

ENVIRONMENTAL ATLAS

OF

EASTERN NOVA SCOTIA

SECTION I

BRIER ISLAND TO

SABLE RIVER

ENVIRONMENT CANADA

ENVIRONMENTAL PROTECTION SERVICE

ATLANTIC REGION

MARCH 1980

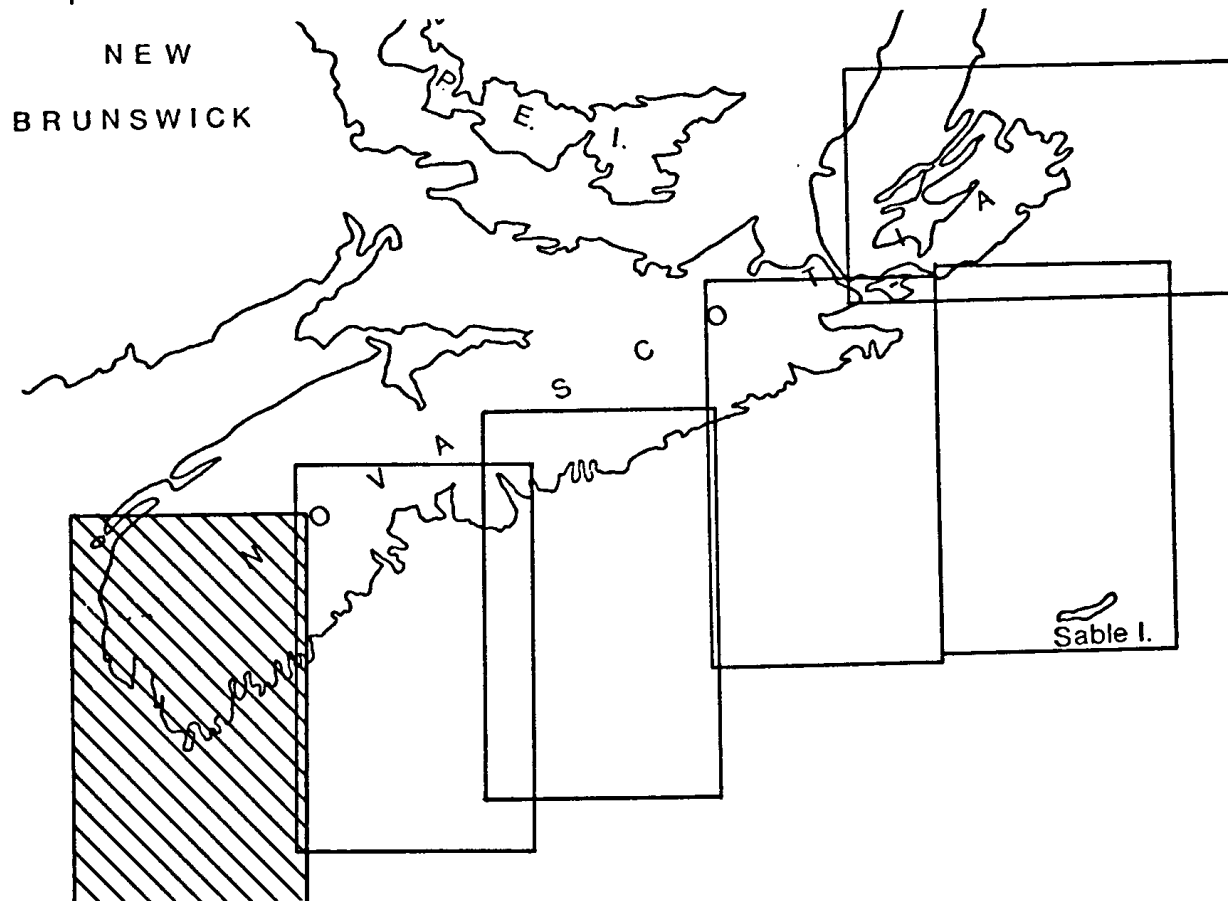
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In addition, the information contained in this atlas may assist government departments in activities such as the assessment of oil spill contingency plans, development of environmental operating conditions for offshore petroleum exploration and in the review of ocean dumping application in the Atlantic Region.

Eastern Nova Scotia has been subdivided into six sections:

1. Brier Island to Sable River
2. Sable River to Halifax
3. Halifax to Moser River
4. Liscomb Point to Chedabucto Bay
5. Sable Island
6. Southeastern Cape Breton Island

These are shown by the sketch map below (the shaded portion indicates the area covered in this section).



Each section of the atlas contains two base maps, one depicting shoreline types and the other showing features such as access roads, lighthouses and bathymetric contours. Biological and physical environmental parameters are described by means of transparent acrylic overlays. These overlays may be used individually or in any combination.

The appendix contains monthly wind and visibility data presented in a series of twelve tables. This type of information is provided for the following coastal stations:

Yarmouth, Shearwater, Sable Island and Sydney. Tables listing tidal ranges, fish processing plants, lobster pounds and fisheries protection officers are also provided. A list of the references utilized has been included, however, personal communications and observations could not be cited.

The author expresses his appreciation for the cooperation provided by the following groups without whose assistance this report could not have been prepared: Atlantic Oceanographic Laboratory, Atmospheric Environment Service, Canadian Wildlife Service, Environmental Management Service, Fisheries and Marine Service, Maritime Resource Management Service, Nova Scotia Department of Environment, Parks Canada, Petro-Canada.

The scientific advice of numerous E.P.S personnel is also acknowledged. In particular, I would like to thank Mr. R. Percy, Mr. A. McIver, Mr. J. Swiss and Dr. C. Duerden for their help in the preparation of this report.

The Atlantic coast of Nova Scotia is an important maritime region supporting an abundance of fish, birds and marine mammals. Many of these organisms are entirely dependent on the coastal environment for their survival. This renewable resource provides a source of income and recreation for thousands of people throughout eastern North America. In recent years, the significance of the area as an oil transportation route and as a site for offshore petroleum exploration has intensified. The potential risk of a major oil spill in the coastal zone has grown accordingly.

This atlas compiles existing physical and biological baseline data for the Atlantic coast of Nova Scotia including the Scotian Shelf and Sable Island. Ocean dumping disposal sites as well as important offshore drilling sites (oil and/or gas shows) are also plotted. For my purposes, an oil or gas show is defined as any well-site that has tested oil or gas. This does not imply that commercial quantities of hydrocarbons have been discovered at these locations.

The Scotian Shelf is situated between the Laurentian and Fundian Channels and extends seaward from the Nova Scotia mainland for approximately 200 kilometers. The Shelf area is typified by numerous offshore banks separated by several basins. The major banks are Browns, Roseway, LaHave, Emerald, Sambro, Middle, Banquereau, Canso, Sable Island and Missaine.

