AERIAL SURVEYS OF WATERFOWL IN THE COASTAL ZONE OF THE MARITIME PROVINCES

M.B. Hughson & A.D. Smith 1973

Aerial Surveys of Waterfowl in the Coastal Zone of the Maritime Provinces

by

Wm. B. Hughson

and

A. D. Smith

Canadian Wildlife Service
Sackville, New Brunswick
May, 1973

TABLE OF CONTENTS

Aerial Surveys of Waterfowl in the Coastal Zone of the Maritime Provinces

Introduction

The provinces of New Brunswick, Nova Scotia and Prince Edward Island together have a coastline of approximately 7000 miles. It is highly unlikely that a single mile of that coastline is not frequented by waterfowl at some time during the year. Over the past seven years the Canadian Wildlife Service has periodically conducted aerial surveys of waterfowl along portions of that coastline. Those surveys were designed to provide Canadian Wildlife Service Biologists with data on waterfowl species numbers and locations. With potentially increasing pressures on the coastal zone and the waterfowl resource, those data are becoming increasingly relevant.

Methods

Coastal waterfowl inventories have been conducted since April, 1966, in a reasonably consistent manner. The method employed was visually scanning the coastal zone from light aircraft at an altitude of 100 to 150 feet. Coastal sections that have been surveyed were divided into survey blocks and waterfowl counts recorded in terms of those blocks. The survey blocks were established according to discernable land features identifying the end of one survey block and

the beginning of the next. During most surveys, waterfowl counts have been facilitated through the use of portable tape recorders. The data were later transcribed onto data summary sheets.

Results

Six distinct survey sections in the Maritime Provinces are treated here representing approximately 30 per cent of the Maritime coastal area. Those survey sections are: the eastern shore of New Brunswick; coastal Prince Edward Island; the Northumberland shore of Nova Scotia; the coastal zone of Chignecto Bay, New Brunswick and Nova Scotia; the coastal regions of southwestern New Brunswick; and the southwestern coast of Nova Scotia (Figure 1). Each survey section has been sub-divided into convenient survey blocks. Table 1 provides a breakdown of the number of survey blocks inventoried at least once in each survey section, by month, during the period of April, 1966 to April, 1973. Some of the survey blocks have been inventoried up to eight times in a particular month during the period in question. Where a survey block has been inventoried more than once, the highest counts have been employed in the construction of Tables 2 to 7. Those tables present breakdowns of coastal waterfowl counts for the six survey areas in question. The waterfowl enumerated are: Canada geese (Branta canadensis); black duck (Anas rubripes); other dabblers, pintail (A. acuta), American green-winged teal (A. crecca carolinensis), blue-winged teal (A. discors); divers, greater scaup (Aythya marila), lesser scaup (A. affinis), golden-eye (Bucephala spp.), bufflehead (B. albeola), common merganser (Mergus merganser), red-breasted merganser (M. serrator); and sea ducks, oldsquaw (Clangula hyemalis),

common eider (Somateria mollissima), white-winged scoter (Melanitta deglandi, surf scoter (M. perspicillata), and common scoter (M. nigra).

The figures presented for each species and group are rounded to the nearest ten.

Discussion

The data presented in Tables 2 through 7 are aggregated summaries of 86 aerial surveys conducted between April, 1966 and April, 1973. The tables present a monthly figure for species and groups of species and does not represent the total numbers passing through a particular location per unit time. Since the progression rate through the Maritime coastal zone is unknown, it is impossible to numerically describe on a monthly basis, the total number of waterfowl occurring in a survey area. Furthermore the summaries must not be construed to indicate a relative progression rate for survey sites. Rather the numbers indicate what may be observed in a survey section at a particular time during a month. For example, Table 2 gives the erroneous impression that a high of approximately 6,000 geese remain in Chignecto Bay throughout March and April. Rather, in that survey section, the available data present what is likely to occur at a particular time in March or April.

We have not attempted to adjust the data for differences between surveys. Among those are differences in weather and tidal phenomena, factors altering visibility and the employment of several observers. We have, however, used the highest figures when more than one count of a survey

block were available. That is justified as we believe the data do not represent maximum numbers, nor do they account for the progression rate through a block during periods of migration for which the data primarily pertain.

