

BIRD MORTALITY FROM RECENT
EAST COAST OIL SPILLS

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by

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Abstract

Recent oil pollution in Atlantic coastal waters from three sizable "inshore" oil spills: Arrow - February 4, 1970, Irving Whale - February 14, 1970, and Golden Robin - September 30, 1974, resulted in known mortality of approximately 2,500 aquatic birds, and an estimated total kill in excess of 14,000 birds of over 30 species. However, offshore oil spillage of relatively small quantities during winter months may account for larger kills of aquatic birds than those major inshore spills. Nearly annually, reports of oiled seabirds coming ashore during late fall and winter months on the Magdalen Islands, in southern Newfoundland, and on Sable Island, suggest a chronic problem of oil spillage at sea. During February 1975 an estimated 5,400 dead birds washed up on Sable Island from an oil slick of unknown origin.

The Arrow Incident

With the grounding of the tanker Arrow on Cerberus Rock on February 4, 1970 in Nova Scotia's Chedabucto Bay, Atlantic Canada experienced its first major oil spill since World War II. The Arrow spilled approximately 2.5 million gallons of Bunker C oil. The spilled oil contaminated approximately 160 miles of coast before moving out to sea in the direction of Sable Island (Figure 1).

Chedabucto Bay is ice-free in winter and provides winter habitat for a variety of aquatic birds. The Arrow grounded on Wednesday morning and the first reports of dead birds washing ashore came on Thursday afternoon. The following Monday, February 9, a beach survey of three miles of coast near Arichat revealed 41 dead or heavily oiled birds of five species (Table 1) (Smith 1970). A more intensive survey covering 11.6 miles of Chedabucto Bay coastline carried out on February 16 counted 308 dead and 41 heavily oiled birds (Table 2) (Pearce 1970). Main species involved were Oldsquaw, Red-breasted Merganser, Murres and Grebes.

After the middle of February, snow and ice conditions along the coast made it next to impossible to survey for dead birds. Frequently, an oiled Oldsquaw, Red-breasted Merganser, or Goldeneye could be observed preening its feathers, and upwards of 15 per cent of the gulls observed had patches of oil on them.

Some of the Arrow oil that moved out to sea eventually came ashore on the north beach of Sable Island 120 miles southeast of Chedabucto Bay. A. R. Lock (1975) visited Sable Island on March 11 - 13, followed by R. Brown on May 15 (Brown *et al.* 1973) and reported finding large numbers of oiled dead birds. Table 3 presents a break-down of species of the numbers of dead birds found by both observers.

Based on those beach surveys conducted in Chedabucto Bay and on Sable Island, estimated minimum mortality from Arrow oil slicks was 2,300 and 4,800 respectively, for those two areas (Brown *et al.* 1973). Table 4 summarizes by species the estimated 7,100 birds killed by Arrow oil slicks.

The Irving Whale

During February 1970 a second incident occurred where large numbers of seabirds were oiled along the south coast of Newfoundland. The Irving Whale spilled between 3,000 and 7,000 gallons of Bunker C during a gale on or about February 14 just off the French island of St. Pierre. Ground and aerial surveys conducted shortly thereafter in the Burin Peninsula and St. Shotts areas of southern Newfoundland found large numbers of oiled eiders, with estimated minimum mortality in excess of 5,500 birds (Brown *et al.* 1973).

The Golden Robin

The third major incident of inshore oil spillage in recent years occurred on September 30, 1974, when the oil tanker Golden Robin grounded while entering harbour at Dalhousie, N.B. Between one and two thousand barrels of Bunker C escaped from the tanker, polluting sections of coast on both the Quebec and New Brunswick sides of Chaleur Bay (Figure 2).

A survey of 3.5 miles of shoreline on the New Brunswick side on October 2 reported 67 heavily oiled birds of five species (Table 5). Beach surveys conducted on following days covered a total of 24.8 miles and reported 963 heavily oiled birds (Table 6). Main species involved were Red-necked Grebe (20 per cent), Black Guillemot (20 per cent), Common Eider (17 per cent), Surf Scoter (10 per cent), and Double-crested Cormorant (9 per cent). Conditions were generally favourable for extensive coastal searches for dead and heavily oiled birds, thus the mortality

presented in Table 7 are thought to be fairly realistic. The mortality figure of 2,174 was derived by direct extrapolation of the known number of birds oiled permile of coastline surveyed.