The topography of the region is dominated by rocky shore zones of low relief situated on an open-ocean coast. (a simplified shoreline classification has been provided for the coastal zone). The coastal area is relatively free of sea ice, apart from Cape Breton Island which receives substantial ice floes from the Gulf of St. Lawrence during February and March. Tidal currents rotate clockwise over the Scotian Shelf with velocities varying from 12.7 to 15.8 cm/sec. Tidal ranges are low - generally less than two meters, except near the Bay of Fundy where the range approaches four meters. High wave energy condition prevail along most of this stretch of coastline.

The climate is described as humid-temperate with mean summer temperatures of 18-20°C and mean winter temperatures of -3°C to -5°C. Prevailing winds blow from the southwest in the summer and the northwest in winter. Average wind speeds are 18km/h in summer and 37km/h in winter. Between December and April, gale force winds can be expected offshore 10 to 15% of the time.

Surface circulation in the Scotian Shelf is generally counterclockwise with a southwesterly drift along the coast of Nova Scotia and a northeasterly drift along the edge of the Continental Shelf. Surface current speeds between 3.8 and 18.5 cm/sec have been recorded.

The Scotian Shelf consists of four distinct water masses: Coastal Water, Warm Slope Water, Labrador Slope Water and the Gulf Stream. Each has a separate salinity and temperature regime.

The Coastal Water (coldest and freshest) is mainly comprised of water from the Gulf of St. Lawrence. This flow of water, called the Nova Scotian Current (Bigelow 1927) moves southwesterly parallel to the coast of Nova Scotia and may at times enter the Gulf of Maine.

The Slope Water, located between the Coastal Water and the Gulf Stream, is comprised of two distinct segments - the Warm Slope Water and the Labrador Slope Water. Situated close to the Gulf Stream, the Warm Slope Water is warmer and more saline than the Labrador Slope Water which is found near the Coastal Water. Although currents are weak and erratic, an easterly flow has been recorded for the Warm Slope Water while the Labrador Slope Water has a westerly flow.

The Gulf Stream is located beyond the Slope Water. It is defined as a narrow band of swift flowing warm saline water extending to depths in excess of 1500 meters.

Areas of relatively intense and constant upwelling have been identified near the entrance to the Bay of Fundy and at the northeast corner of Nova Scotia adjacent Cabot Strait (Sutcliffe *et al* 1976). Another important upwelling area is known as the Scotian Gulf which lies between Emerald Bank and LaHave Bank. Along the Nova Scotia coast there is a narrow band of intermittent upwelling influenced principally by winds and local bathymetry.

During summer, high levels of plankton have been found on the Scotian Shelf, primarily along the Shelf break. Phytoplankton have been recorded at levels of 349mg/c (m²day) by Fournier et al 1977. These high concentrations are thought to be associated with areas of upwelling where nutrient-rich subsurface water is carried to the ocean surface.

Irish moss is the principal seaweed harvested in the region. The plants are abundant just below the low-water mark. The most productive areas are located in Yarmouth and Shelburne counties. Rockweed is another intertidal seaweed found in commercial quantities in southwestern Nova Scotia.

Baitworms (bloodworms) are harvested along the coast of southwestern Nova Scotia. Adult worms are abundant in soft estuarine mud. Larvae spend several weeks in the plankton before settling to a benthic existence.

Squid are caught commercially on the Scotian Shelf, primarily along the Shelf break and in the Sable Island Bank region. During late summer, squid are found inshore from Digby to Halifax although concentrations vary significantly from year to year.

Shellfish harvested in the region include scallops, oysters, bar clams, soft-shell clams, quahogs and mussels. However, the only commercial species are scallops and oysters. Major scallop beds are located on Browns and Middle Banks, Lurcher and Trinity Shoals. A large offshore scallop fishery also occurs on Georges Bank which is located southwest of the study area.. Oysters are grown commercially on raft cultures (oyster farming). This aquaculture activity is confined mainly to the Bras d'or Lakes. At Ostrea Lake, near Musquodoboit Harbour, the Nova Scotia Department of Fisheries operates an experimental shellfish station.

Lobsters and queen (snow) crabs are the primary crustaceans harvested commercially in the region. Lobsters occur inshore along the entire coast to a depth of about 20 meters. The heaviest fishing activity takes place in southwestern Nova Scotia. Lobster are also fished offshore, mainly on Browns Bank and the northwest part of Georges Bank. Queen crabs occur in commercial quantities along the southeast coast of Cape Breton Island.

Numerous fish species use the Scotian Shelf as a feeding and nursery areas. The most important commercial species are herring, mackerel, silver hake, cod, pollock and haddock.

Herring is a pelagic species widely distributed throughout the region. The major stock, called the Nova Scotian stock, migrates from the Bay of Fundy to the vicinity of Chedabucto Bay. Overwintering takes place near Sydney Bight and Chedabucto Bay. During spring and fall spawning has been identified in numerous coastal areas and the Bras d'or Lakes.

Mackerel, another pelagic species, migrate through the coastal waters during spring (northward) and fall (southward). Mackerel generally overwinter in deep water areas at the edge of the Continental Shelf.

Silver hake are concentrated in the vicinity of Canso Bank, Middle Bank, southwestern Sable Island Bank, Georges Bank and the Browns-LaHave Basin. Overwintering of this species also occurs along the edge of the Continental Shelf. Spawning takes place during summer, mainly on the western portion of Sable Island Bank.

Several major cod stocks on the Scotian Shelf have been identified: the Nova Scotian coastal stock, the Browns - LaHave stock, the Georges Bank stock and the Banquereau - Sable Island Bank stock. In the spring, spawning occurs on most of the offshore banks. The Browns - LaHave stock is concentrated on the offshore banks in the winter before dispersing to mix with the Nova Scotia coastal stock during the summer.

In this region pollock are thought to be of a single stock which spawns on Jeffrey's Ledge (U.S. waters). From there, pollock migrate to three known areas - the Bay of Fundy, southwestern Nova Scotia and the southern Gulf of Maine.

Two major stocks of haddock are found in the area - the eastern Scotian Shelf stock and the western Scotian Shelf stock. During winter, the eastern stock is concentrated on Emerald, Western and Sable Island Banks. The western stock overwinters on Browns and LaHave Banks. In summer, both stocks disperse to inshore areas along the Nova Scotian coast. (Haddock stocks are recognized as presently being depleted on the Scotian Shelf).

Atlantic salmon migrate through Scotian Shelf waters to spawning rivers in May, although spawning does not take place until October and November. Except for southwestern Nova Scotia, salmon support a significant sport fishery during the summer.

