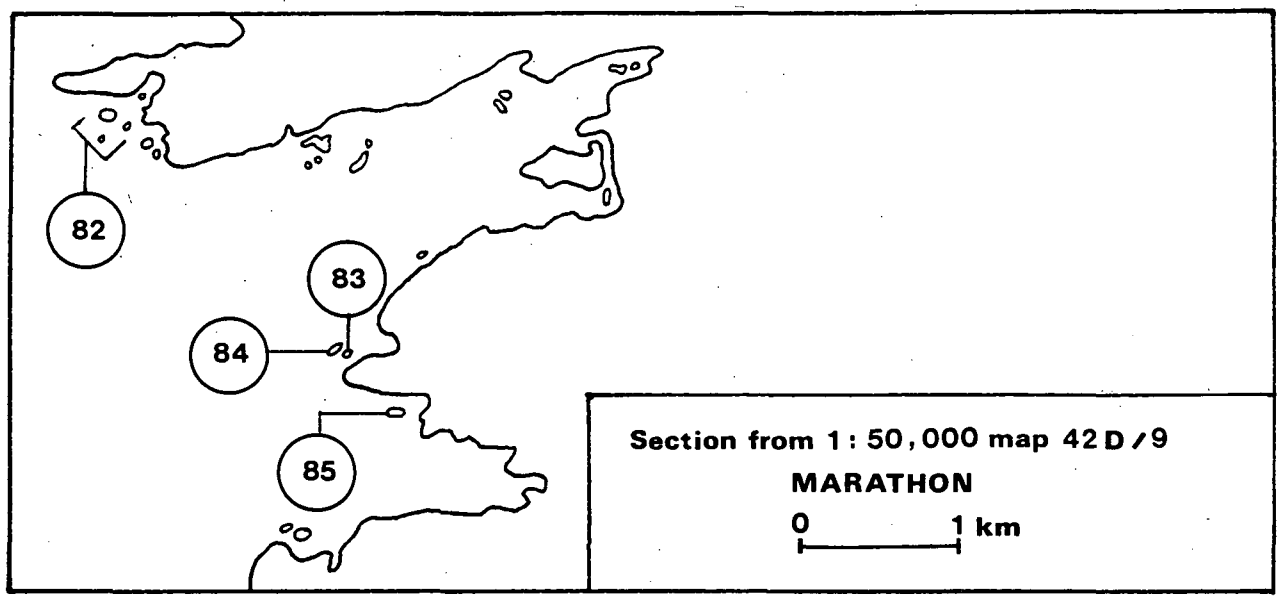

63
64
59
62
65
58
60
61
66
Section from 1 : 50,000 map 42 D / 15
COLDWELL
0
1 km

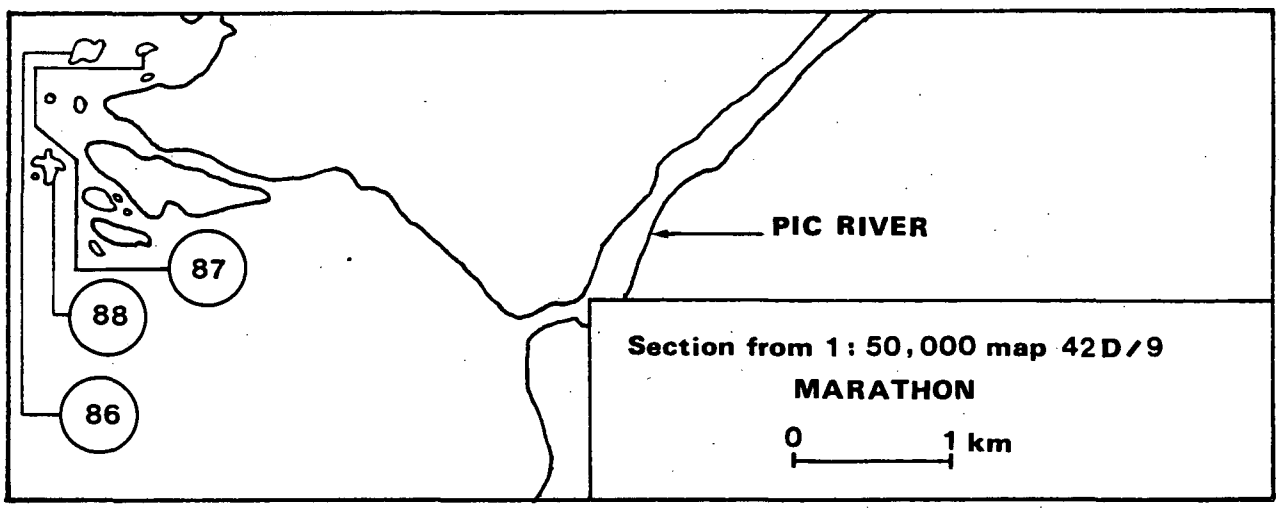

69
PIC ISLAND
67
68
Section from 1 : 50,000 map 42 D / 10
PIC ISLAND
0
1 km

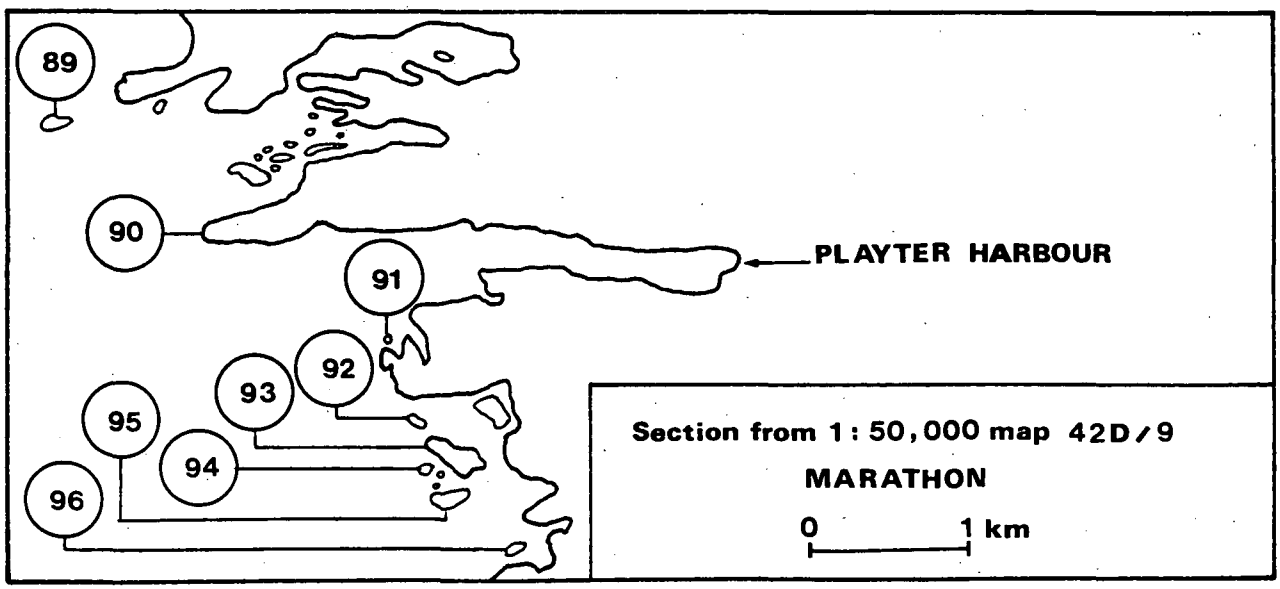

76
75
74
71
70
72
73
PIC ISLAND
Section from 1 : 50,000 map 42D / 10
PIC ISLAND
0
1 km

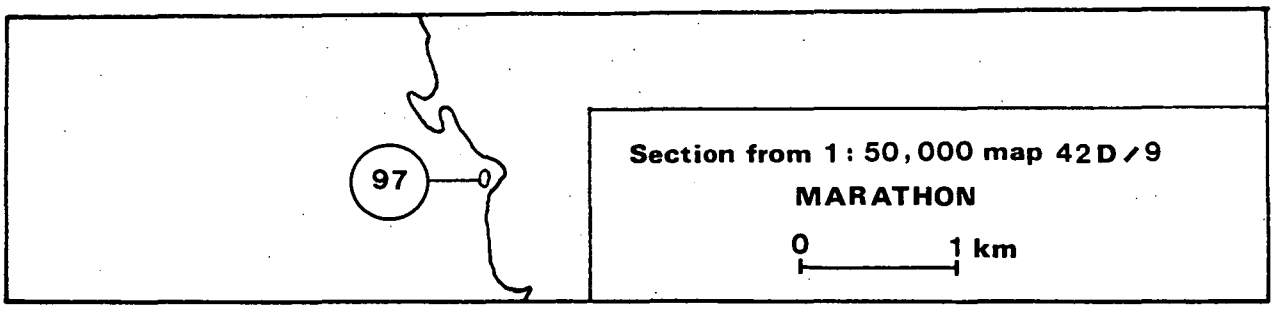

77
Section from 1 : 50,000 map 42D / 16
GOODCHILD LAKE
0
1 km

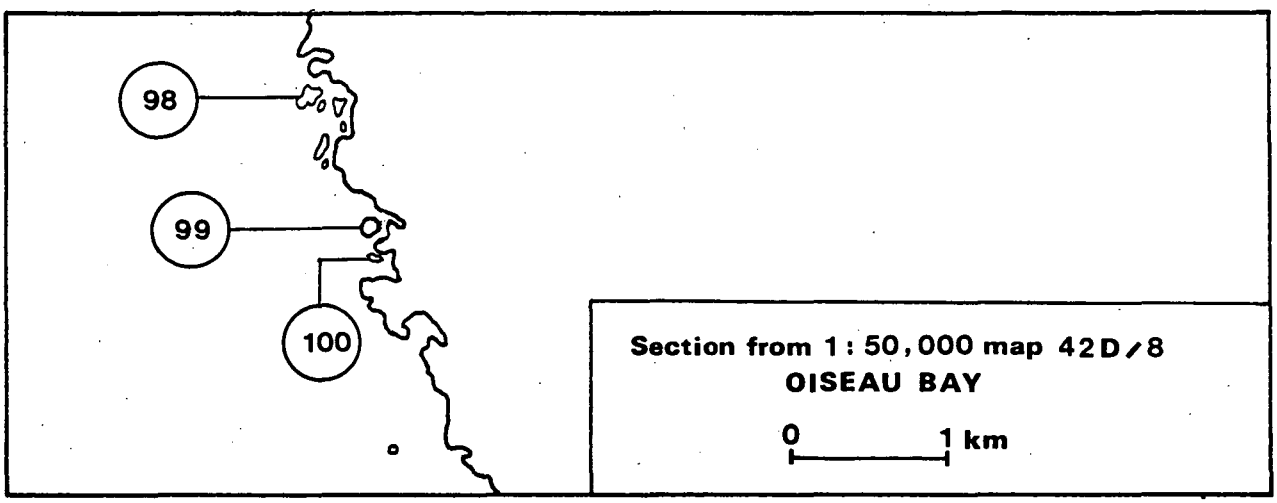

80
81
79
MARATHON
Section from 1 : 50,000 map 42D / 9
MARATHON
0
1 km

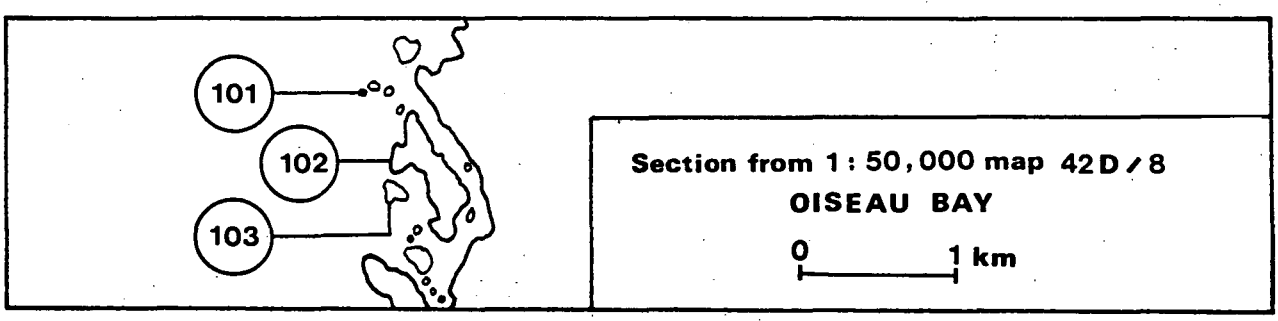

82
83
84
85
Section from 1 : 50,000 map 42 D / 9
MARATHON
0
1 km

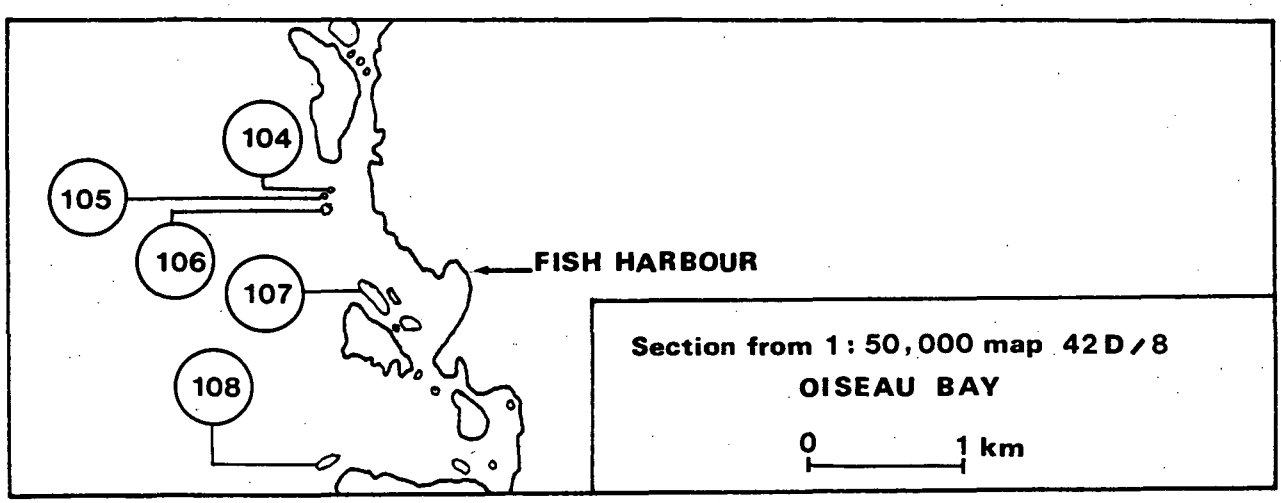

PIC RIVER
87
88
86
Section from 1 : 50,000 map 42 D / 9
MARATHON
0
1 km

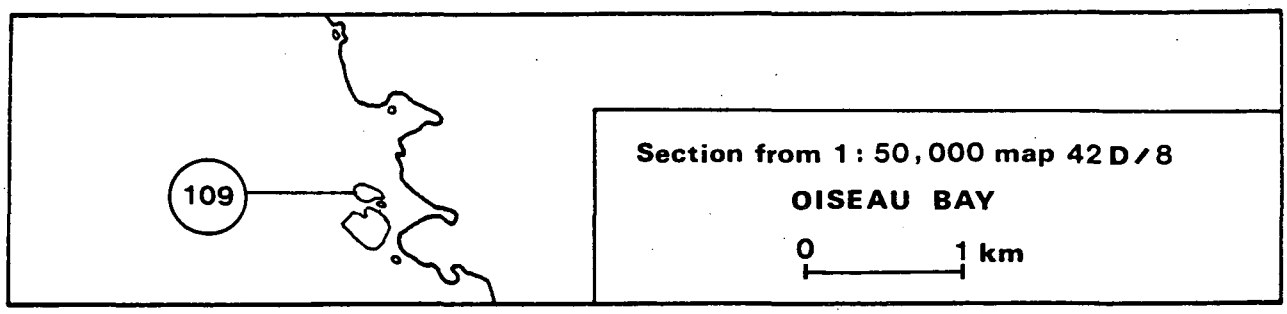

89
90
91
92
93
95
94
96
PLAYTER HARBOUR
Section from 1 : 50,000 map 42 D / 9
MARATHON
0
1 km