(a) Canada geese

Aerial counts of Canada geese are presented in Table 2.

Wintering populations of Canada geese are found primarily in southwestern Nova Scotia and between Cole Harbour and Musquodoboit Harbour on the Province's eastern shore (Figure 2). In the Cole Harbour - Musquodoboit area, 910 Canada geese were counted on January 22, 1973, and the limited January coverage for southwestern Nova Scotia (Table 2) totalled 2,770. The available aerial survey data are obviously incomplete for both locations at present. Martell (1969) demonstrated that as many as 6,000 Canada geese may over-winter in the Port Joli area alone.

The March and April totals in Table 2 reflect the spring movement of Canada geese. Unfortunately, spring aerial surveys have not been made in Prince Edward Island where large numbers are known to occur, and limited data is available for the Northumberland shore of Nova Scotia.

In the Chignecto Bay region, goose numbers peak for a period of several days. This may occur in March or early April and appears dependent on weather conditions (VanZoost, 1970). A high of approximately 6,000 geese usually occurs there in spring.

Few Canada geese have been recorded by aerial surveys in August. By September, an influx of migrants is evident and this increases dramatically through October and November.

Particularly high numbers occur in coastal bays and marshes in October and November. Between Alberton and Tracadie on the Gulf of St. Lawrence shore, and Pinette to Hebron on the Northumberland Strait shore of Prince Edward Island (Figure 3), it is not unusual to count between 250 and 2,000 geese in any one of the 13 survey blocks there. Likewise, flocks are common at similar locations along the eastern shore of New Brunswick and Northumberland shore of Nova Scotia. Between 500 and over 1,000 appeared to be consistent counts for Miscou Island, Baie Verte, and between Tracadie and Kouchibouguac, in eastern New Brunswick, while over 3,000 geese may occur in the coastal zone of Wallace Bay to Bayhead, Nova Scotia (Figure 3).

Fall aerial survey data is not available for southwestern New Brunswick, whereas limited data are presented for southwestern Nova Scotia. Here, one survey counted 2,000 geese at Port Joli on November 22, 1966.

(b) Brant

While numbers of brant (Branta canadensis) have not been illustrated in table form, they have been periodically observed on aerial surveys. Largest concentrations occur in southwestern New Brunswick during March (3,240 brant) and April (2,066). Five hundred brant have been observed at Brier Island during March with April figures of 80 at Tatamagouche, along the Northumberland Strait shore

of Nova Scotia, and 500 at Baie Verte on the Eastern New Brunswick coast. The only fall observation is five individuals observed at Neguac (eastern New Brunswick) during September.

(c) Black Duck

Table 3 summarizes available black duck aerial survey data for the six coastal sections.

The black duck is a year round resident of the Maritime Provinces, as it over-winters in all three provinces.

A high of 7,000 black ducks have been observed in Prince Edward Island during January, on Canadian Wildlife Service mid-winter inventories during the late 1950's.

In January and February, 3,010 and 1,710 respectively, have been counted along the southeastern coast of New Brunswick. A complete survey of the western coast of Nova Scotia in December revealed the presence of 5,800 black ducks, while the limited January data accounted for 2,810. The maximum winter ground count obtained by Martell (1969) for Port Joli on February 7, 1969 was 5,064.

The distribution of over-wintering black ducks in the Maritimes is more extensive than that of the Canada geese. Whereas Canada geese are restricted to coastal sections of Nova Scotia, the black duck over-winters in ice free bays and estuaries in all three provinces. Over-wintering black ducks are distributed in small numbers along the Atlantic coast of Nova Scotia, with major concentration areas at Cole Harbour - Musquodoboit Harbour, Port Joli area, and Yarmouth shore. An aerial survey on January 22, 1973, recorded 835 black ducks in Cole Harbour - Musquodoboit Harbour (Figure 2).