Waterfowl, primarily Canada geese, black ducks, eiders and scoters migrate through the region in spring (northward) and fall (southward). Major stop-over areas are located in southwestern and southeastern Nova Scotia and Sable Island. These areas are also known wintering locations for waterfowl, mainly eiders.

Numerous shorebirds, mainly sandpipers and plovers also migrate through the region, using basically the same staging areas as waterfowl.

Sable Island is the only known breeding area in the world of the Ipswich sparrow. During summer, approximately 4000 individuals can be found there (Mc Laren 1968).

A number of seabird colonies are located in coastal areas; species present during the breeding season include great cormorants, double crested cormorants, great blue herons, razor billed auks, Leach's storm petrel, Atlantic puffins, black-legged kittiwates, black guillemots, Arctic terns, common terns, Roseate terns in addition to great black-backed and herring gulls. Seabirds are generally found at their nesting sites from April to October. Large numbers of pelagic seabirds overwinter in waters southeast of Cape Breton Island and in the vicinity of the Scotian Gulf. In spring, pelagic birds are concentrated in an area southeast of Yarmouth. The main species found in these areas are murrelets, dovekeys, black-legged kittiwates, Glaucous gulls, Icelandic gulls and northern fulmars (Brown et al 1976).

A large number of Grey seals are found year-round throughout the region. The Basque Islands, Camp Island and Sable Island are the only known breeding sites for grey seals. Sable Island supports the largest population with over 2,500 pups born there annually during January and February. Grey seals migrate between Sable Island and the coast of Nova Scotia, although this movement is usually restricted to juveniles (Mansfield & Beck 1977).

Harbour seals are also permanent residents of the coastal zone. Approximately 3,000 to 4,000 seals are found along the coast with another 1,300 inhabiting Sable Island. (Boulva 1973). Breeding occurs during May and June in numerous bays and inlets. Unlike grey seals, there is little exchange between Sable Island and coastal populations.

Fin whales and sei whales are common in the vicinity of Emerald Bank during summer. In winter, these whales are concentrated primarily on LaHave, Roseway, Baccaro and Browns Banks. (Sutcliffe and Brodie 1977). Other species which migrate through the region include sperm, minke, humpback, blue, Atlantic pilot, bowhead and killer whales.

Several species of dolphins and porpoises can be found in the coastal waters during spring and fall migrations.

KEY TO OVERLAYS

A. MARINE MAMMALS

Grey Seals Breeding Area - Winter	.....	▲
Migration Route for Grey Seals - Summer	.....	➡
Overwintering Area for Whales	.....	+ + + +
Feeding Area for Whales - Summer	.....	x x x x x

B. AVIFAUNA

Seabird Breeding Colony	.....	*
Migration Route for Ducks & Geese - Spring & Fall	.....	➡
Migration Route for Shorebirds - Spring & Fall	.....	|||
Migratory Bird Stop-over Zone - Spring & Fall	.....	|||
Overwintering Habitat - Primarily Eiders	.....	□ □ □ □
Ducks & Geese	.....	○ ○ ○ ○
Migratory Bird Sanctuary	.....	✕
Pelagic Seabird Concentrations :		
Spring	.....	|||
Winter	.....	|||

C. FISHERIES

Major Commercial Species - Primary Fishing Areas

Tuna	.....	T
Cod	.....	C
Hake	.....	K
Haddock	.....	D
Redfish	.....	R
Pollock	.....	P
Herring	.....	H
Mackerel	.....	M
Queen Crabs	.....	Q
American Plaice	.....	L
Yellowtail	.....	Y
Clams	.....	▲
Oysters	.....	△
Scallops	.....	○ ○
Gaspereau	.....	g
Salmon	.....	s
Smelt	.....	m
Eels	.....	e
Baitworms	.....	b
Seaweed Harvesting	.....	●
Salmon Trap or Net	.....	T
Fish Trap	.....	†
Squid	.....	◆
Herring Spawning Area	.....	■ ■ ■
Overwintering Area for Herring	.....	● ● ●
Silver Hake Spawning Area	.....	└ ┘
Fish Processing Plant	.....	F
Lobster Pound	.....	L
Trout Farming	.....	▣

D. OCEANOGRAPHY

Primary Surface Currents:

Summer	.....	➡
Winter	.....	➡
All Seasons	.....	➡

Sea Surface Temperature (°C):

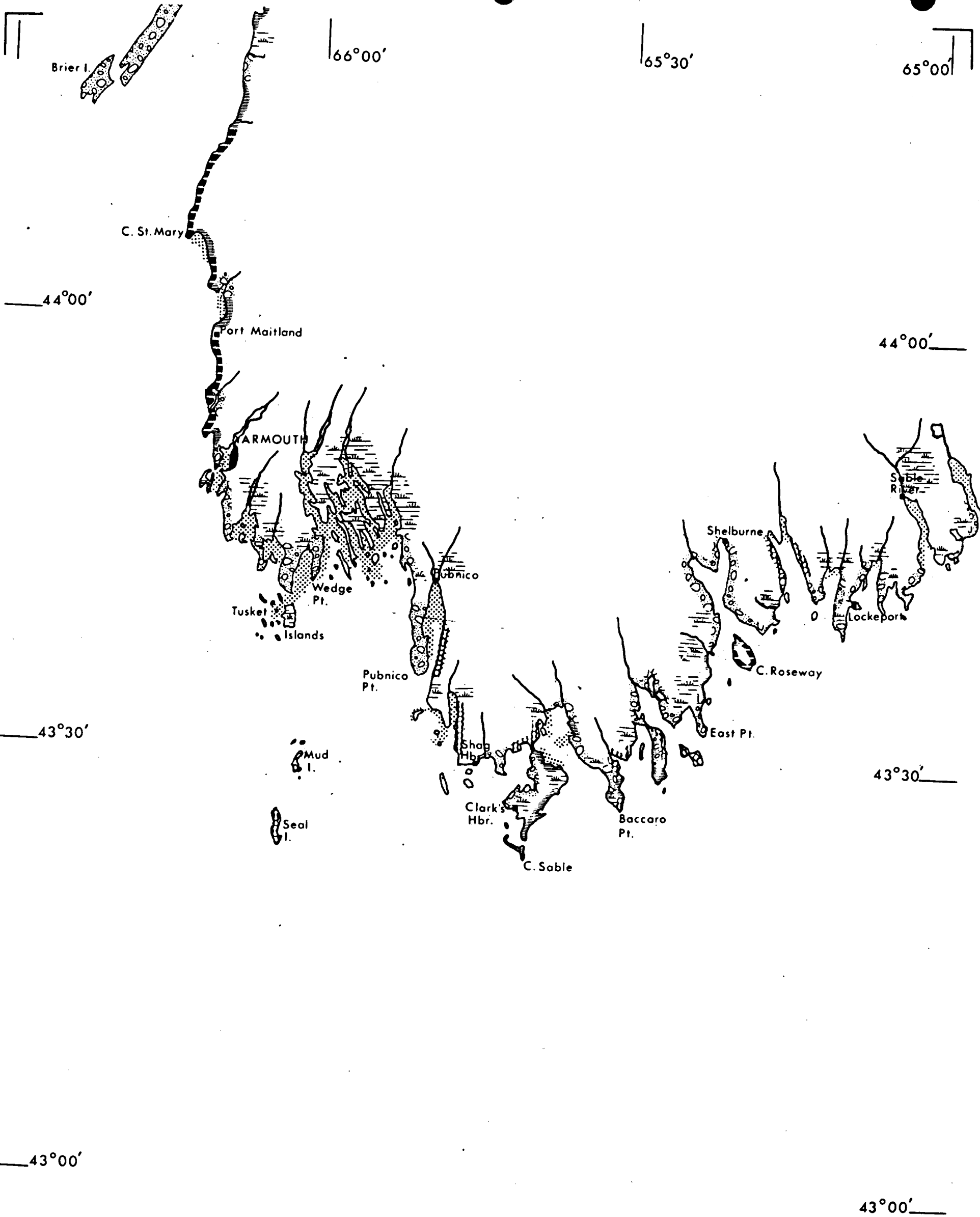
Spring	.....	— — —
Summer	.....	— — —
Fall	.....	— — —
Winter	.....	— — —