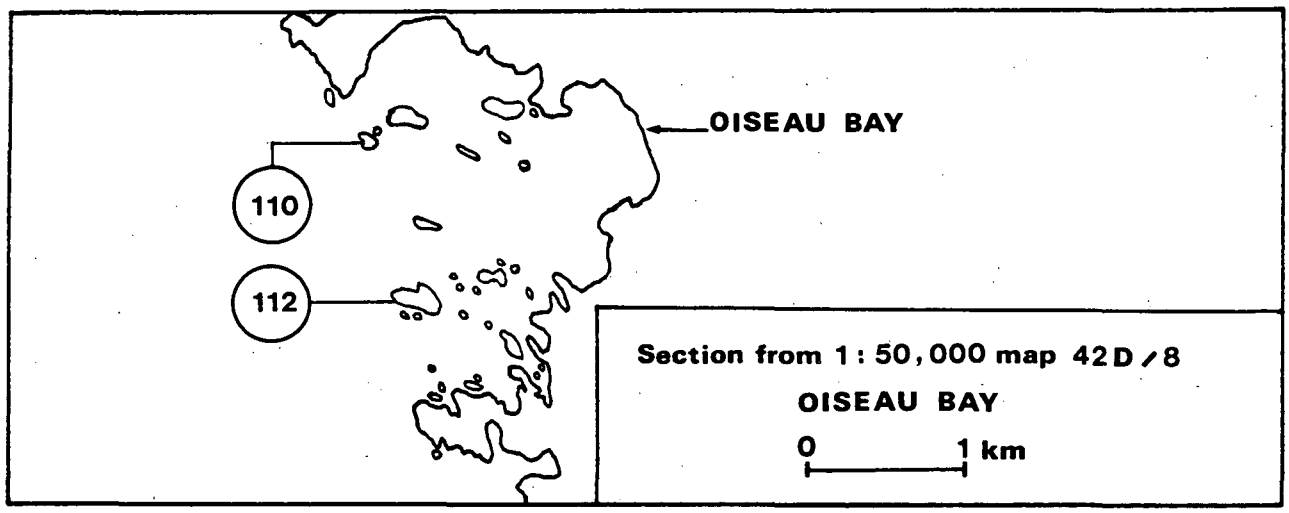

97
Section from 1 : 50,000 map 42D/9
MARATHON
0
1 km

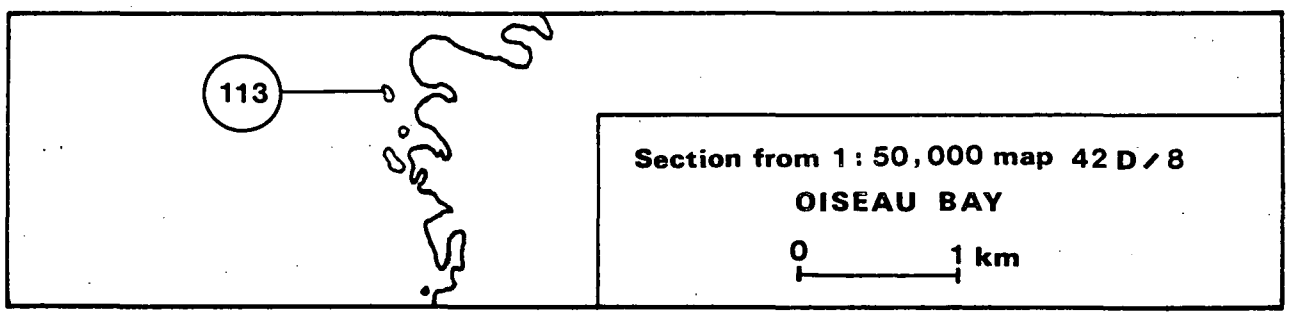

98
99
100
Section from 1 : 50,000 map 42D/8
OISEAU BAY
0
1 km

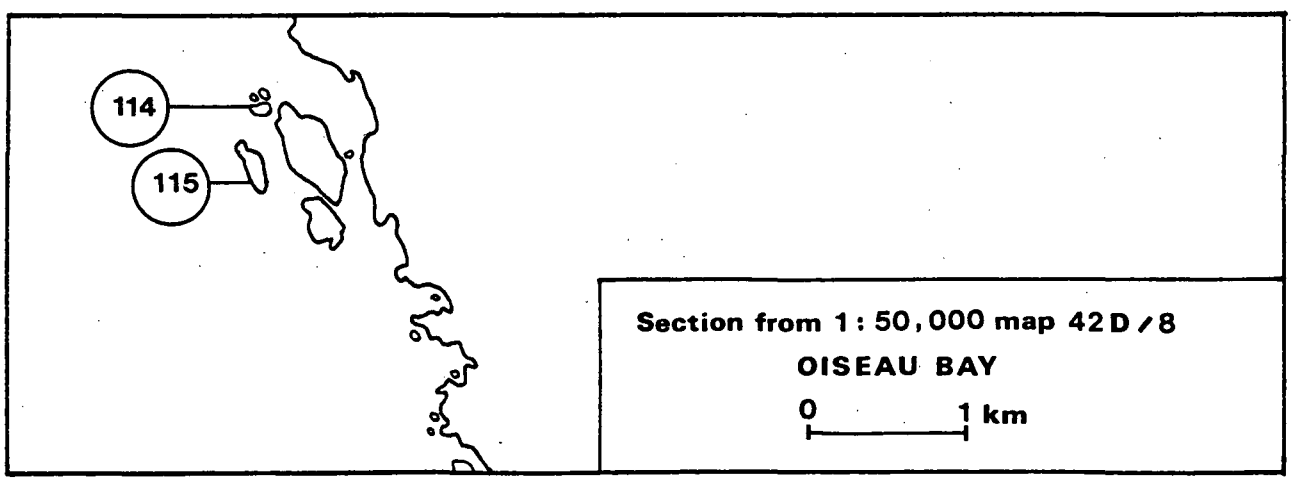

101
102
103
Section from 1 : 50,000 map 42D/8
OISEAU BAY
0
1 km

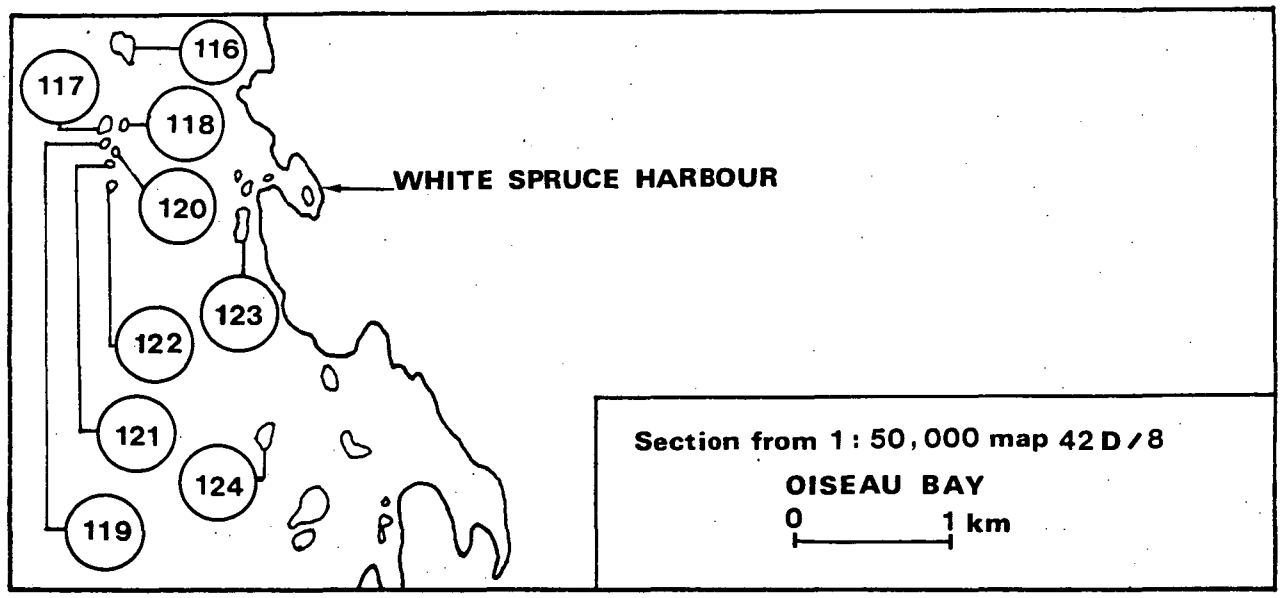

104
105
106
107
108
FISH HARBOUR
Section from 1 : 50,000 map 42D/8
OISEAU BAY
0
1 km