In addition to those locations cited above, southwestern New Brunswick is likewise inhabited by large numbers of over-wintering black ducks. In Passamaquoddy Bay alone, we have recorded the extremes of 570 to 1,710 black ducks on survey flights in December, January and February. However, for the most part, over-wintering black ducks there appear to be widely dispersed, inhabiting the many coastal bays and shallow estuaries. The spring northward progression rate of birds over-wintering south of Passamaquoddy is unknown but is potentially very high. Our data at present do not shed light on that aspect.

Spring migrants arrive in the Chignecto Bay region by mid-March and build in numbers as the salt marsh habitat becomes clear of snow and ice. Large salt marsh tracts on the northern side of Shepody Bay and at the upper regions of Cumberland Basin attract the bulk of those migrants.

Salt marshes along the Northumberland shore of Nova Scotia and eastern shore of New Brunswick are usually open by early April and spring black duck numbers peak on those marshes during that month. Recorded highs on surveys in those areas are respectively 1,630 and 1,520 black ducks. Unfortunately, no spring data are available for Prince Edward Island, however, significant numbers of black ducks are known to use coastal habitat in the province during April and early May.

Black ducks produced in the Maritimes begin to group up by mid-August and appear in small flocks on salt marshes and shallow bays in the coastal zone. Those numbers continue to build throughout September, and with an influx of northern migrants during October and

November, build to peak numbers by mid- to late November (refer to Table 3). By mid-November it is not uncommon to see single flocks of blacks numbering up to 600. Under normal conditions severe icing has forced most blacks to their wintering grounds by late December.

(d) Other Dabblers

Under the category "other dabblers" we include pintail, American green-winged teal, and blue-winged teal. Scant numbers of mallard (Anas platyrhynchos) and American wigeon (A. americana) have been observed on aerial surveys but there is insufficient data to warrant tabulation. Rarely have more than five of those been recorded in a survey block, and generally none are observed. Of the two species, the mallard is widely distributed throughout the Maritime coastal zone, while wigeon occur locally in each province. The pintail is not abundant in the Maritime Provinces, but main breeding grounds are in the border region of New Brunswick and Nova Scotia, the Saint John River valley, and Prince Edward Island. The highest April aerial count in Chignecto Bay was 59 pintail, relative to 251 green-winged teal, three mallard, and no wigeon (Table 4).

The counts provided in Table 4 refer primarily to teal. American green-winged teal are the major component of those spring data, and the fall counts apply primarily to both blue-winged and American green-winged teal. Due to the difficulties imposed by aerial surveys it has often not been possible for an observer to positively distinguish between those species. In those cases, counts have been recorded as teal. Blue-winged teal numbers build on coastal marshes during late

August and early September. By late September most blue-winged teal have migrated south with a few stragglers remaining in the Maritimes to mid-October. American green-winged teal numbers continue to build throughout October. The October data of Table 4 reflect primarily American green-winged teal numbers. Large numbers of green-wings remain on the coastal salt marshes well into November, with a few individuals remaining late into the month. American green-winged teal do not normally occur in the Maritime Provinces during the winter months.

(e) Divers

Survey summary data for diving ducks appear in Table 5. Divers refer to scaup, goldeneye and mergansers. A few ring-necked ducks (Aythya collaris) have been observed on flights but not in sufficient numbers to warrant tabulation.

Over-wintering diving ducks occur in all three provinces, unfortunately no data is available for Prince Edward Island, however, large numbers of goldeneye are known to winter in open river mouths of that province. Winter occurrence of scaup is restricted to south-western Nova Scotia whereas sizeable flocks of goldeneye occur along the southwestern coasts of both New Brunswick and Nova Scotia.

Table 5 illustrates that the diving duck group occurs in large numbers throughout the Maritime coastal zone during spring. The birds initially build up in coastal areas that support wintering populations and move through the eastern shore of New Brunswick and northern shore

of Nova Scotia as the coast becomes relatively ice free in early to mid-April.

The data presented in Table 5 demonstrates the fall build-up of divers in the coastal region of eastern New Brunswick, Prince Edward Island, and northern shore of Nova Scotia. During the period September to October, those concentrations are comprised primarily of scaup and mergansers, with the largest numbers occurring during October on the eastern shore of New Brunswick (10,510 scaup, 2,120 mergansers) and Prince Edward Island (4,220 scaup, 15,650 mergansers). Scaup and merganser numbers decline considerably during November, however, goldeneye numbers peak during that month in those three survey sections.