Some of the Golden Robin oil undoubtedly dispersed farther out in Chaleur Bay as a lot of oil sheen was observed off Belledune Point on October 4. That oil sheen may have been responsible for the soiling of approximately 700 gannets from the Bonaventure colony. Table 8 illustrates observations made by Philip Taylor (personal correspondence) on Bonaventure Island during the first week of October 1974.

In summary, the three major inshore oil spills in recent years have resulted in an estimated total kill in excess of 14,000 aquatic birds. However, it has become increasingly evident that many "small" offshore spills (intentional or accidental) go unreported and may account for substantial losses of birds at sea. In recent years the Canadian Wildlife Service has received numerous reports of oiled eiders, murrees, and dovebies being observed in winter months coming ashore on southern Newfoundland, Magdalen Islands, and Sable Island. Our illustration of a substantial bird kill occurred on Sable Island in January - February 1975 (A.R. Lock 1975). A mean of 300 birds (predominantly dovebies and murrees) were observed per km of beach surveyed. Extrapolated up, a total of 5,400 dead birds can be assumed to have come ashore on Sable, with unknown numbers that may have sunk before reaching the island. That rather significant bird kill resulted from oil spillage of unknown origin.

References

- Brown *et al.* 1973. Bird Mortality from Oil Slicks off eastern Canada. February - April 1970. *Can. Field Nat.* 87:225-234.
- Lock, A.R. 1975. Oiled Bird Kill, Sable Island, January/February 1975. Unpublished report.
- Pearce, P.A. 1970. Preliminary Assessment of Effects of Oil Pollution on Aquatic Birds in Chedabucto Bay, Nova Scotia. February 1970.
- Smith, A.D. 1970. Preliminary Report on Oil Pollution in Chedabucto Bay, N.S. February 1970. Unpublished report.

ARROW - 18,000 tons
Ran aground on Cerberus Rock, 4 Feb.1970, Chedabucto Bay N.S.
Spilling 2.5 million gallons Bunker c oil