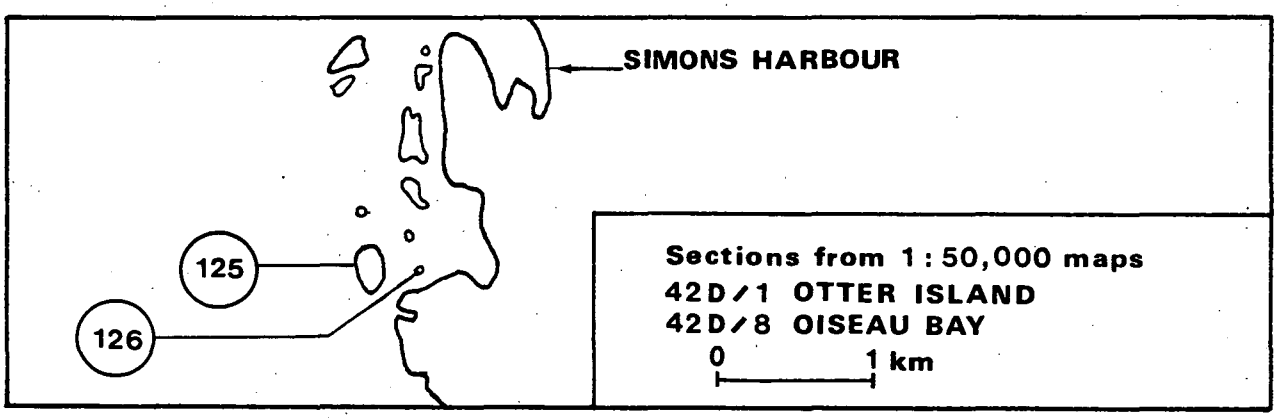

109
Section from 1 : 50,000 map 42 D / 8
OISEAU BAY
0
1 km

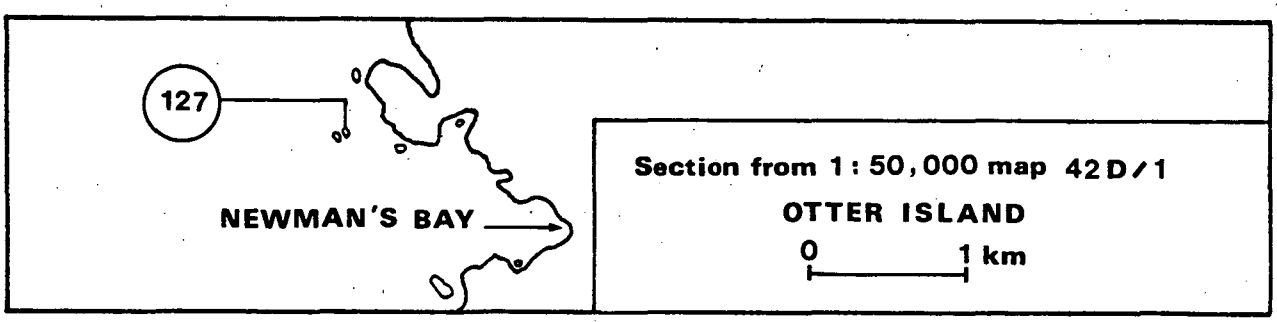

OISEAU BAY
110
112
Section from 1 : 50,000 map 42 D / 8
OISEAU BAY
0
1 km

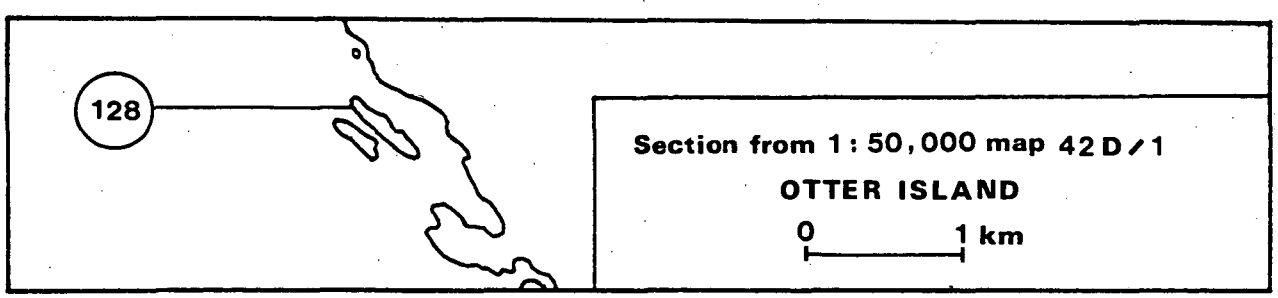

113
Section from 1 : 50,000 map 42 D / 8
OISEAU BAY
0
1 km

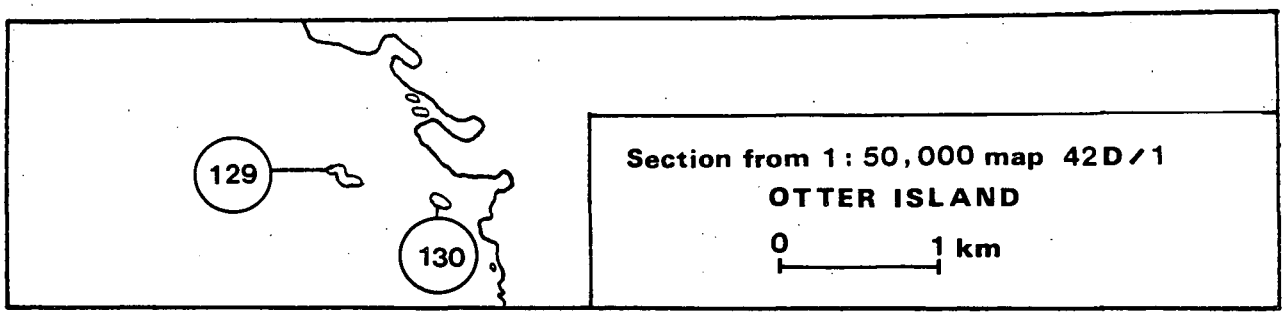

114
115
Section from 1 : 50,000 map 42 D / 8
OISEAU BAY
0
1 km

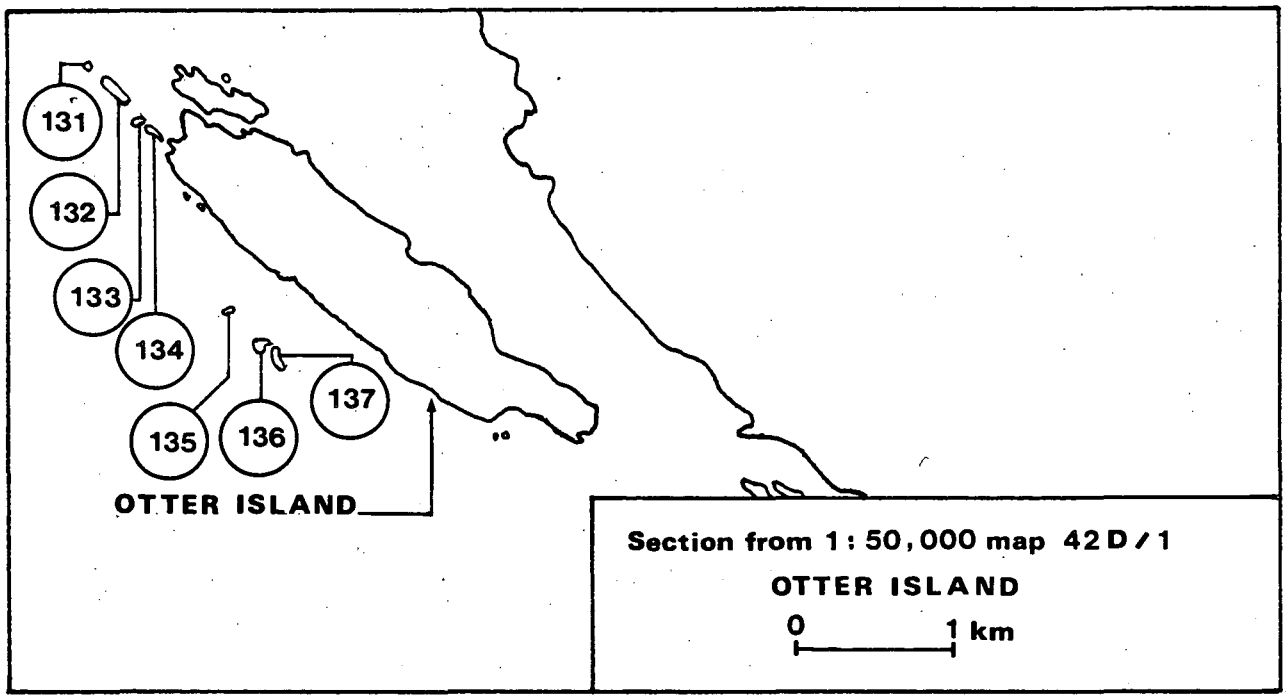

116
117
118
120
WHITE SPRUCE HARBOUR
123
122
121
124
119
Section from 1 : 50,000 map 42 D / 8
OISEAU BAY
0
1 km

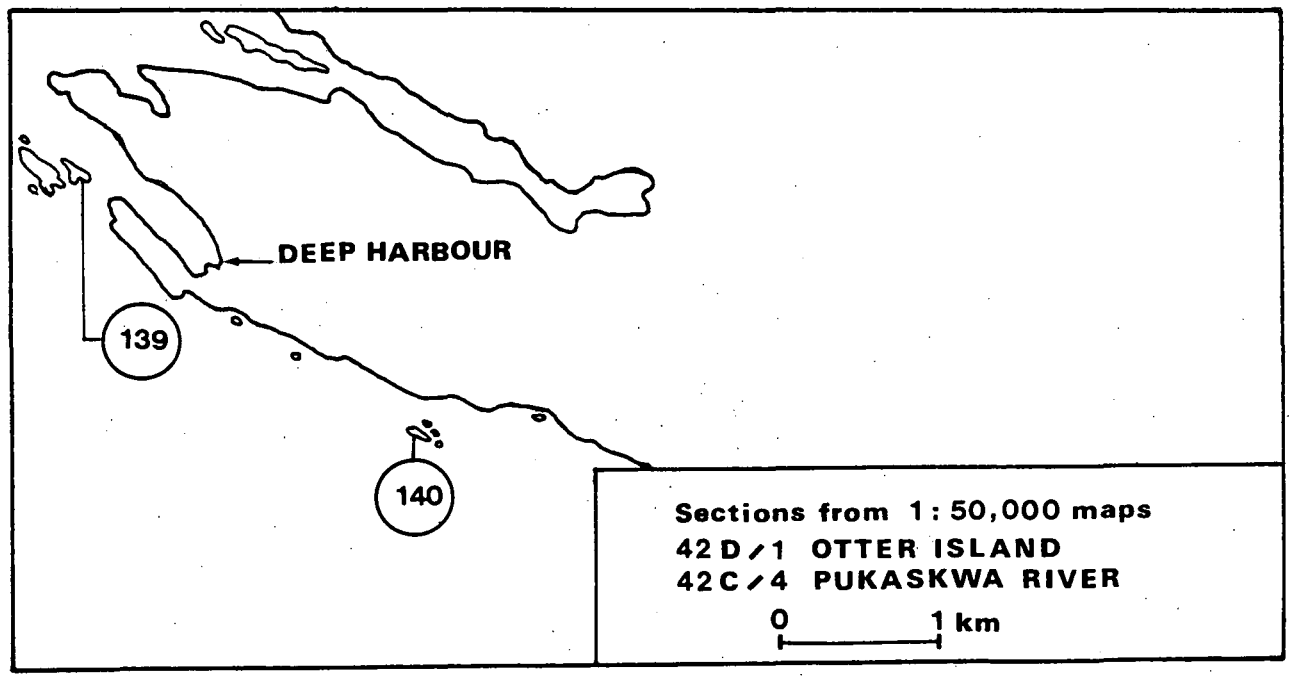

SIMONS HARBOUR
125
126
Sections from 1 : 50,000 maps
42 D / 1 OTTER ISLAND
42 D / 8 OISEAU BAY
0
1 km


127
NEWMAN'S BAY
Section from 1 : 50,000 map 42 D / 1
OTTER ISLAND
0
1 km


128
Section from 1 : 50,000 map 42 D / 1
OTTER ISLAND
0
1 km


129
130
Section from 1 : 50,000 map 42D/1
OTTER ISLAND
0
1 km


131
132
133
134
135
136
137
OTTER ISLAND
Section from 1 : 50,000 map 42D/1
OTTER ISLAND
0
1 km


DEEP HARBOUR
139
140
Sections from 1 : 50,000 maps
42D/1 OTTER ISLAND
42C/4 PUKASKWA RIVER
0
1 km

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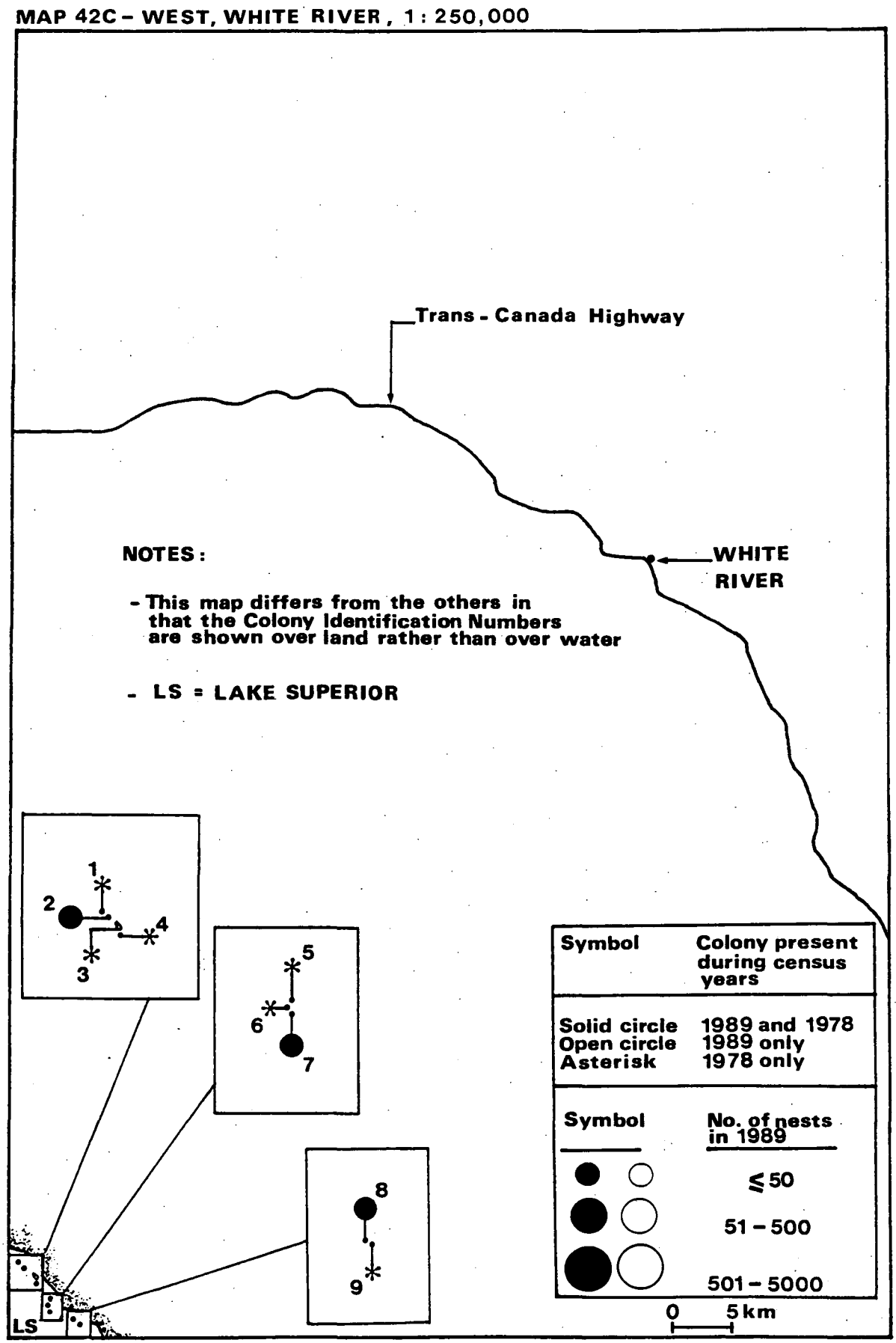
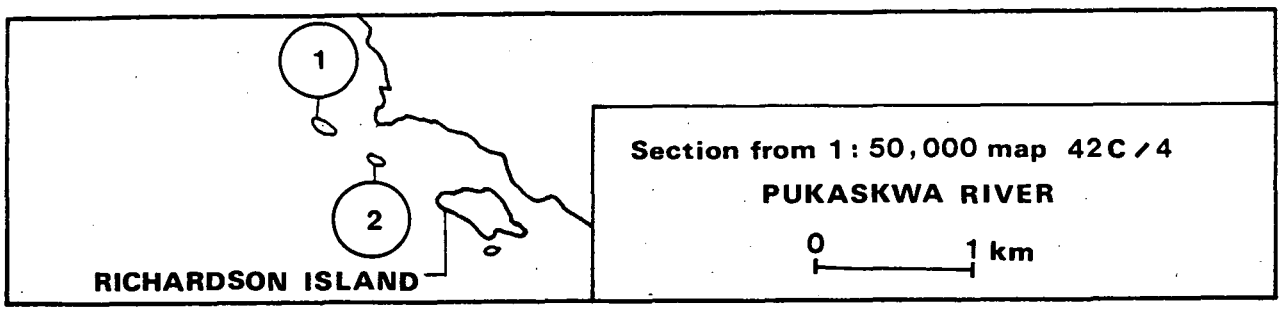
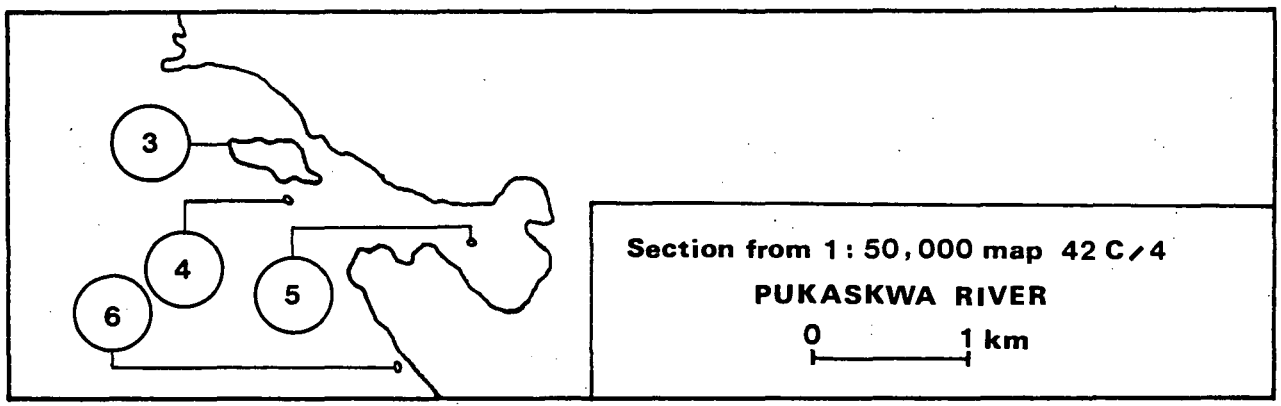
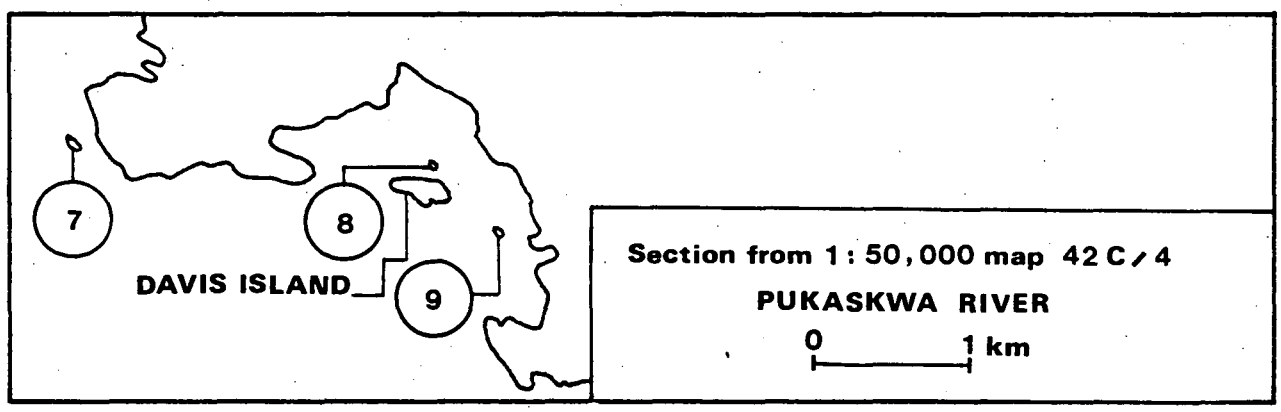
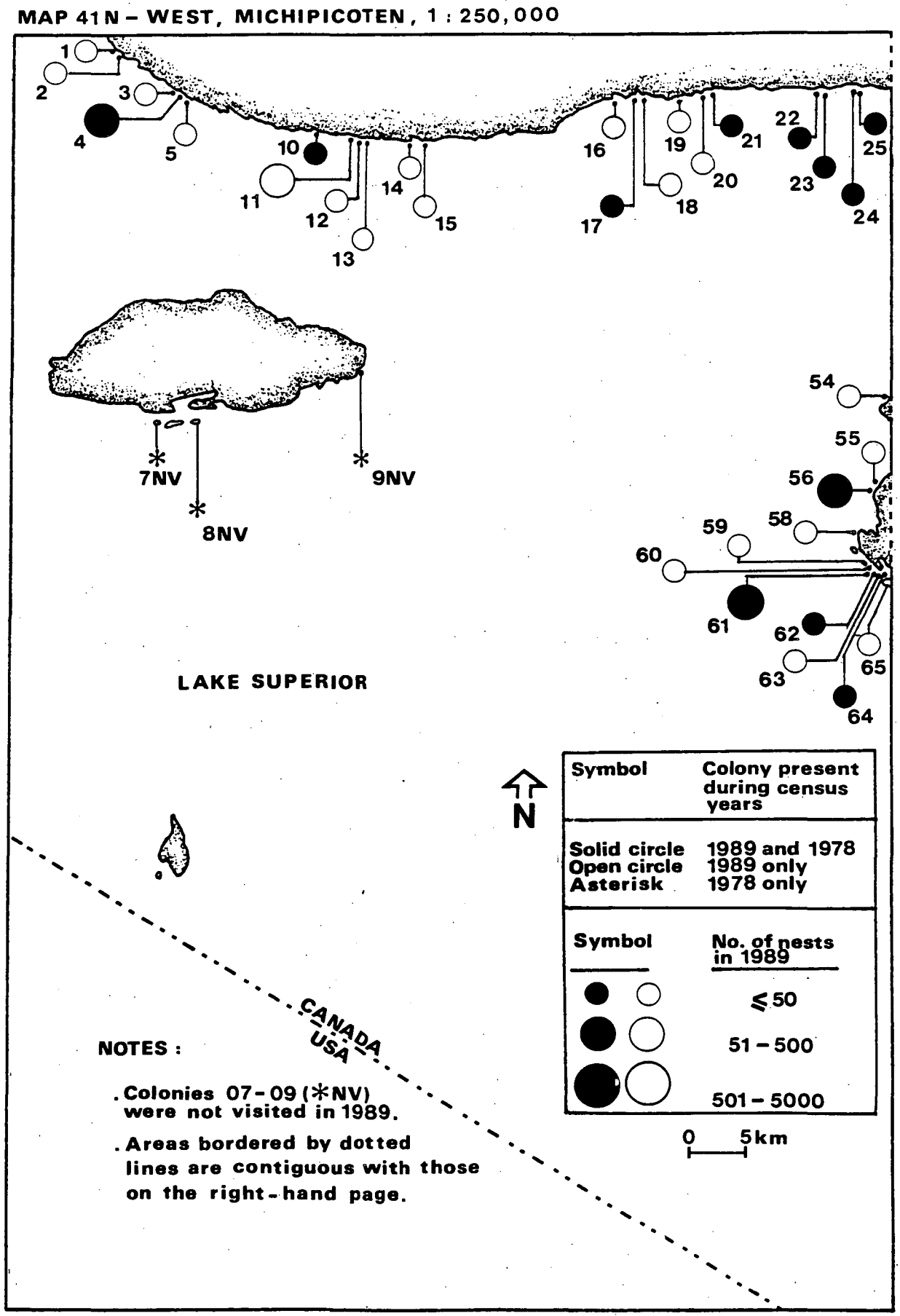