By December most diving ducks are on their wintering grounds with stragglers remaining along the eastern coast of New Brunswick. No data are available for the Northumberland shore of Nova Scotia, however, numbers of goldeneye and mergansers frequent open river mouths of that section throughout December and occasionally through winter.

(f) Sea Ducks

Available sea duck survey data are summarized in Table 6. Included in the sea duck grouping are oldsquaw, eider and the three species of scoter. The numbers illustrated in that table are no doubt extremely low since the survey method of visually scanning the "in-shore" coastal zone, in all probability, missed significant numbers of those species.

Table 6 illustrates sizeable numbers of oldsquaw during January and February only in southwestern New Brunswick and Prince

Edward Island. However, oldsquaw are known to over-winter in all three provinces. Small numbers are scattered along the entire ice free coast of Nova Scotia during winter and small flocks occur in open areas between ice flows in Northumberland Strait and along the northern coast of Prince Edward Island.

Over-wintering scoter and eider occur primarily in southwestern New Brunswick and southwestern Nova Scotia. Springtime numbers of both eider and scoter increase to 5,060 and 6,130 respectively during April in southwestern New Brunswick. Scoters re-appear early in the fall as 3,660 birds have been observed in southwestern New Brunswick during August. Both scoter and eider numbers increase through September, peaking in October in eastern New Brunswick and Prince Edward Island. Oldsquaw usually appear in large flocks by early November. By December most sea ducks are on their wintering grounds.

Conclusion

The data presented illustrates an intensive use of the Maritime coastal zone by several species of waterfowl. While the data do not cover the zone in its entirety, it does survey much of the most intensely used coastline. In the data presented obvious gaps occur such as the winter and spring surveys for Prince Edward Island, May surveys for the eastern coast of New Brunswick and Northumberland coast of Nova Scotia, along with complete winter coverage of southwestern Nova Scotia. Future surveys by the Canadian Wildlife Service will attempt to fill data gaps in the material presented in this paper.

In addition, surveys are required along Nova Scotia's eastern shore, Cape Breton Island and the north shore of New Brunswick.