Mean Concentration of Sea Ice (Winter):

10/10	.....	▣
>7/10	.....	▣

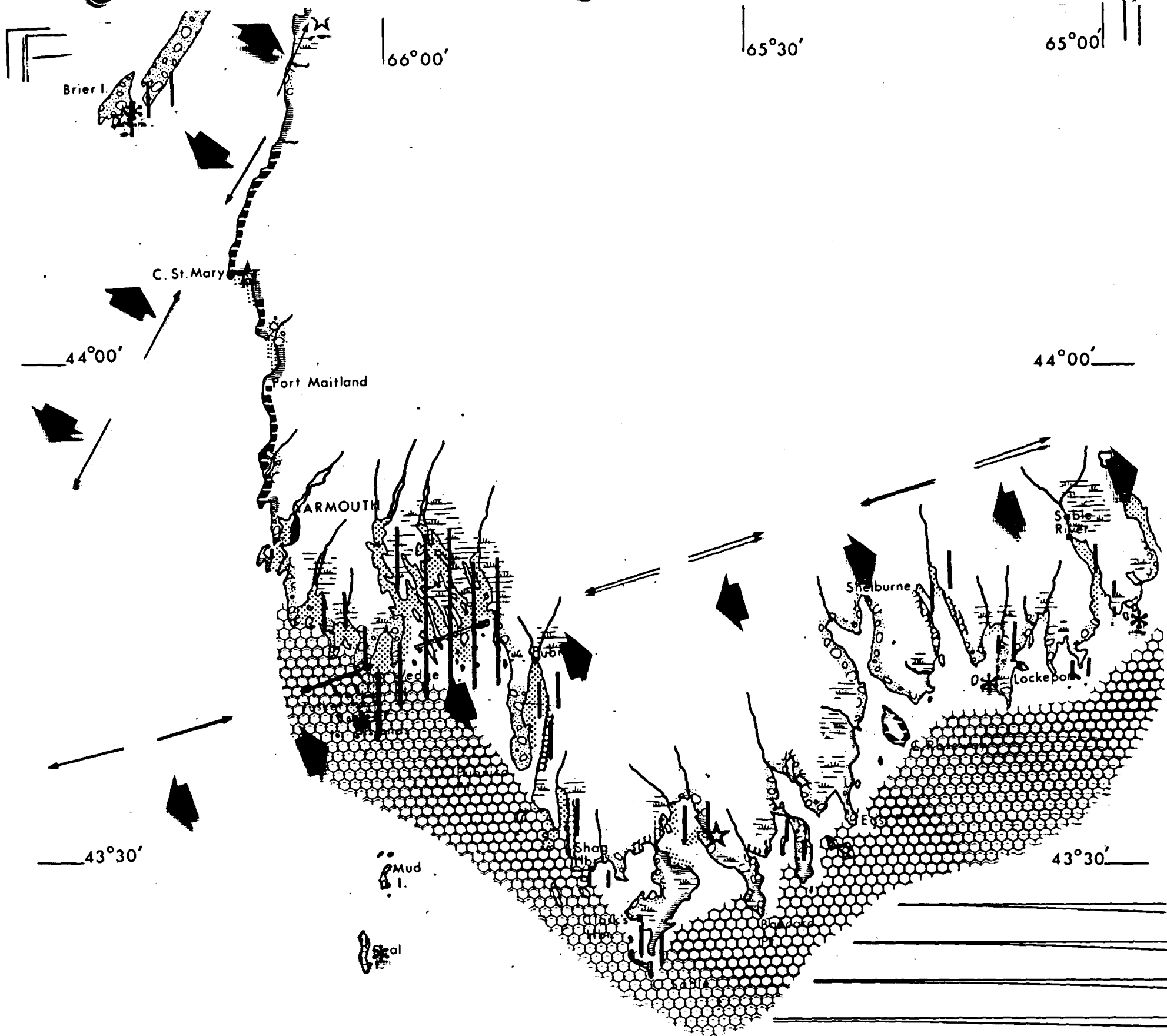
E. MISCELLANEOUS

International Biological Programme Site	.....	☆
Oil Transfer Point	.....	★
Dredging Disposal Site	.....	ⓓ
Offshore Drilling Site:		
Oil Shows	.....	⊕
Gas Shows	.....	⊕
Oil & Gas Shows	.....	⊕



- KEY:
- Cliff
 - Sand Beach
 - Cobble/Shingle Beach
 - Rocky Shore
 - Intertidal Mud/Sand
 - Salt Marsh