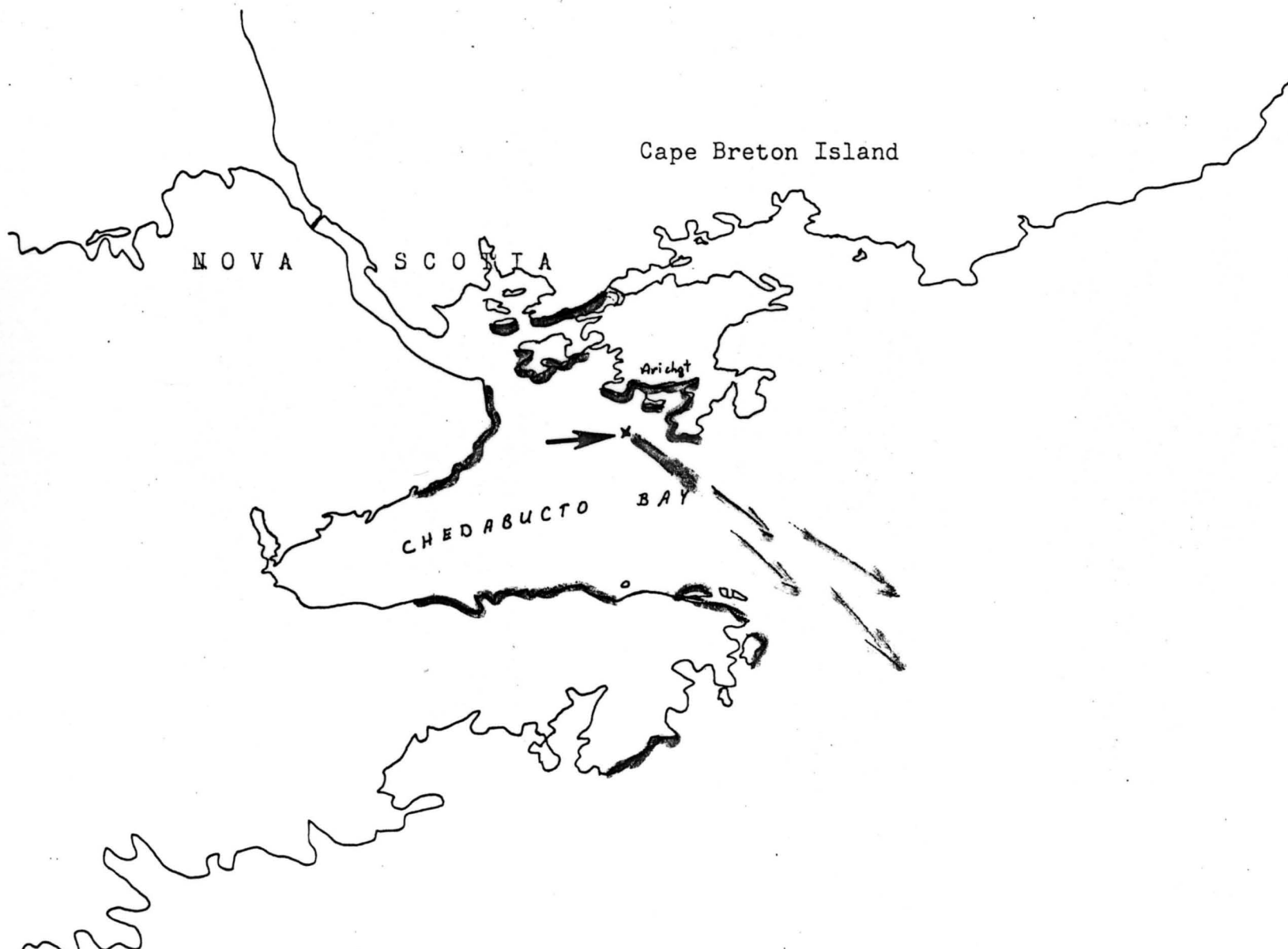


Figure 1.

Approx. 160 miles of coast oiled to varying degrees

OLDEN ROBIN.

Grounded 30 Sept, 1974-Dalhousie N.B.