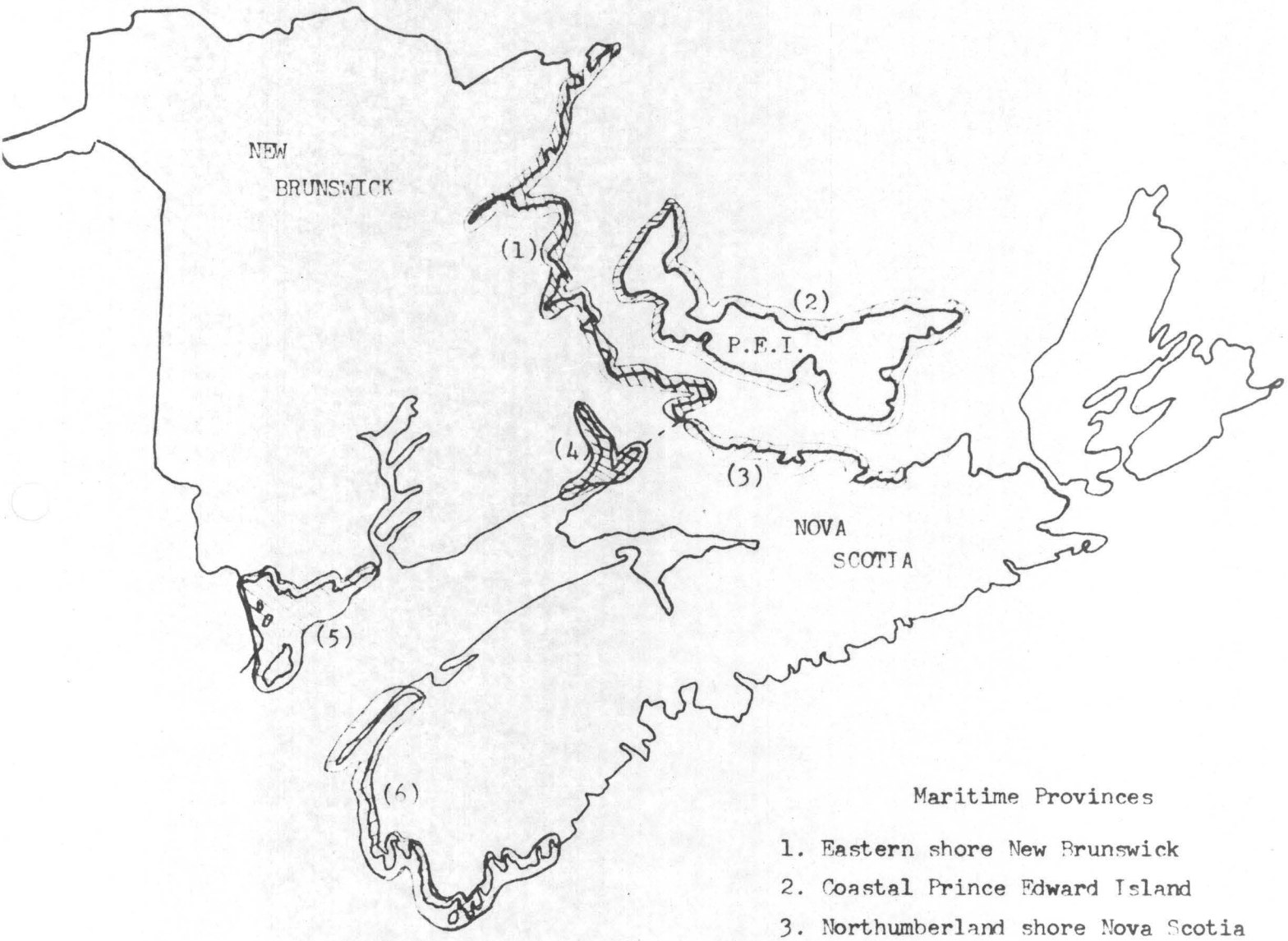
The Maritime coastal zone provides habitat for thousands of migrating and wintering waterfowl. Hopefully, this paper has shed additional light on numbers and species of waterfowl utilizing more strategic sections of that zone. With increasing pressure on the coastal zone through port, tidal power projects, oil spills, and recreational developments, the importance of documenting waterfowl use of that zone is becoming increasingly important.

References

Canadian Wildlife Service. 1948 to 1963. Mid-winter waterfowl inventories.

Martell, Arthur M. 1969. A study of winter waterfowl ecology at Port Joli, Nova Scotia. M.Sc. thesis, Acadia U. Wolfville, N.S.

VanZoost, Jonathan Raymond. 1970. The ecology and waterfowl utilization of the John Lusby National Wildlife Area. M.Sc. thesis, Acadia U. Wolfville, N.S.



Maritime Provinces

1. Eastern shore New Brunswick
2. Coastal Prince Edward Island
3. Northumberland shore Nova Scotia
4. Chignecto Bay
5. Southwestern New Brunswick
6. Southwestern Nova Scotia