SCALE 1:500,000
0 5 10
KILOMETERS

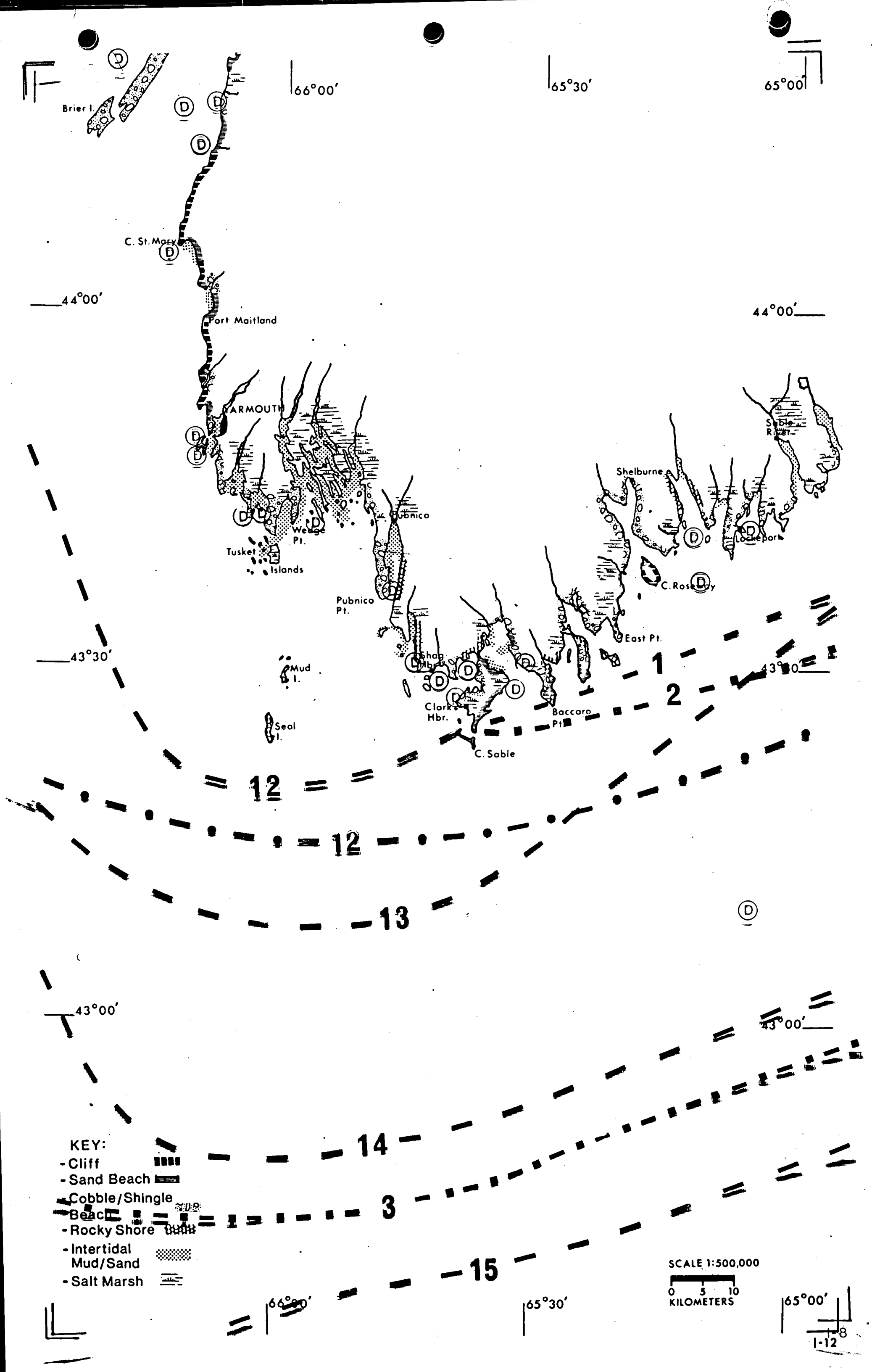


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