Appendix 11. Locations of colony sites in Canadian Lake Superior. See App. 8 for explanation of Appendices 9-13.


1
2
RICHARDSON ISLAND
Section from 1 : 50,000 map 42C/4
PUKASKWA RIVER
0
1 km

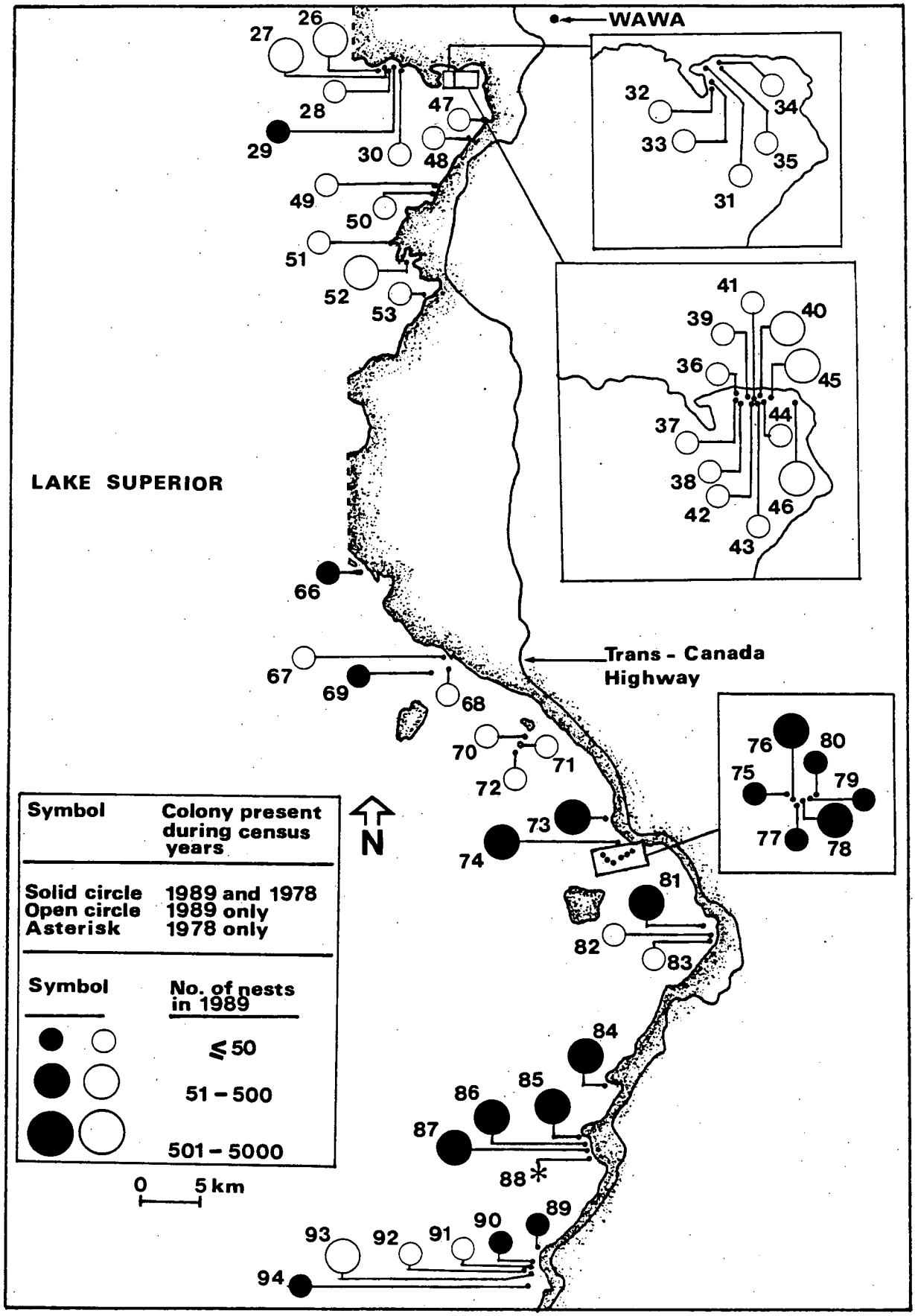

3
4
5
6
Section from 1 : 50,000 map 42 C/4
PUKASKWA RIVER
0
1 km

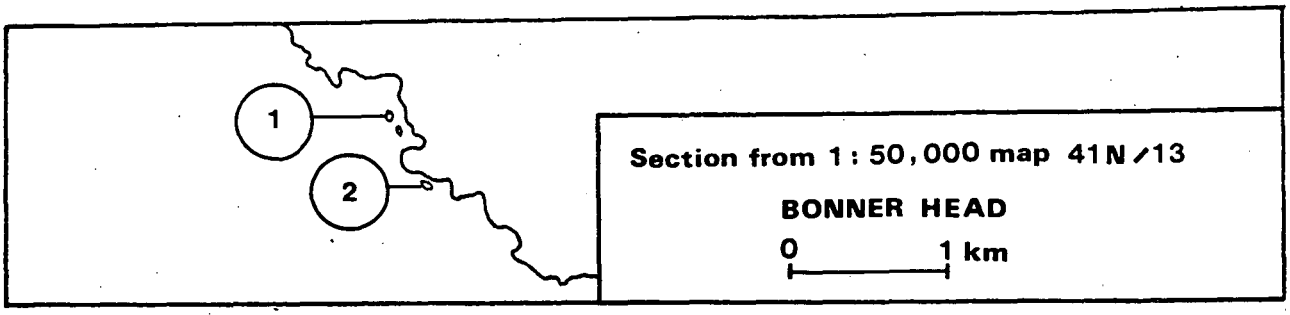

7
8
9
DAVIS ISLAND
Section from 1 : 50,000 map 42 C/4
PUKASKWA RIVER
0
1 km

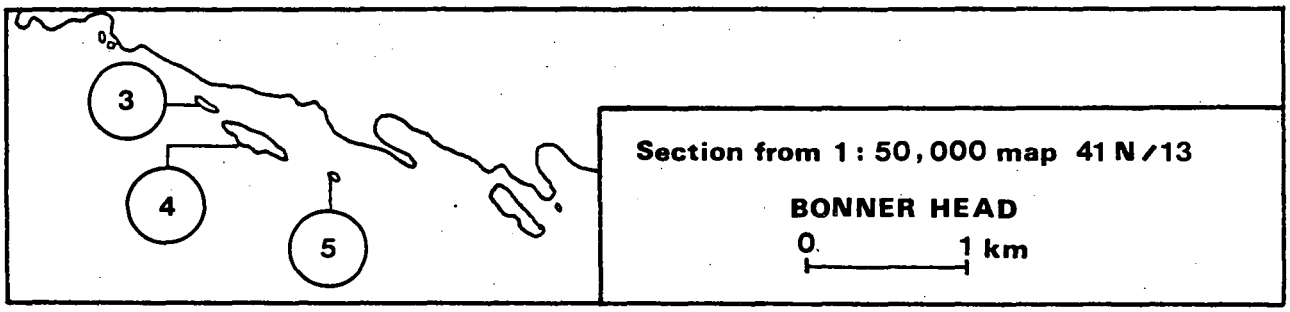


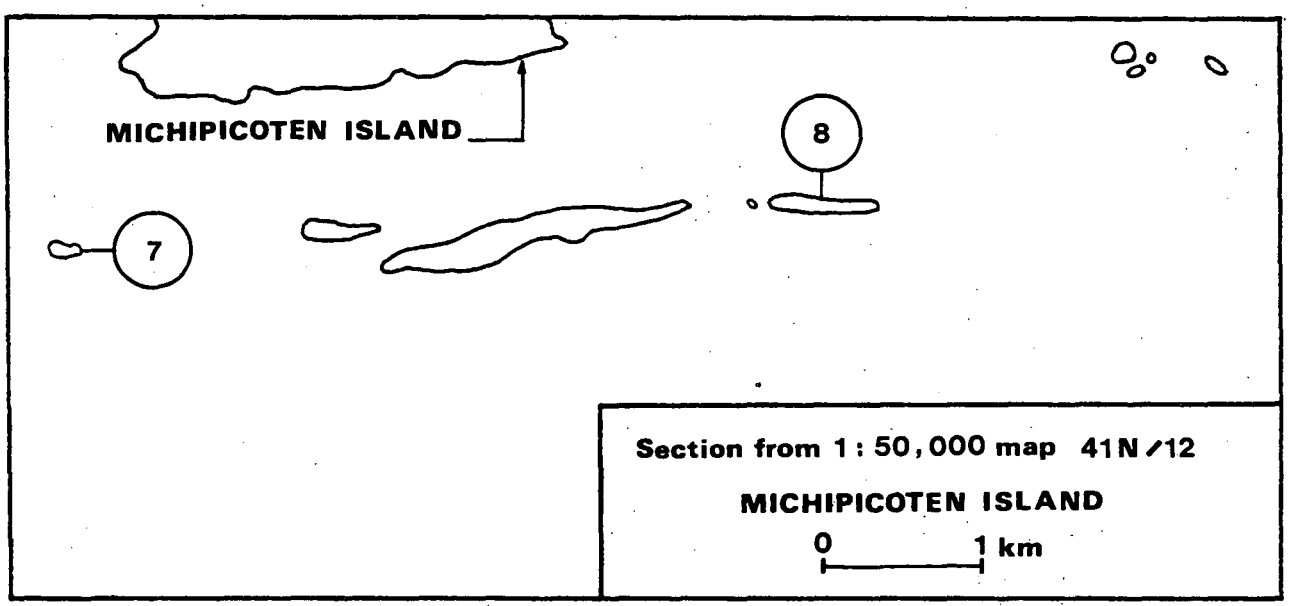
Appendix 12. Locations of colony sites in Canadian Lake Superior. See App. 8 for explanation of Appendices 9-13.