Figure 1. Coastal survey sections

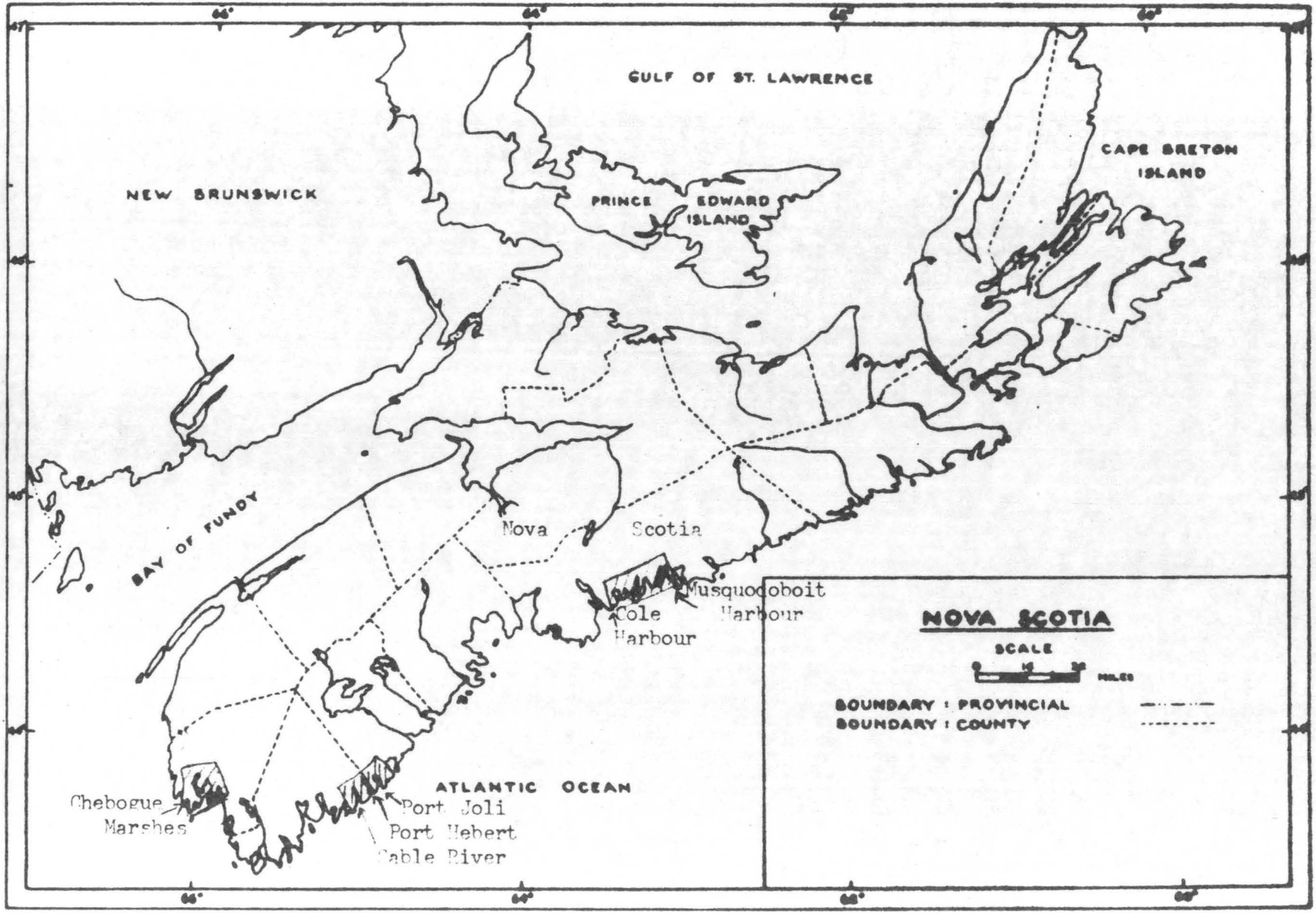


Figure 2. Principal over-wintering sites of Canada Geese

Figure 3. Fall concentration area - Canada Goose

Table 1. Survey block coverage per survey section

Survey section	No. blocks per survey section	Number of blocks surveyed per survey section											
		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Eastern shore New Brunswick	17	3	0	2	14	-	-	-	15	17	17	17	12
Prince Edward Island	34	3	320	0	0	-	-	-	34	34	34	29	0
Northumberland shore Nova Scotia	12	2	0	0	9	-	-	-	5	11	7	7	0
Chignecto Bay	5	0	0	5	5	-	-	-	5	4	3	3	0
Southwestern New Brunswick	7	7	7	7	7	-	-	-	7	0	0	0	7
Southwestern Nova Scotia	36	9	0	31	7	-	-	-	0	0	23	6	36