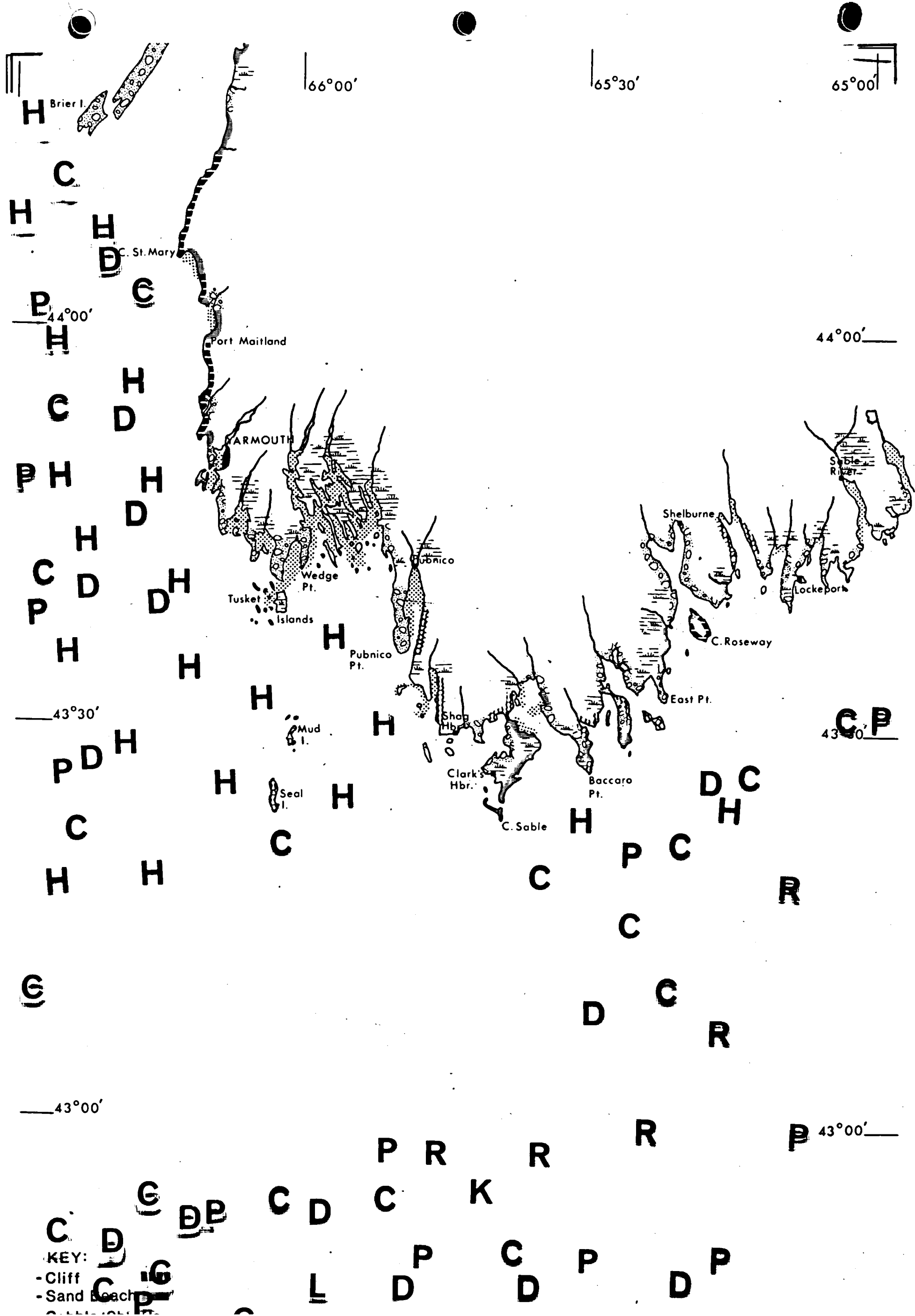
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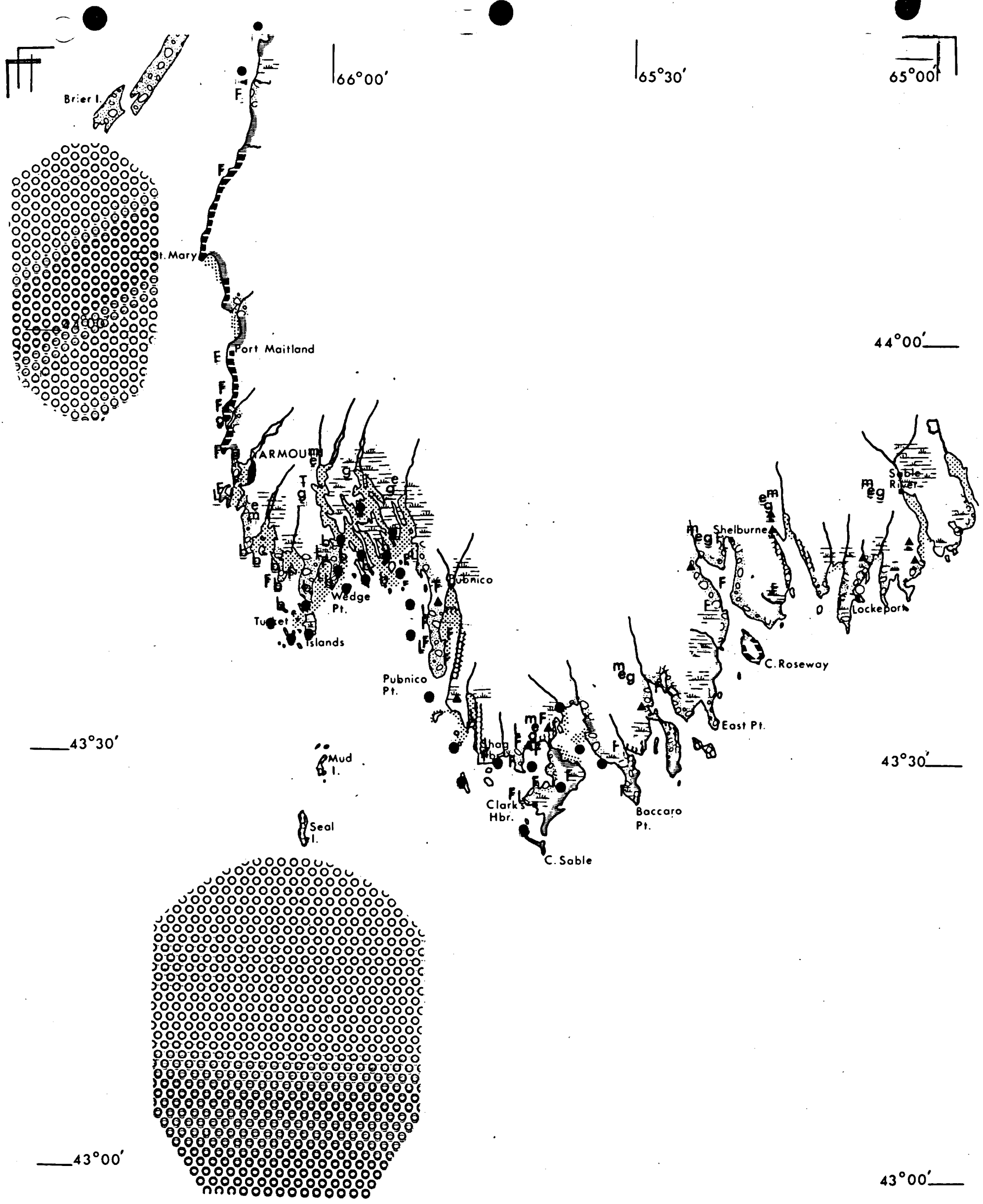