Estimate 1,000-2,000 bbls. Bunker C escaped

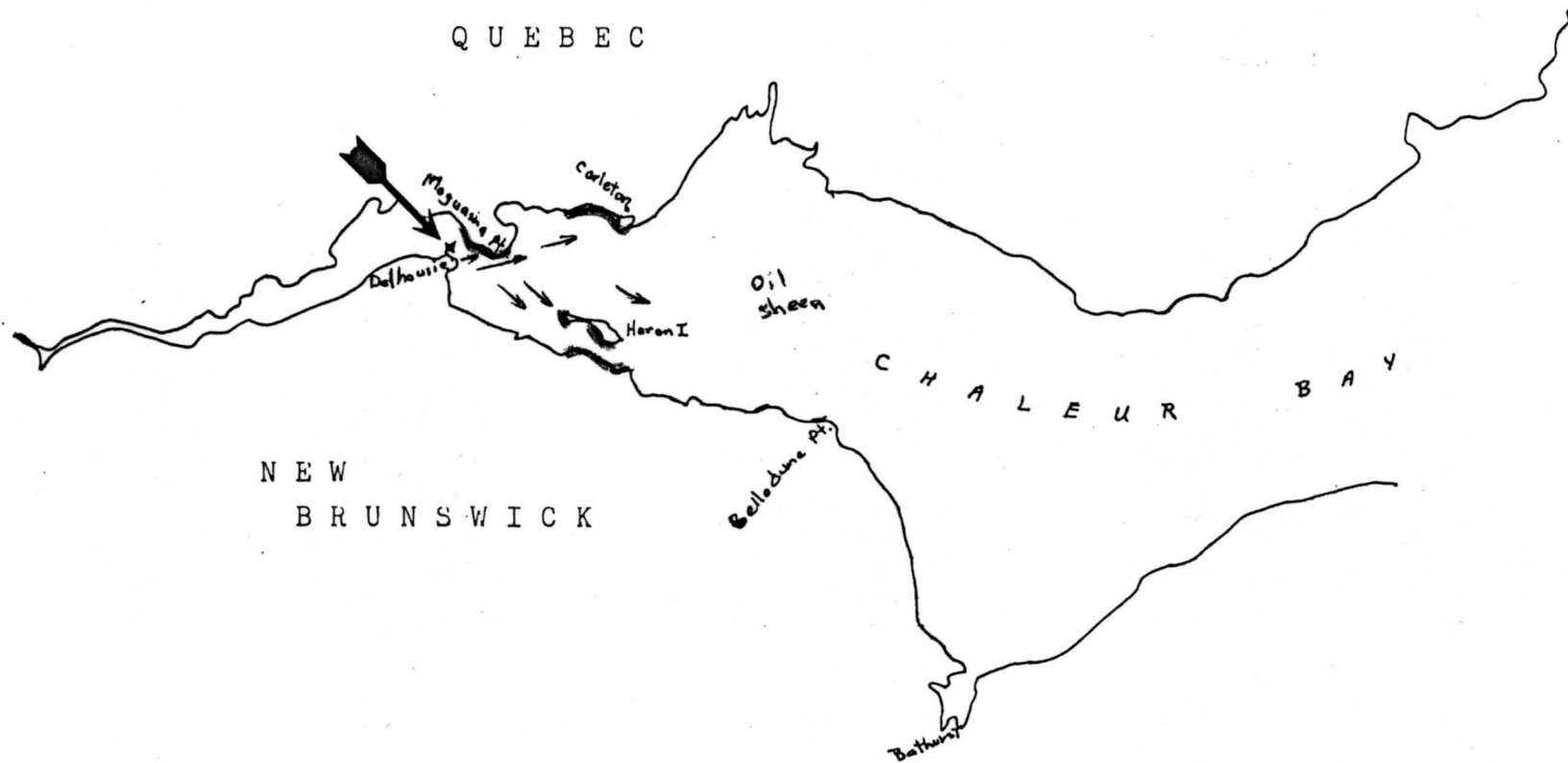


Figure 2. OILED BIRDS- observed along approximately 70 miles of coast

ARROW OIL SPILL

Table 1.
Oiled birds observed along 3 miles of coast near Arichat, Nova Scotia (Chedabucto Bay) on February 9, 1970 (Smith and Watson)

<i>Species</i>	<i>Heavily oiled</i>	<i>Dead</i>	<i>Total</i>
<i>Red-necked Grebe</i>	1	-	1
<i>Black Guillemot</i>	1	-	1
<i>Murre</i>	-	4	4
<i>Oldsquaw</i>	12	13	25
<i>Red-breasted Merganser</i>	1	9	10
	15 (37%)	26 (63%)	41 (100%)

ARROW OIL SPILL

Table 2.

Oiled birds observed during a ground survey of 11.6 miles of Chedabucto Bay coastline on February 16, 1970 (Pearce and Wood)

<i>Species</i>	<i>Dead</i>	<i>Heavily oiled</i>	<i>Total</i>
<i>Common Loon</i>	1	-	1
<i>Red-necked Grebe</i>	5	-	5
<i>Horned Grebe</i>	24	4	28
<i>Grebe spp.</i>	30	-	30
<i>Common Goldeneye</i>	3	1	4
<i>Bufflehead</i>	8	-	8
<i>Oldsquaw</i>	117	27	144
<i>White-winged Scoter</i>	1	1	2
<i>Scoter (unidentified)</i>	4	2	6
<i>Red-breasted Merganser</i>	35	5	40
<i>Duck (unidentified)</i>	9	-	9
<i>Gull (unidentified)</i>	3	-	3
<i>Common Murre</i>	1	-	1
<i>Murre (unidentified)</i>	37	1	38
<i>Dovekie</i>	16	-	16
<i>Black Guillemot</i>	7	-	7
<i>Bird (unidentified)</i>	7	-	7
	308 (88%)	41 (12%)	349 (100%)