Table 2. Survey summary of Canada geese - April 1966 to April 1973*

Survey section	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Eastern shore New Brunswick	n.d.	n.d.	240	1520	-	-	-	0	1740	5550	6650	1680
Prince Edward Island	n.d.	n.d.	n.d.	n.d.	-	-	-	0	2150	14610	10800	n.d.
Northumberland shore Nova Scotia	0	n.d.	n.d.	700	-	-	-	320	400	910	512	n.d.
Chignecto Bay	n.d.	n.d.	6070	5800	-	-	-	0	0	70	20	n.d.
Southwestern New Brunswick	0	0	220	280	-	-	-	0	n.d.	n.d.	n.d.	0
Southwestern Nova Scotia	2770	n.d.	540	250	-	-	-	n.d.	n.d.	160**	3280	2900

n.d. - indicates no available data that can be grouped in a standardized manner

* - Figures are rounded to the nearest 10

- Monthly survey section totals are a summation of the highest counts for the individual survey blocks

- Refer to Table 1 for number of blocks surveyed per section by month

** One survey only, St. Mary's Bay to Shelburne - does not include Port Joli to Shelburne Harbour

Table 3. Survey summary of black ducks - April 1966 to April 1973*

Survey section	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Eastern shore New Brunswick	n.d.	n.d.	240	1520	-	-	-	0	1740	5550	6650	1680
Prince Edward Island	n.d.	n.d.	n.d.	n.d.	-	-	-	240	6270	11510	8690	n.d.
Northumberland shore Nova Scotia	0	n.d.	n.d.	1630	-	-	-	320	3520	4950	9010	n.d.
Chignecto Bay	n.d.	n.d.	1220	1350	-	-	-	680	1000	1060	1500	n.d.
Southwestern New Brunswick	3010	1710	2590	930	-	-	-	170	n.d.	n.d.	n.d.	2310
Southwestern Nova Scotia	2810	n.d.	1800	390	-	-	-	n.d.	n.d.	1600	2770	5800

n.d. - indicates no available data that can be grouped in a standardized manner.

* - Figures are rounded to the nearest 10

- Monthly survey section totals are a summation of the highest counts for the individual survey blocks

- Refer to Table 1 for the number of survey blocks inventoried per section by month

Table 4. Survey summary for miscellaneous dabbling ducks - April 1966 to April 1973*

Survey section	Species	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Eastern shore New Brunswick	Teal	-	-	0	70	-	-	-	720	6380	1990	640	0
	Pintail	n.d.	n.d.	0	10	-	-	-	50	990	710	10	0
Prince Edward Island	Teal	n.d.	n.d.	n.d.	n.d.	-	-	-	300	3100	2130	170	n.d.
	Pintail	n.d.	n.d.	n.d.	n.d.	-	-	-	10	190	660	0	n.d.
Northumberland shore Nova Scotia	Teal	0	n.d.	n.d.	50	-	-	-	20	860	480	40	n.d.
	Pintail	0	n.d.	n.d.	0	-	-	-	0	0	0	0	n.d.
Chignecto Bay	Teal	n.d.	n.d.	70	250	-	-	-	500	1270	2000	1100	n.d.
	Pintail	n.d.	n.d.	50	60	-	-	-	10	200	150	0	n.d.
Southwestern New Brunswick	Teal	0	0	0	40	-	-	-	10	n.d.	n.d.	n.d.	0
	Pintail	0	0	0	0	-	-	-	0	n.d.	n.d.	n.d.	0
Southwestern Nova Scotia	Teal	0	n.d.	0	0	-	-	-	n.d.	n.d.	3820	50	0
	Pintail	0	n.d.	0	0	-	-	-	n.d.	n.d.	0	0	0

n.d. indicates no data

* - Figures are rounded to the nearest 10

- Monthly survey section totals are a summation of the highest counts for the individual survey blocks