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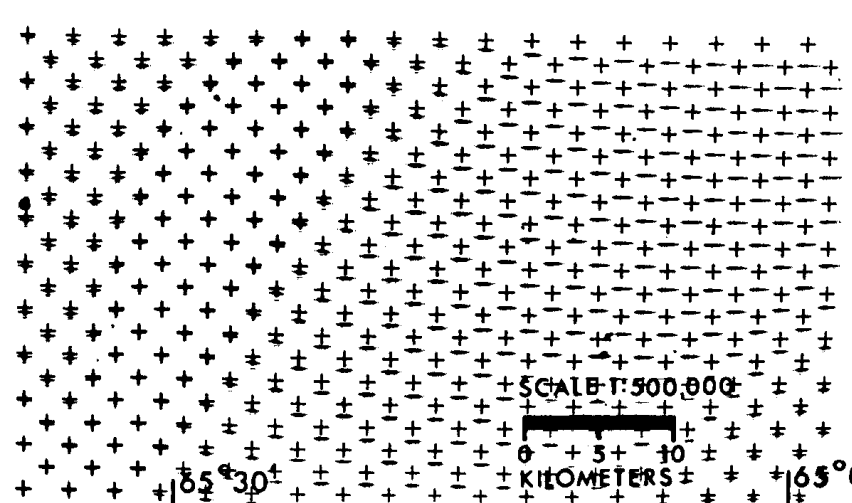
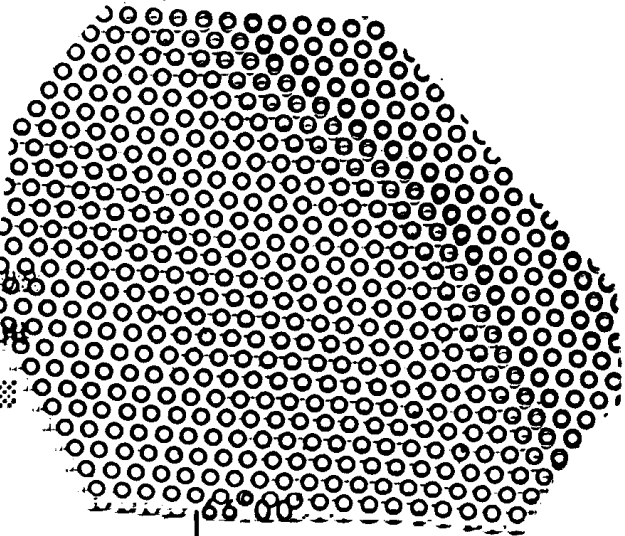
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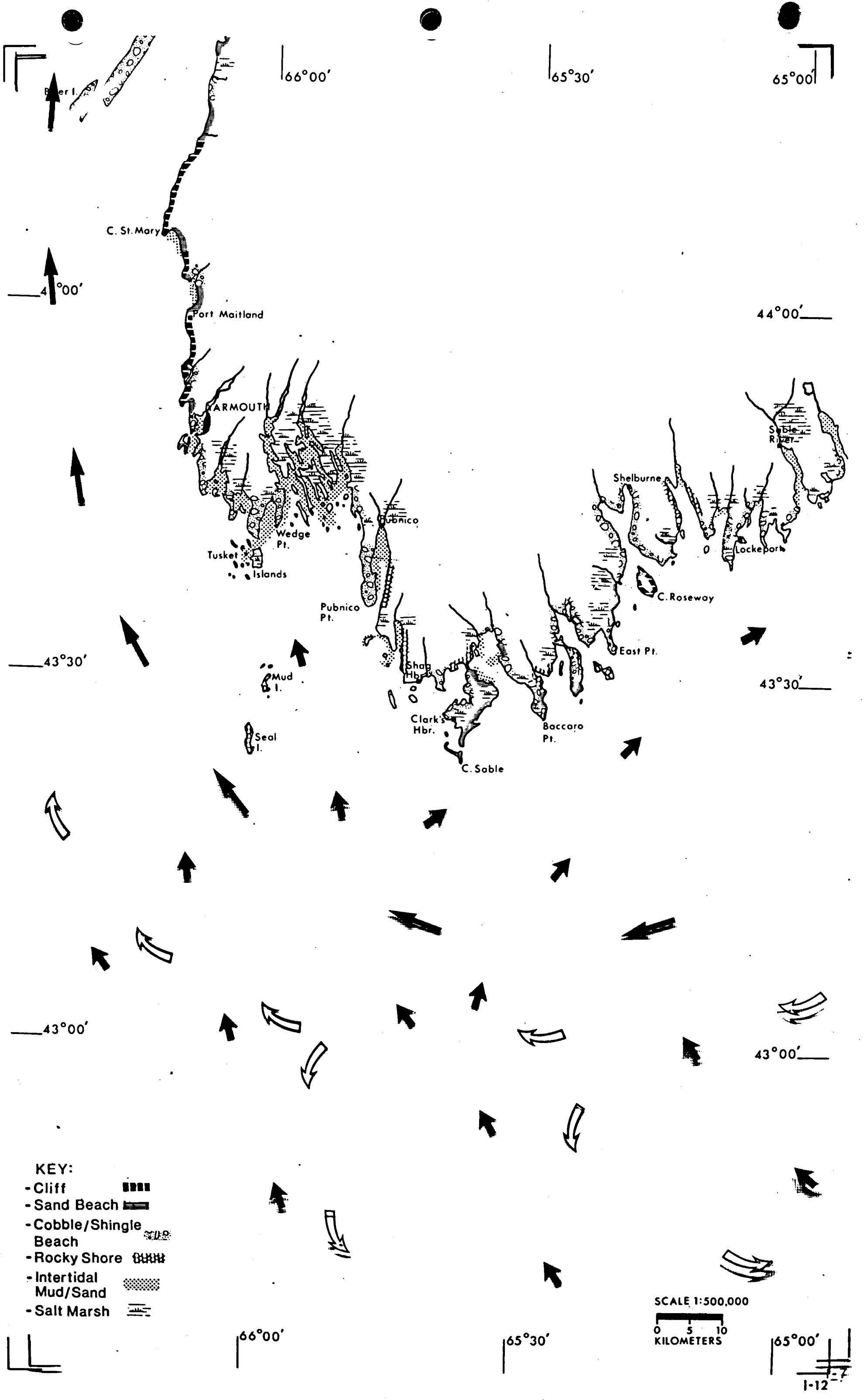




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C. St. Mary

Port Maitland

YARMOUTH

Tusket
Islands

Wedge
Pt.

Pubnico
Pt.

Pubnico

Shag
Hbr.

Clark's
Hbr.

C. Sable

Baccaro
Pt.

East Pt.