ARROW OIL SPILL

Table 3.
Birds observed dead on Sable Island during March 12, 13
and May 15, 1970

<i>Species</i>	<i>March</i> <i>(A.R. Lock)</i>	<i>May</i> <i>(R.G. Brown)</i>
<i>Common Loon</i>	1	4
<i>Fulmar</i>	29	43
<i>Gannet</i>	0	2
<i>Oldsquaw</i>	1	8
<i>Scoter spp.</i>	0	1
<i>Merganser spp.</i>	0	1
<i>Duck spp.</i>	0	3
<i>Razorbill</i>	0	1
<i>Common Murre</i>	0	6
<i>Thick-billed Murre</i>	0	137
<i>Murre spp.</i>	122	175
<i>Dovekie</i>	57	57
<i>Black Guillemot</i>	5	1
<i>Common Puffin</i>	2	2
<i>Seabird spp.</i>	0	4
	<u>217</u>	<u>445</u>
<i>Miles searched</i>	1.8	9.6

Table 4.

Estimated minimum mortality caused by Arrow oil slicks (Ref. Brown et al.)

	<i>Chedabucto Bay</i>	<i>Sable Island</i>
<i>Grebes</i>	450	0
<i>Fulmar</i>	0	650
<i>Oldsquaw</i>	1000	30
<i>Red-breasted Merganser</i>	300	5
<i>Murres</i>	250	2800
<i>Dovekie</i>	100	1250
<i>Black Guillemot</i>	50	50
<i>All birds</i>	2300	4800

GOLDEN ROBIN SPILL

Table 5.
Oiled birds observed during a survey of 3.5 miles
of shoreline on October 2, 1974

<i>Species</i>	<i>Number heavily oiled</i>
<i>Common Loon</i>	5
<i>Red-breasted Merganser</i>	1
<i>Surf Scoter</i>	1
<i>Black Guillemot</i>	34
<i>Red-necked Grebe</i>	<u>26</u>
<i>Total</i>	67

Approximately 19 oiled birds per mile

*All birds still alive - were able to catch only
6 of the 67 birds*

Table 6. Golden Robin spill.
 Summary of heavily oiled birds observed on 24.8 miles of coast during the
 period October 2 to 5, 1974

<i>Species</i>	<i>Number observed</i>	<i>Per cent of total</i>
<i>Common Loon</i>	17	*
<i>Red-throated Loon</i>	70	7
<i>Horned Grebe</i>	11	*
<i>Red-necked Grebe</i>	195	20
<i>Black Guillemot</i>	188	20
<i>Common Murre</i>	16	*
<i>Black Duck</i>	1	*
<i>American Green-winged Teal</i>	1	*
<i>Common Eider</i>	161	17
<i>Surf Scoter</i>	94	10
<i>Black Scoter</i>	2	*
<i>Goldeneye</i>	16	*
<i>Red-breasted Merganser</i>	35	*
<i>Double-crested Cormorant</i>	87	9
<i>Bonaparte's Gull</i>	8	*
<i>Herring Gull</i>	20	*
<i>Ring-billed Gull</i>	15	*
<i>Least Sandpiper</i>	10	*
<i>Semi-palmated Sandpiper</i>	5	*
<i>Black-bellied Plover</i>	7	*
<i>Semi-palmated Plover</i>	1	*
<i>Dowitcher</i>	1	*
<i>Yellowlegs</i>	1	*
<i>Horned Lark</i>	1	*
Totals 24 species	963 birds**	

* Less than 5%

**Approximated 5% of the total were dead on the beach

Table 7.