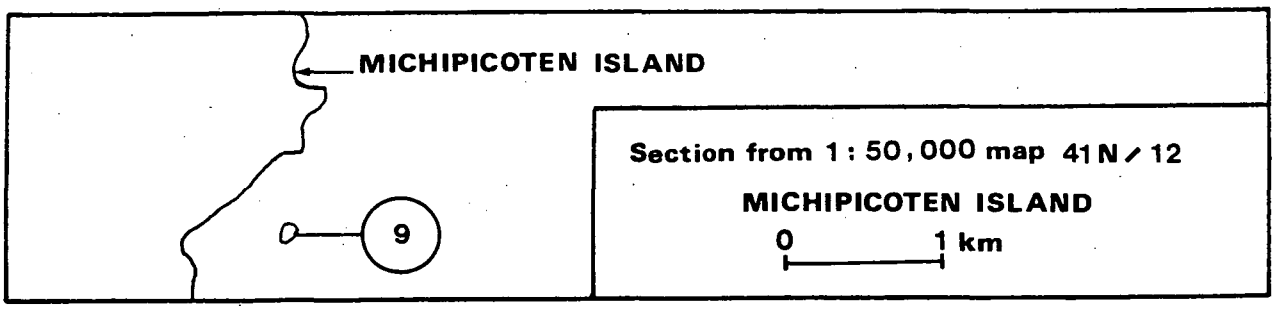
MAP 41N - EAST, MICHIPICOTEN, 1:250,000

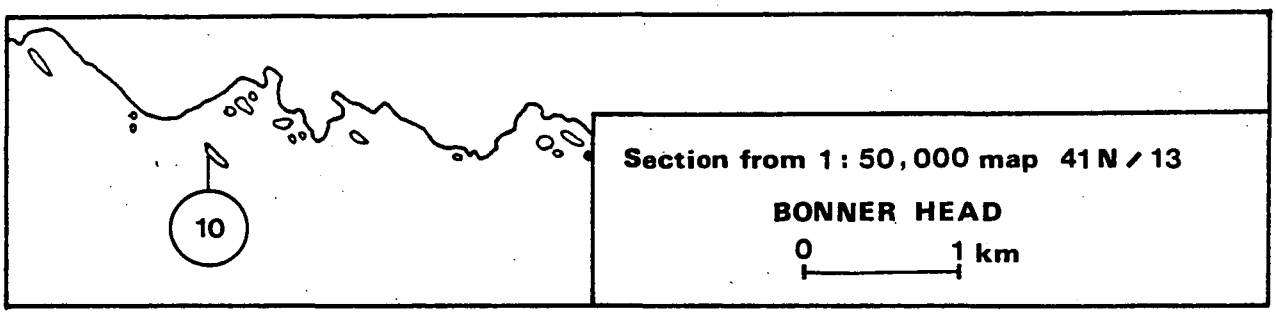


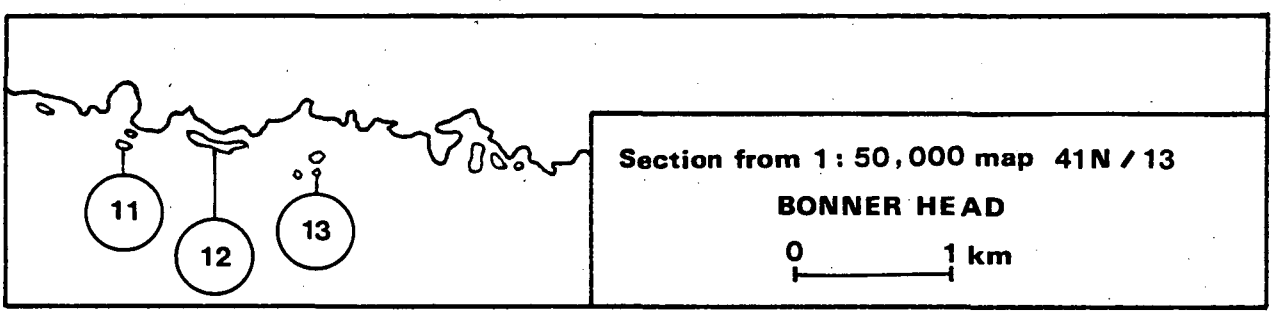

1
2
Section from 1 : 50,000 map 41N/13
BONNER HEAD
0
1 km

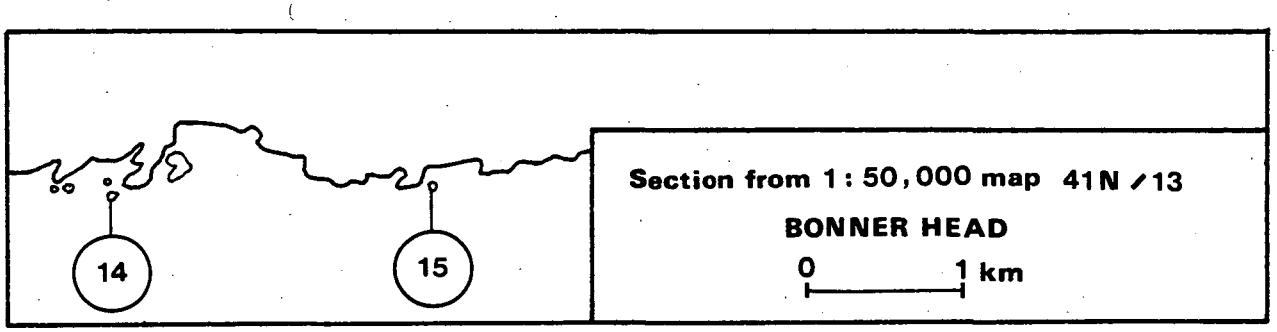

3
4
5
Section from 1 : 50,000 map 41N/13
BONNER HEAD
0
1 km

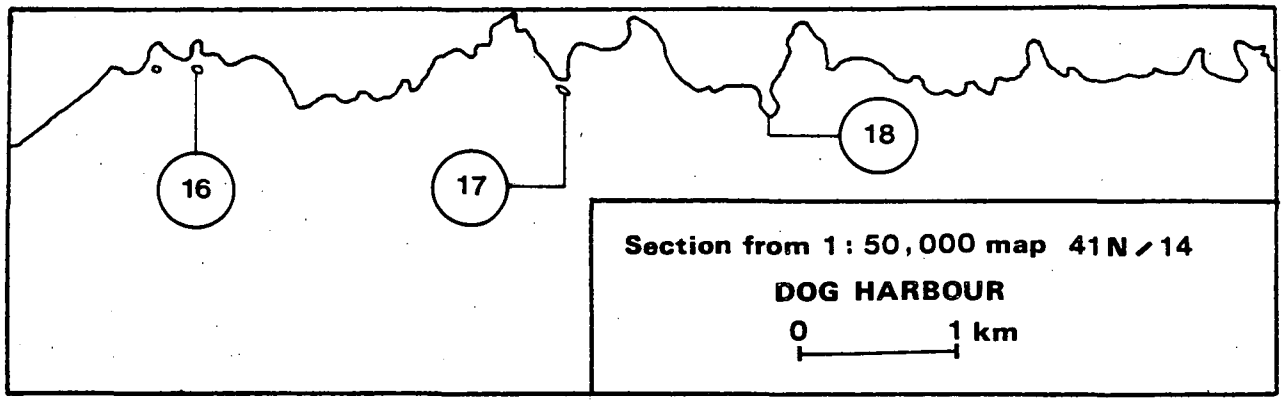

MICHIPICOTEN ISLAND
8
7
Section from 1 : 50,000 map 41N/12
MICHIPICOTEN ISLAND
0
1 km

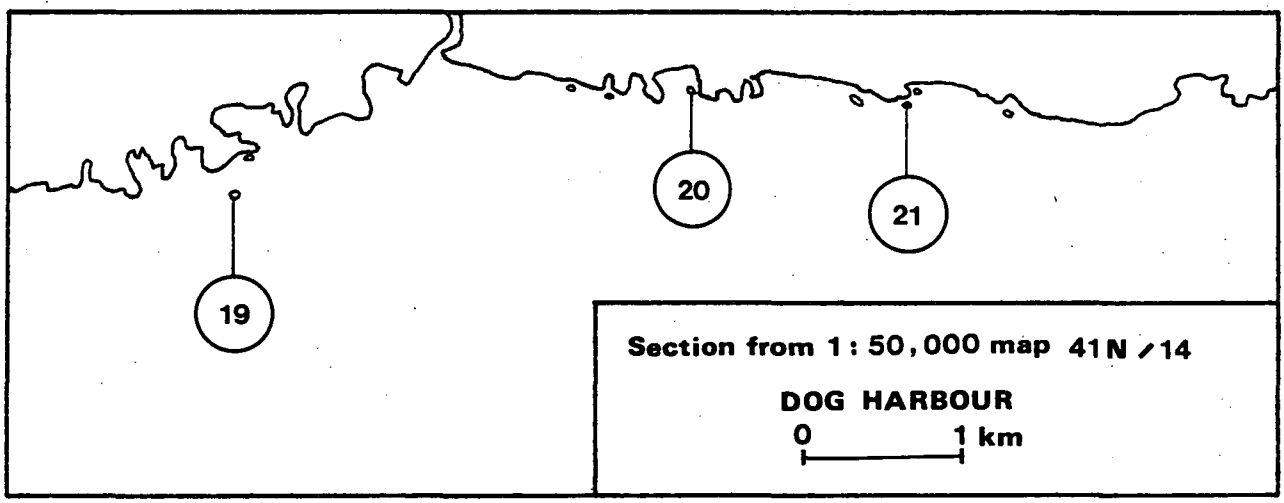

MICHIPICOTEN ISLAND
9
Section from 1 : 50,000 map 41N / 12
MICHIPICOTEN ISLAND
0
1 km