- Refer to Table 1 for number of blocks surveyed per section by month

Table 5. Survey summary for divers - April 1966 to April 1973*

Survey section	Species	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Eastern shore New Brunswick	Scaup	0	n.d.	0	390	-	-	-	0	1150	10510	2730	0
	Goldeneye	0	n.d.	360	1620	-	-	-	0	10	520	4110	60
	Merganser	0	n.d.	0	410	-	-	-	120	1230	5820	2520	930
Prince Edward Island	Scaup	n.d.	n.d.	n.d.	n.d.	-	-	-	0	10	4220	980	n.d.
	Goldeneye	n.d.	n.d.	n.d.	n.d.	-	-	-	0	0	440	2950	n.d.
	Merganser	n.d.	n.d.	n.d.	n.d.	-	-	-	40	1380	15850	4500	n.d.
Northumberland shore Nova Scotia	Scaup	n.d.	n.d.	0	270	-	-	-	0	260	0	550	n.d.
	Goldeneye	n.d.	n.d.	0	100	-	-	-	0	0	20	1430	n.d.
	Merganser	n.d.	n.d.	20	420	-	-	-	50	150	630	790	n.d.
Chignecto Bay	Scaup	n.d.	n.d.	n.d.	0	-	-	-	0	0	0	0	n.d.
	Goldeneye	n.d.	n.d.	n.d.	10	-	-	-	0	0	0	0	n.d.
	Merganser	n.d.	n.d.	n.d.	60	-	-	-	0	0	0	60	n.d.
Southwestern New Brunswick	Scaup	0	0	0	0	-	-	-	0	n.d.	n.d.	n.d.	0
	Goldeneye	870	390	350	80	-	-	-	0	n.d.	n.d.	n.d.	810
	Merganser	40	70	590	300	-	-	-	0	n.d.	n.d.	n.d.	280
Southwestern Nova Scotia	Scaup	670	n.d.	380	0	-	-	-	n.d.	n.d.	0	150	1090
	Goldeneye	200	n.d.	1100	60	-	-	-	n.d.	n.d.	0	50	590
	Merganser	0	n.d.	130	20	-	-	-	n.d.	n.d.	0	200	30

n.d. indicates no data

* - Figures are rounded to the nearest 10
- Monthly survey section totals are a summation of the highest counts for the individual survey blocks
- Refer to Table 1 for number of blocks surveyed per section by month

Table 6. Survey summary for sea ducks - April 1966 to April 1973*

Survey section	Species	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Eastern shore New Brunswick	Oldsquaw	70	n.d.	0	0	-	-	-	0	0	0	1310	0
	Scoter	0	n.d.	0	110	-	-	-	0	1680	3100	170	0
	Eider	10	n.d.	100	2420	-	-	-	0	150	820	790	0
Prince Edward Island	Oldsquaw	420	n.d	n.d.	n.d.	-	-	-	0	0	470	1290	n.d.
	Scoter	0	n.d.	n.d.	n.d.	-	-	-	0	150	1840	120	n.d.
	Eider	0	n.d.	n.d.	n.d.	-	-	-	0	0	380	40	n.d.
Northumberland shore Nova Scotia	Oldsquaw	20	n.d.	n.d.	0	-	-	-	0	0	20	130	n.d.
	Scoter	0	n.d.	n.d.	20	-	-	-	50	50	240	10	n.d.
	Eider	0	n.d.	n.d.	0	-	-	-	50	30	0	0	n.d.
Chignecto Bay	Oldsquaw	n.d.	n.d.	0	30	-	-	-	0	0	0	0	n.d.
	Scoter	n.d.	n.d.	0	1540	-	-	-	30	0	0	0	n.d.
	Eider	n.d.	n.d.	100	530	-	-	-	0	10	0	0	n.d.
Southwestern New Brunswick	Oldsquaw	490	450	30	0	-	-	-	0	n.d.	n.d.	n.d.	180
	Scoter	280	440	720	5060	-	-	-	3660	n.d.	n.d.	n.d.	800
	Eider	490	280	3660	6130	-	-	-	0	n.d.	n.d.	n.d.	770
Southwestern	Oldsquaw	0	n.d.	520	140	-	-	-	n.d.	n.d.	0	0	20
	Scoter	0	n.d.	110	30	-	-	-	n.d.	n.d.	600	0	380
	Eider	0	n.d.	1870	480	-	-	-	n.d.	n.d.	10	100	1400

n.d. - indicates no data

* - Figures are rounded to the nearest 10
- Monthly survey section totals are a summation of the highest counts for the individual survey blocks
- Refer to Table 1 for number of blocks surveyed per section by month

Hughson, W. B.

DATA FILE
119.30
CWS-AR
Hughson
1973

Hughson, W. B.
Aerial surveys of waterfowl in the coastal zone of the Maritime Provinces.

Name

Date