Estimate of migratory bird kill in Chaleur Bay due to Golden Robin oil spill (assuming that all birds observed heavily oiled would eventually die)

Area	Coastal milage surveyed	Number of oiled birds	Birds per mile	Miles of coastline	Estimated total oiled birds
Quebec (Fleurant to Maria)	4.66 mi.	64	13.8	30	414
New Brunswick (Dalhousie to Belledune)	20.15 mi.	898	44.0	40	1760
Totals	24.81 mi.	962		70	2174

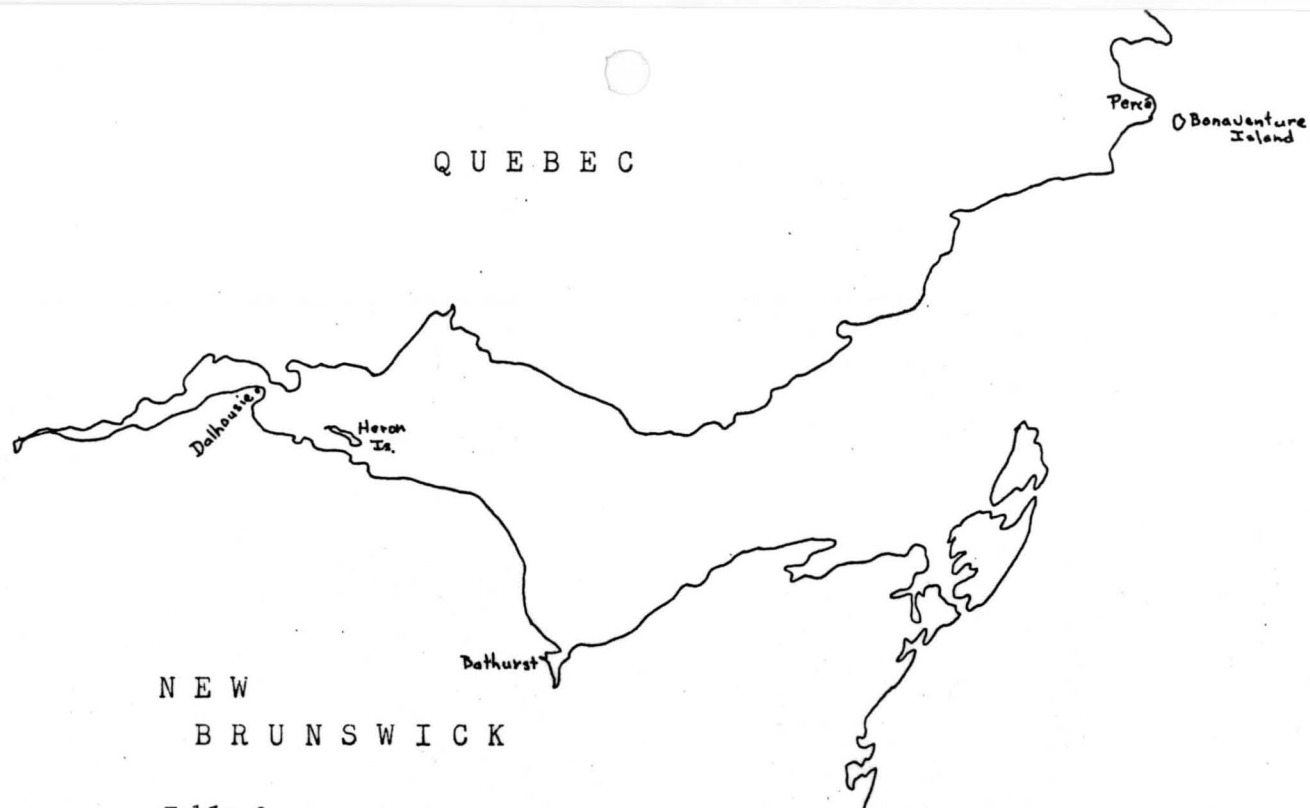


Table 8.
Oiled Gannets observed on Bonaventure Island, Quebec, during first
week of October 1974 (Observer Philip Taylor)

	Sample observed	Proportion Oiled	Remarks
October 5	>1000	1%	Mostly <% soiled
October 7	>1000	2%	Mostly <% soiled One bird 60% soiled

- estimated approximately 700 birds may have been oiled
- observations are coincident with the Golden Robin Oil spill