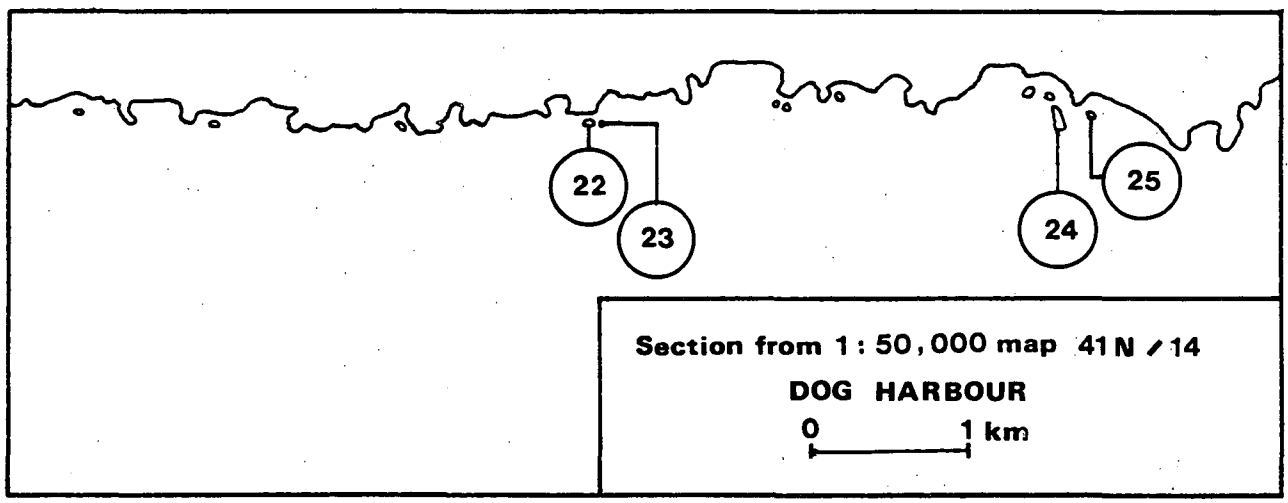

10
Section from 1 : 50,000 map 41N / 13
BONNER HEAD
0
1 km

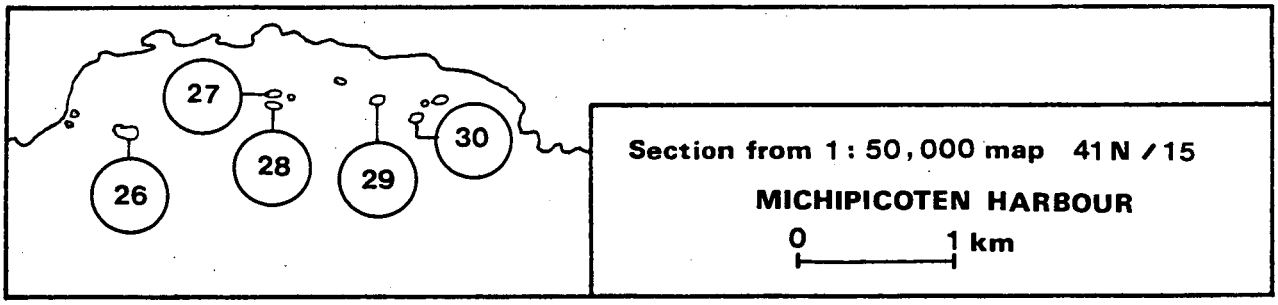

11
12
13
Section from 1 : 50,000 map 41N / 13
BONNER HEAD
0
1 km

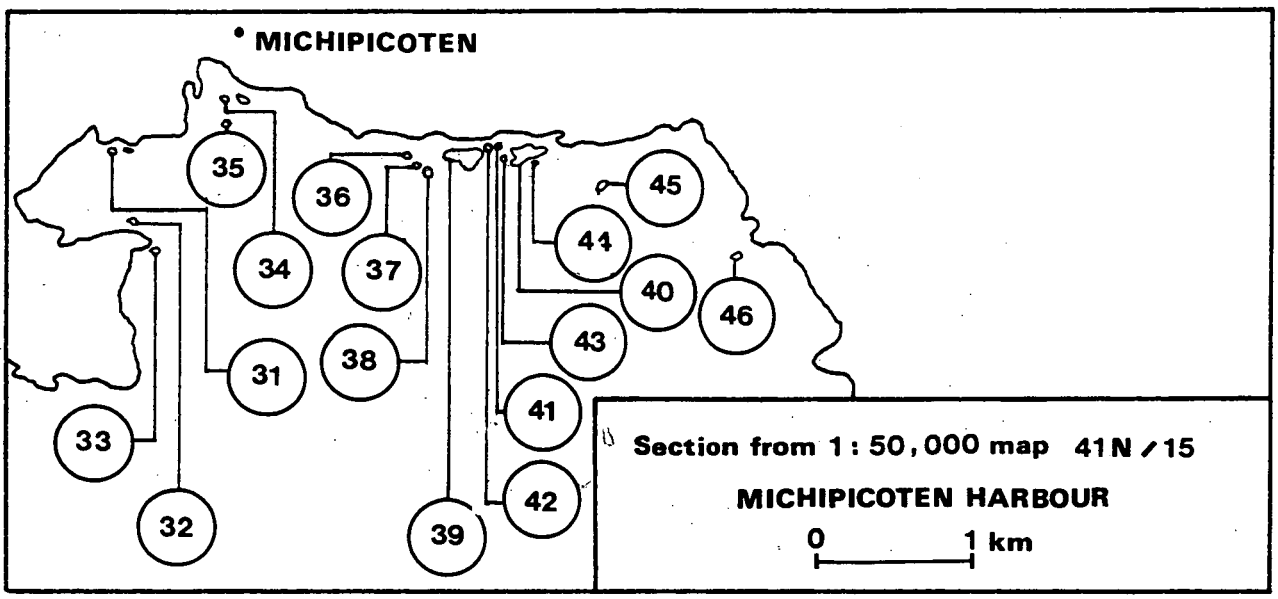

14
15
Section from 1 : 50,000 map 41N / 13
BONNER HEAD
0
1 km

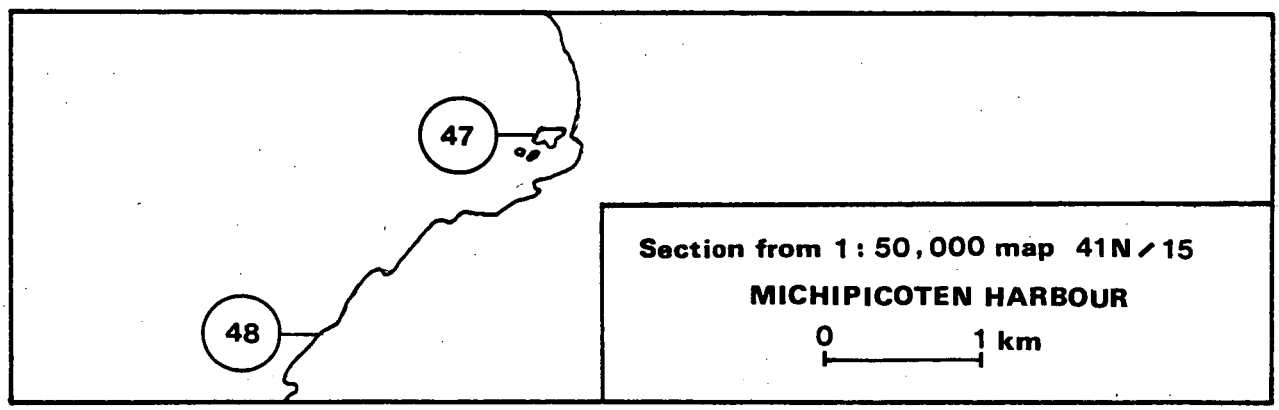

16
17
18
Section from 1 : 50,000 map 41 N / 14
DOG HARBOUR
0
1 km

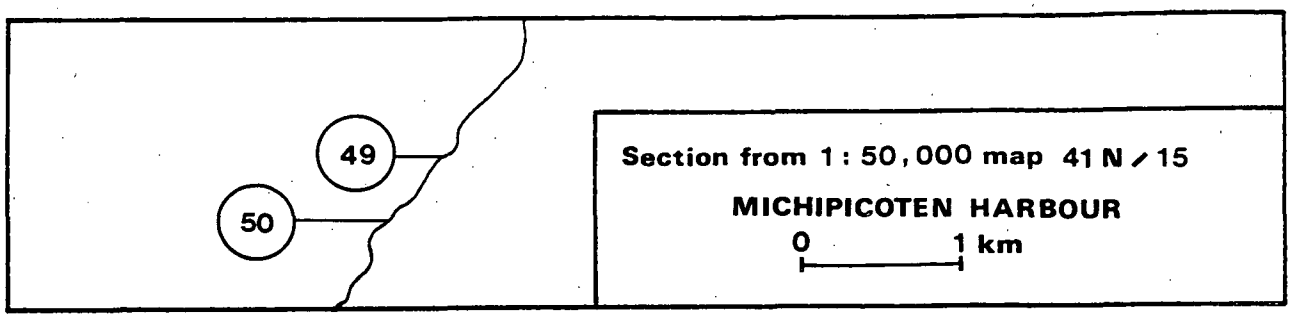

19
20
21
Section from 1 : 50,000 map 41 N / 14
DOG HARBOUR
0
1 km

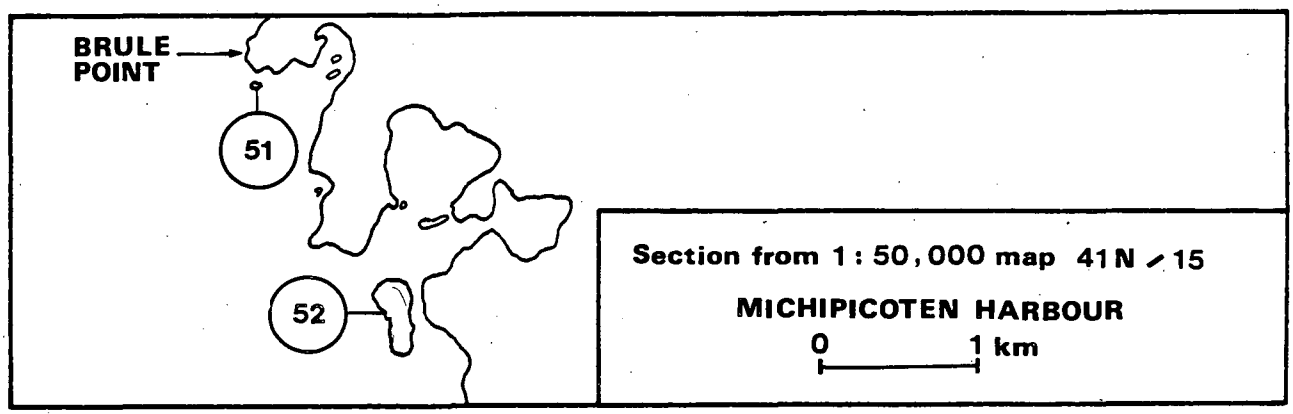

22
23
24
25
Section from 1 : 50,000 map 41 N / 14
DOG HARBOUR
0
1 km

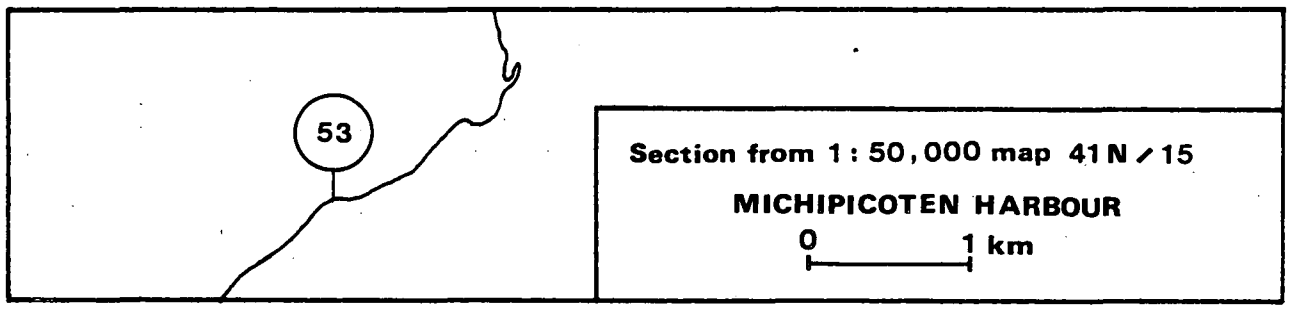

27
28
29
30
26
Section from 1 : 50,000 map 41 N / 15
MICHIPICOTEN HARBOUR
0
1 km

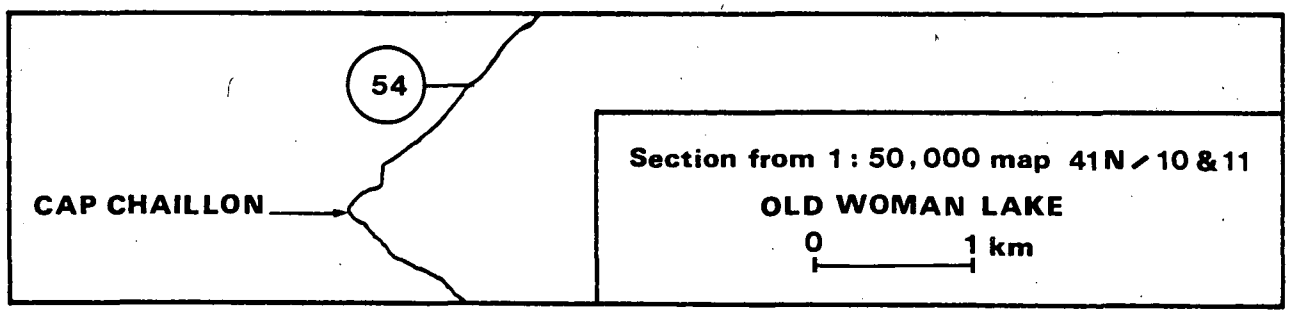

MICHIPICOTEN
35
36
45
44
34
37
40
46
43
38
31
41
33
42
32
39
Section from 1 : 50,000 map 41 N / 15
MICHIPICOTEN HARBOUR
0
1 km

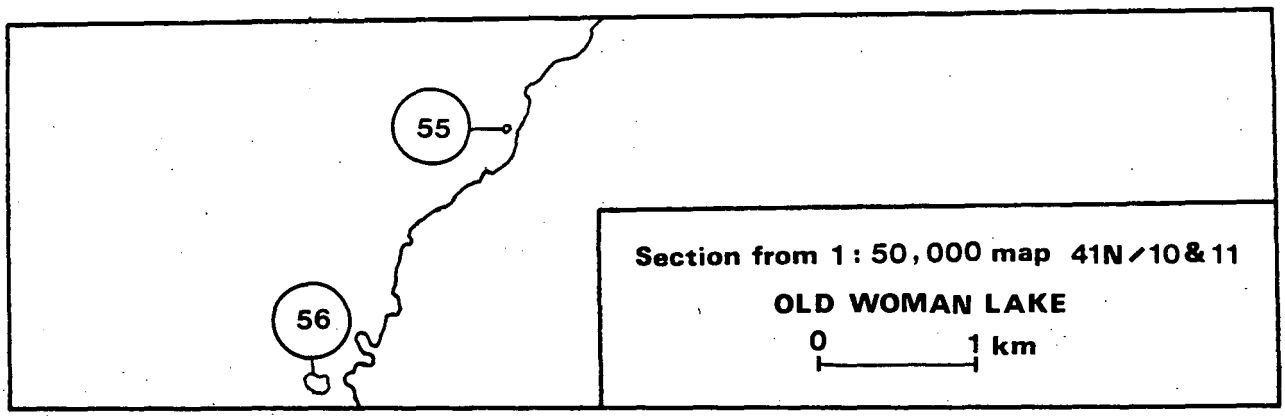

47
48
Section from 1 : 50,000 map 41 N / 15
MICHIPICOTEN HARBOUR
0
1 km

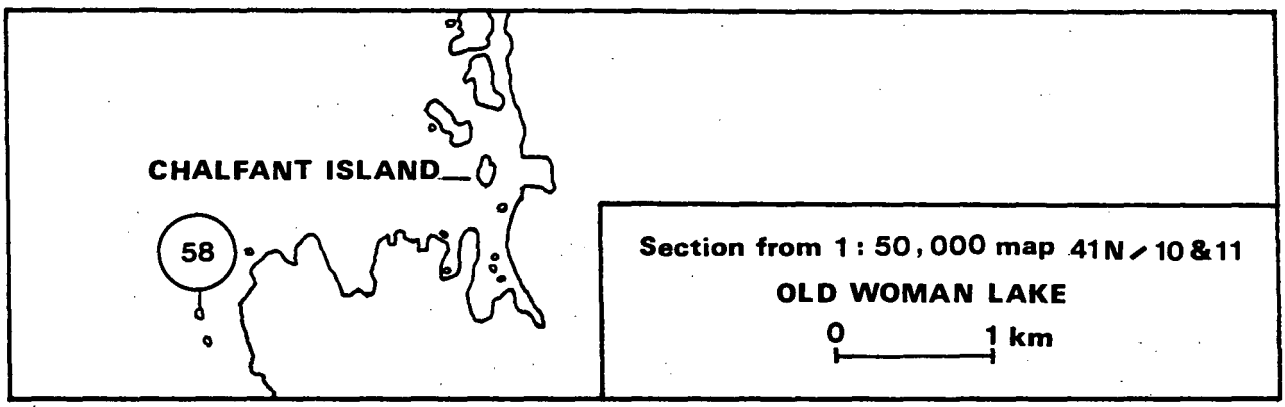

49
50
Section from 1 : 50,000 map 41 N / 15
MICHIPICOTEN HARBOUR
0 1 km

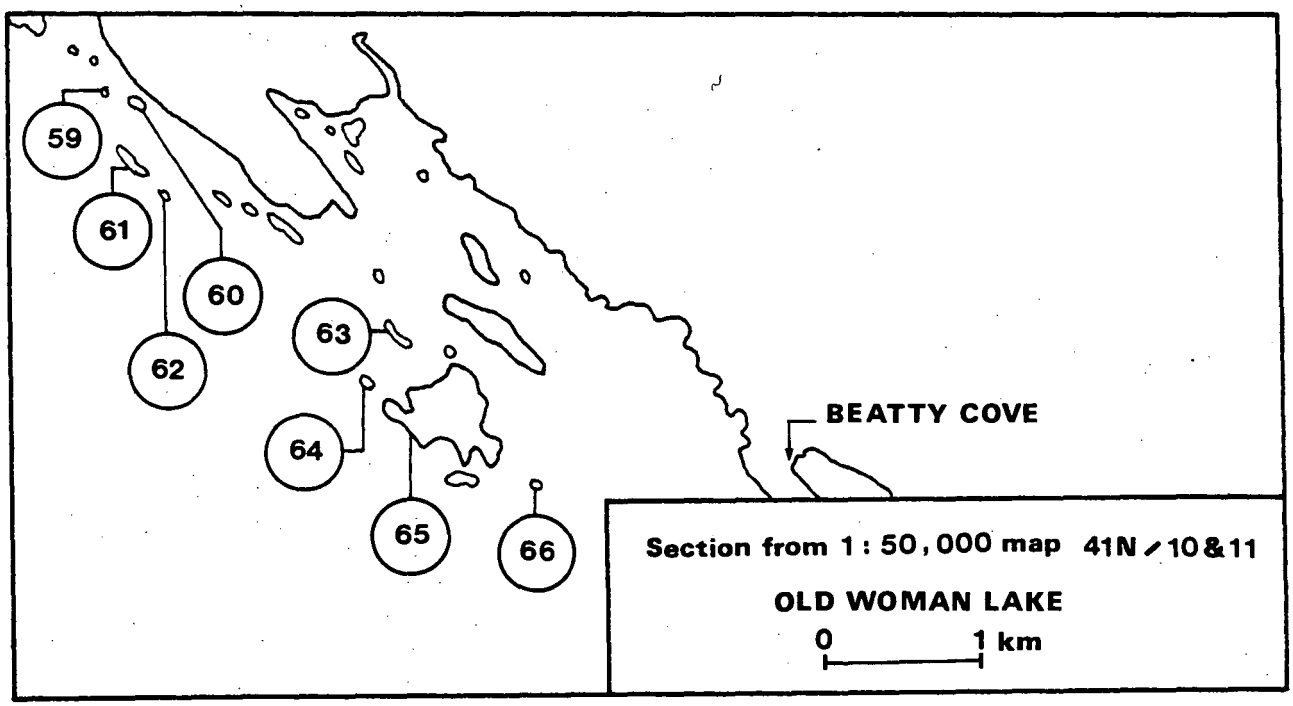

BRULE POINT
51
52
Section from 1 : 50,000 map 41 N / 15
MICHIPICOTEN HARBOUR
0 1 km

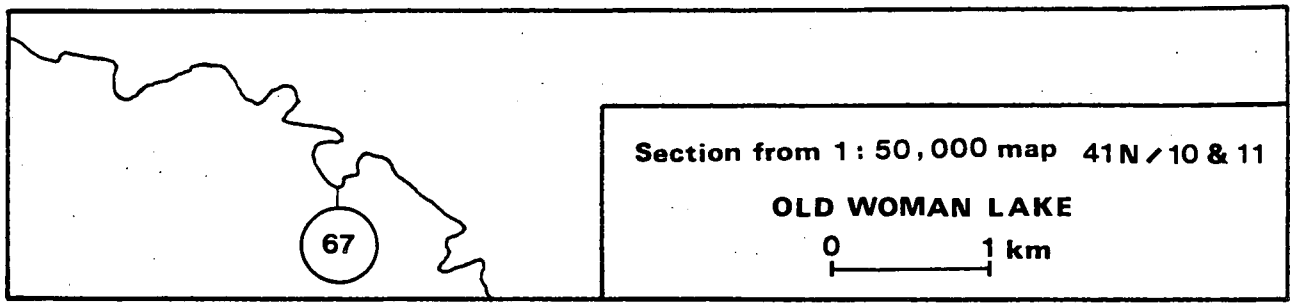

53
Section from 1 : 50,000 map 41 N / 15
MICHIPICOTEN HARBOUR
0 1 km

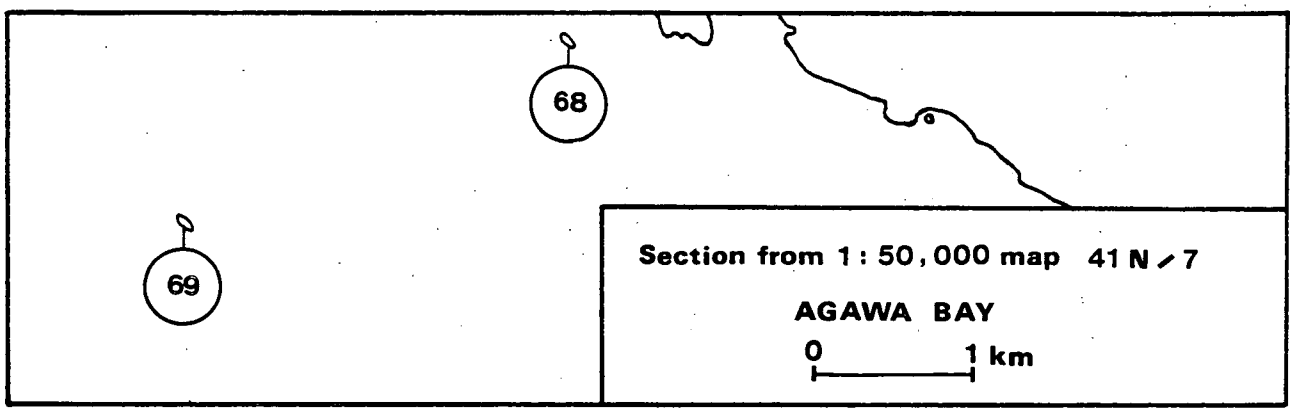

54
CAP CHAILLON
Section from 1 : 50,000 map 41N / 10 & 11
OLD WOMAN LAKE
0 1 km

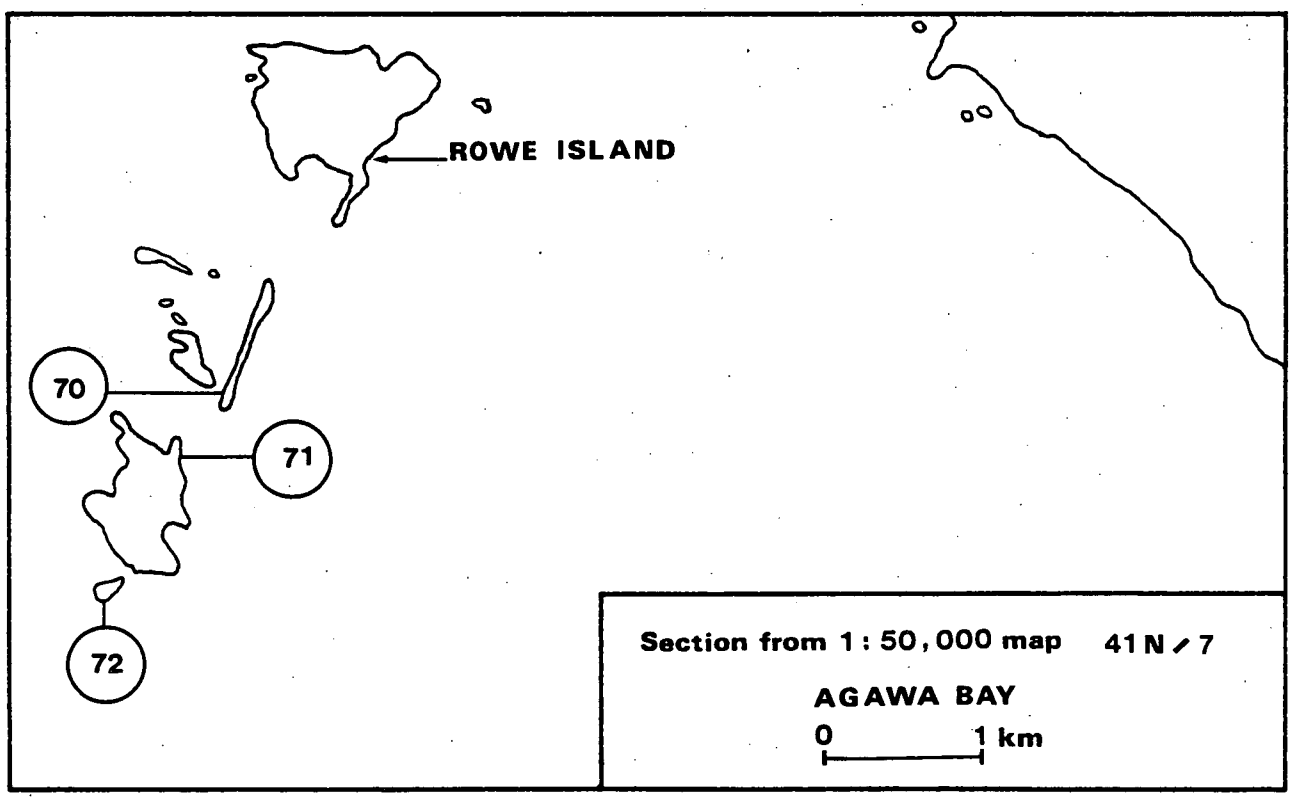

55
56
Section from 1 : 50,000 map 41N/10&11
OLD WOMAN LAKE
0
1 km

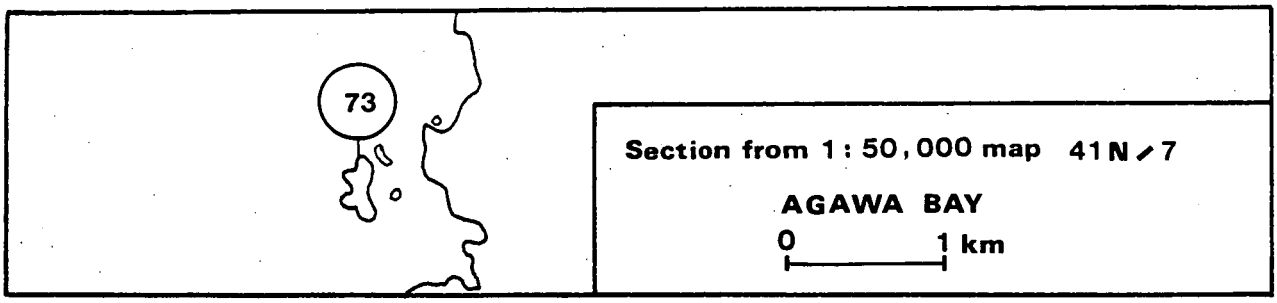

CHALFANT ISLAND
58
Section from 1 : 50,000 map 41N/10&11
OLD WOMAN LAKE
0
1 km

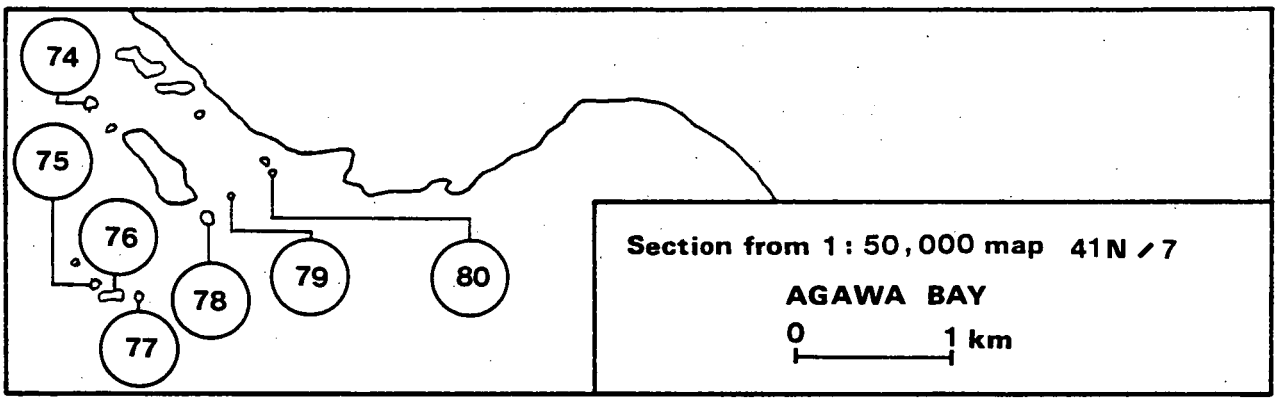

59
61
60
62
63
64
65
66
BEATTY COVE
Section from 1 : 50,000 map 41N/10&11
OLD WOMAN LAKE
0
1 km

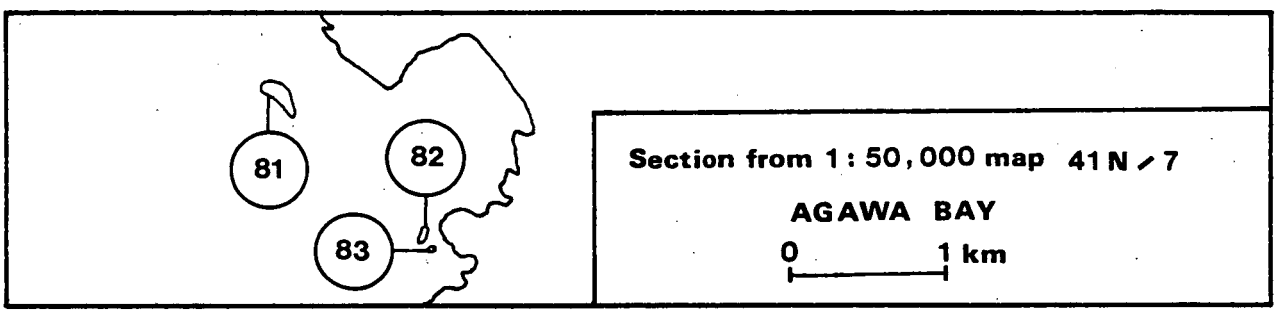

67
Section from 1 : 50,000 map 41 N / 10 & 11
OLD WOMAN LAKE
0
1 km

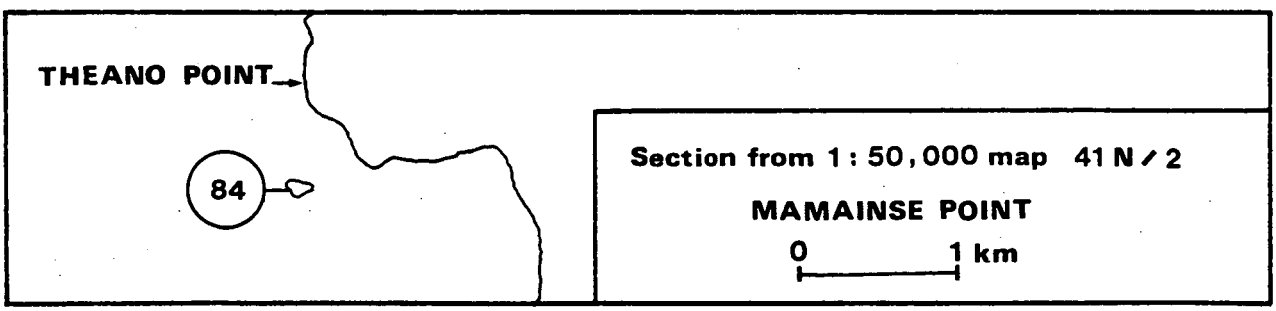

68
69
Section from 1 : 50,000 map 41 N / 7
AGAWA BAY
0
1 km

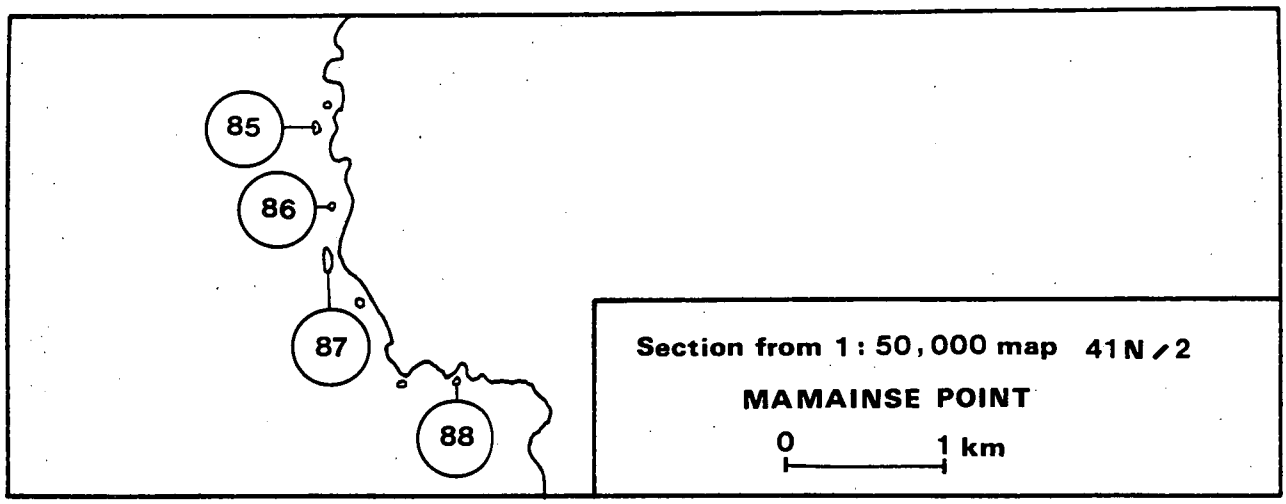

ROWE ISLAND
70
71
72
Section from 1 : 50,000 map 41 N / 7
AGAWA BAY
0
1 km

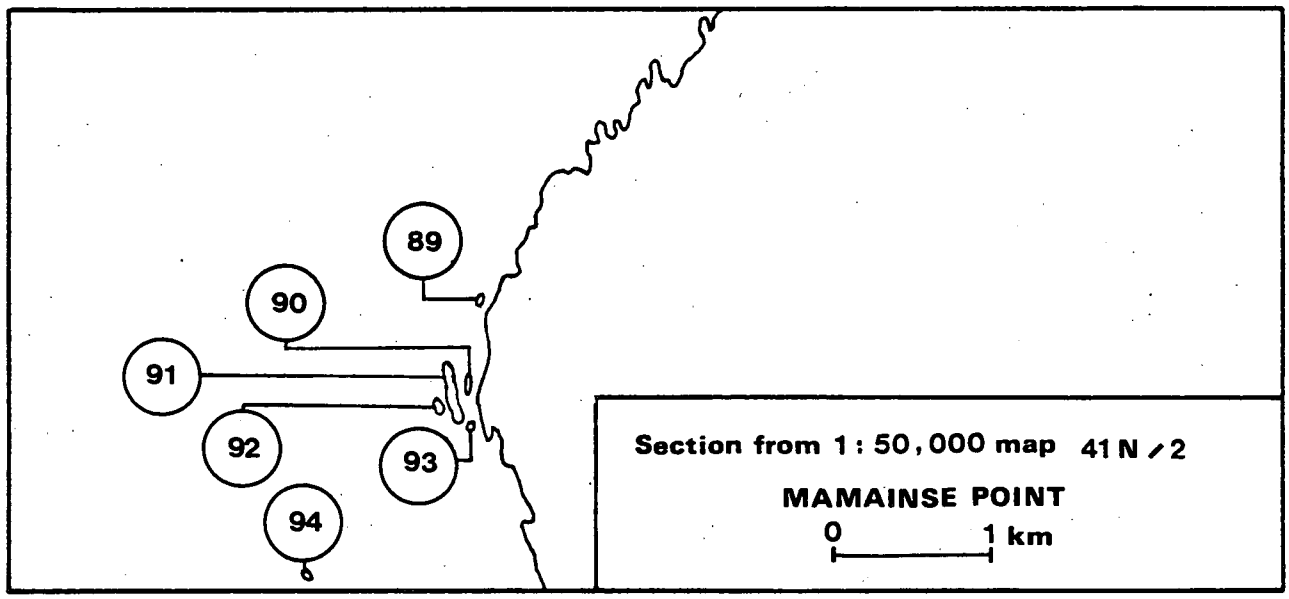

73
Section from 1 : 50,000 map 41 N / 7
AGAWA BAY
0
1 km


74
75
76
77
78
79
80
Section from 1 : 50,000 map 41 N / 7
AGAWA BAY
0
1 km


81
82
83
Section from 1 : 50,000 map 41 N / 7
AGAWA BAY
0
1 km


THEANO POINT
84
Section from 1 : 50,000 map 41 N / 2
MAMAINSE POINT
0
1 km


85
86
87
88
Section from 1 : 50,000 map 41 N / 2
MAMAINSE POINT
0
1 km


89
90
91
92
93
94
Section from 1 : 50,000 map 41 N / 2
MAMAINSE POINT
0
1 km

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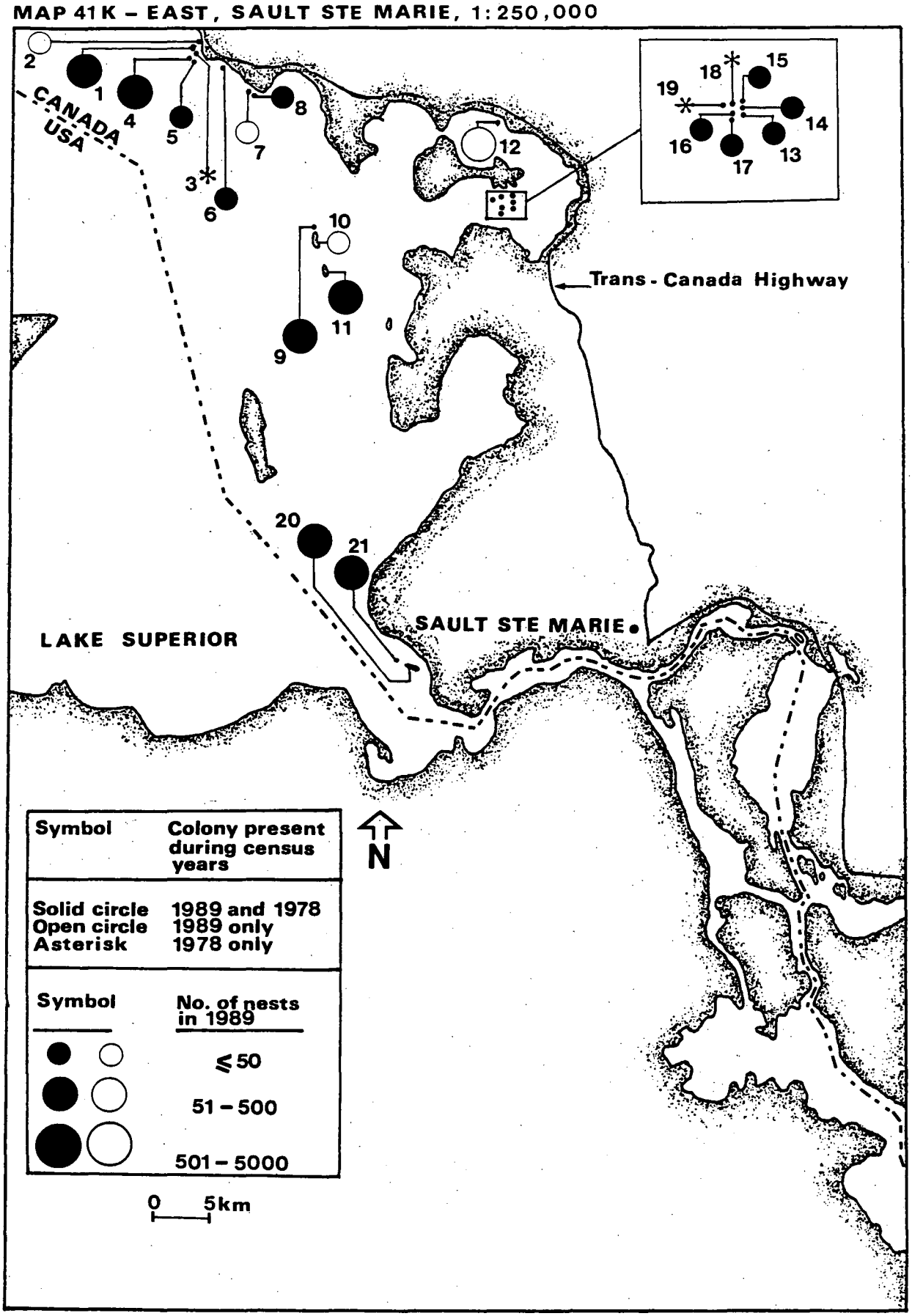
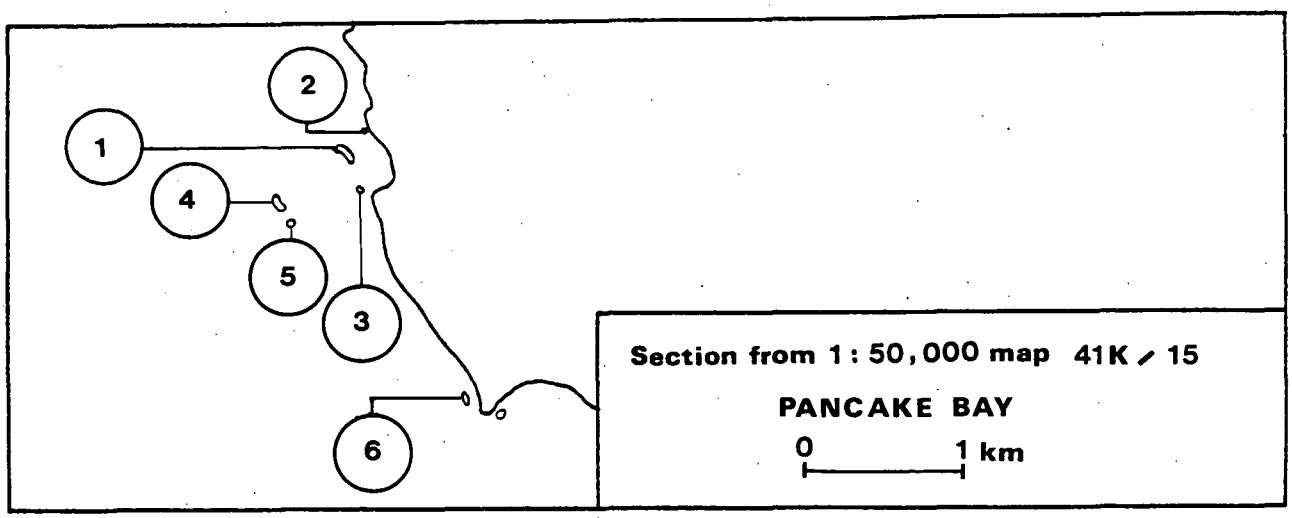
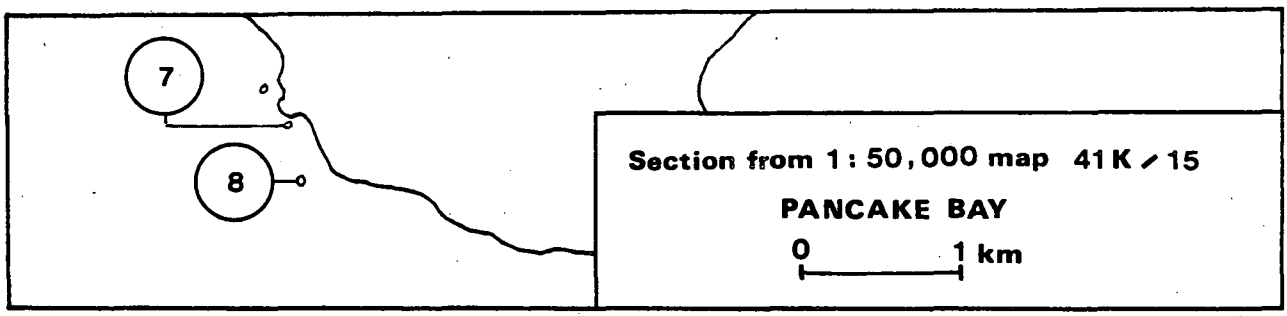
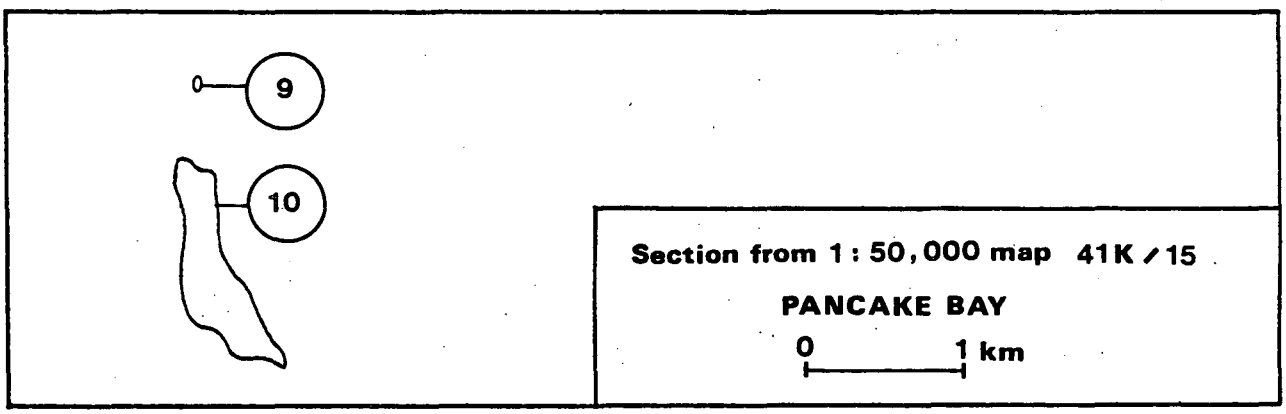
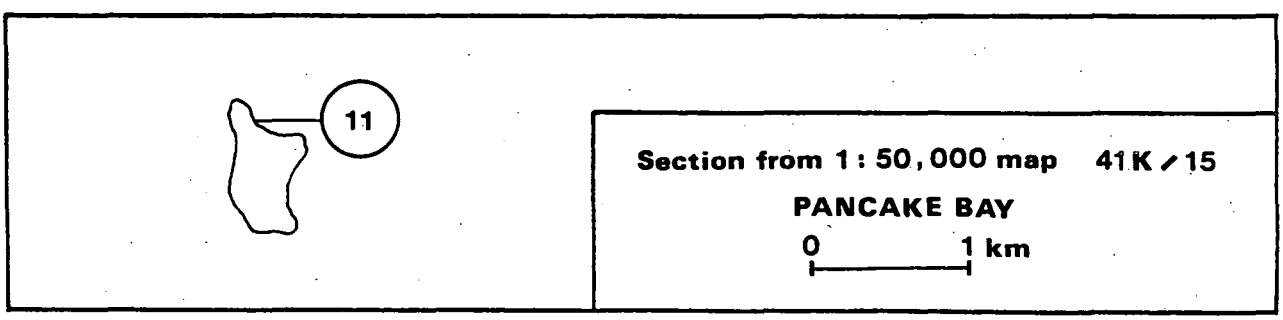


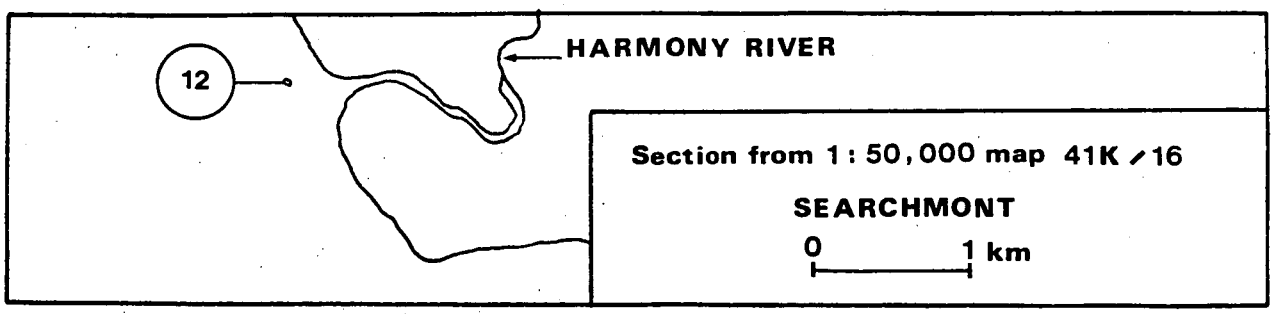
Appendix 13. Locations of colony sites in Canadian Lake Superior. See App. 8 for explanation of Appendices 9-13.

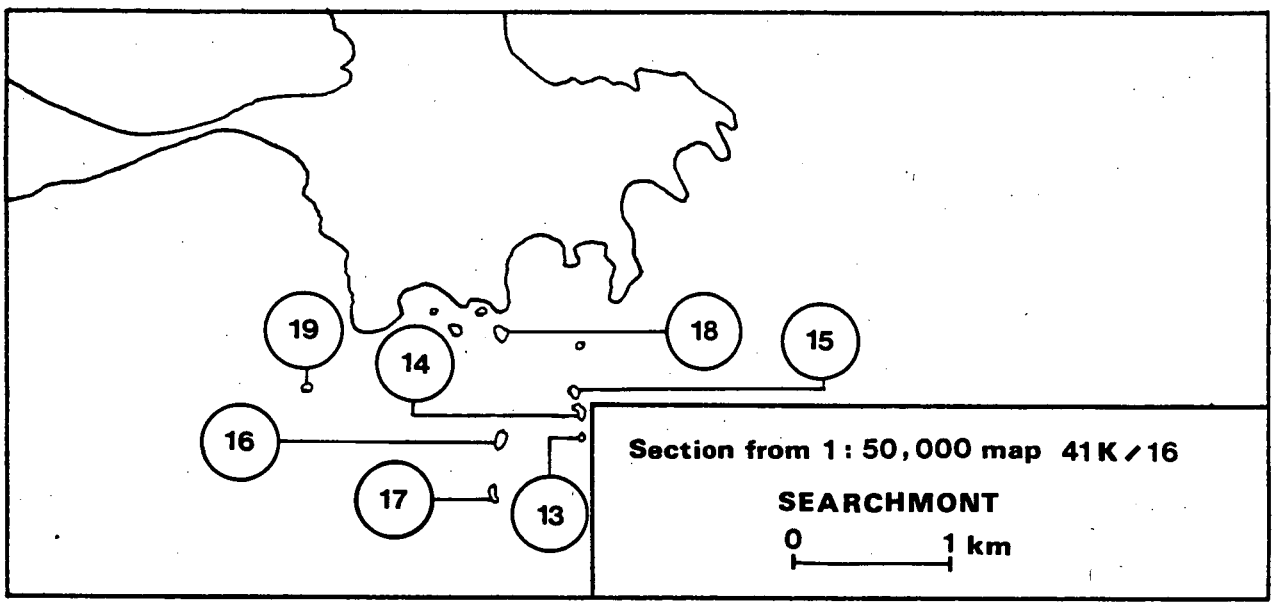

1
2
3
4
5
6
Section from 1 : 50,000 map 41K / 15
PANCAKE BAY
0 1 km

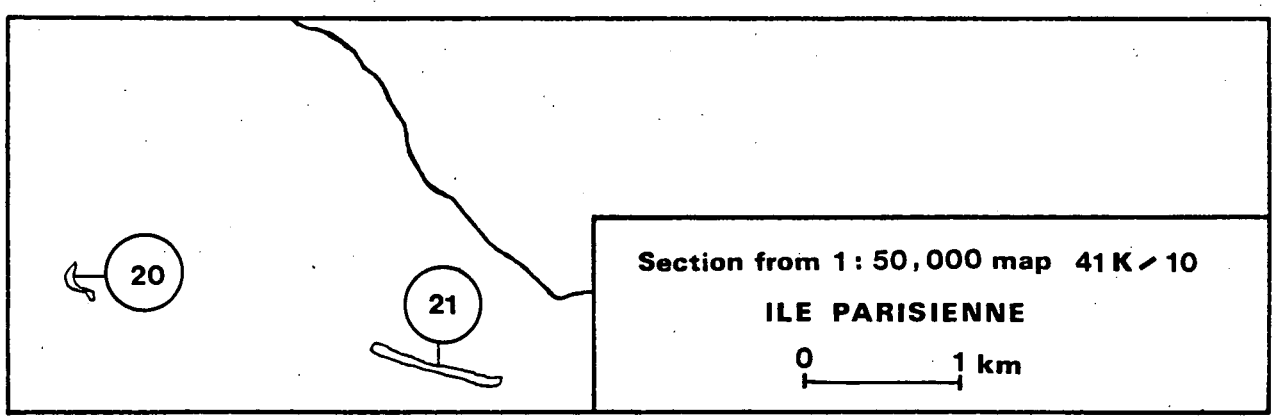

7
8
Section from 1 : 50,000 map 41K / 15
PANCAKE BAY
0 1 km


9
10
Section from 1 : 50,000 map 41K / 15
PANCAKE BAY
0 1 km


11
Section from 1 : 50,000 map 41K / 15
PANCAKE BAY
0 1 km


12
HARMONY RIVER
Section from 1 : 50,000 map 41K / 16
SEARCHMONT
0
1 km


19
14
18
15
16
17
13
Section from 1 : 50,000 map 41K / 16
SEARCHMONT
0
1 km


20
21
Section from 1 : 50,000 map 41K / 10
ILE PARISIENNE
0
1 km