C. Roseway

Shelburne

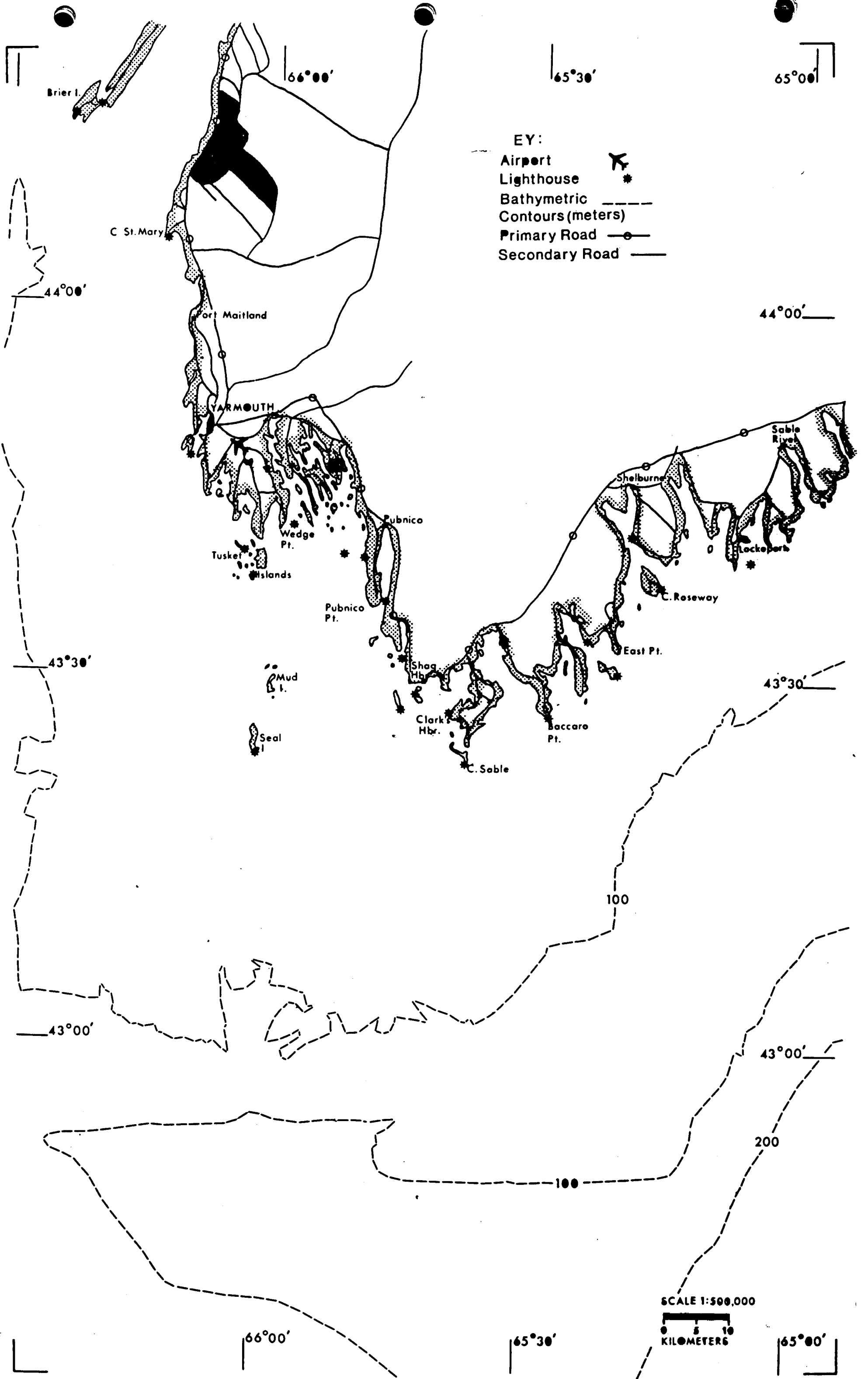
Lockeport

S. Die
R. Hbr.

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SCALE 1:500,000
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KILOMETERS



ENVIRONMENTAL ATLAS

OF

EASTERN NOVA SCOTIA

SECTION II

**SABLE RIVER
TO HALIFAX**

ENVIRONMENT CANADA

ENVIRONMENTAL PROTECTION SERVICE

ATLANTIC REGION

MARCH 1980

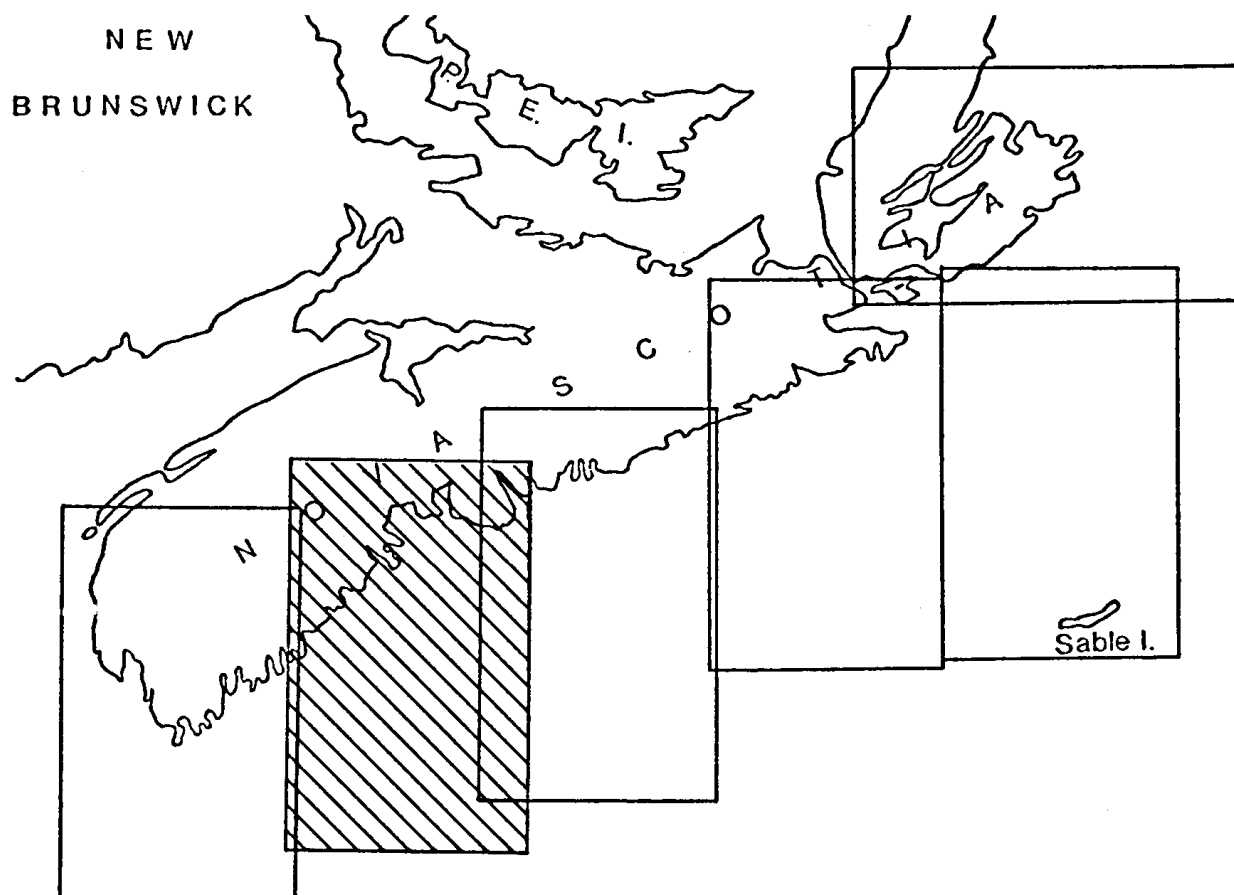
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This project was completed under DSS contract #79-00022

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Grey Seals Breeding Area - Winter	▲
Migration Route for Grey Seals - Summer	➡
Overwintering Area for Whales	+
Feeding Area for Whales - Summer	x

B. AVIFAUNA

Seabird Breeding Colony	*
Migration Route for Ducks & Geese - Spring & Fall	➡
Migration Route for Shorebirds - Spring & Fall .....	|||
Migratory Bird Stop-over Zone - Spring & Fall .....	|||
Overwintering Habitat - Primarily Eiders	□□□□
Ducks & Geese	○
Migratory Bird Sanctuary	◇
Pelagic Seabird Concentrations :	
Spring	==
Winter	

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Pollock	P
Herring	H
Mackerel	M
Queen Crabs	Q
American Plaice	L
Yellowtail	Y
Clams	▲
Oysters	△
Scallops	○
Gaspereau	g
Salmon	s
Smelt	m
Eels	e
Baitworms	b
Seaweed Harvesting	●
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Squid	◆
Herring Spawning Area	■
Overwintering Area for Herring	●
Silver Hake Spawning Area	⊥
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Lobster Pound	L
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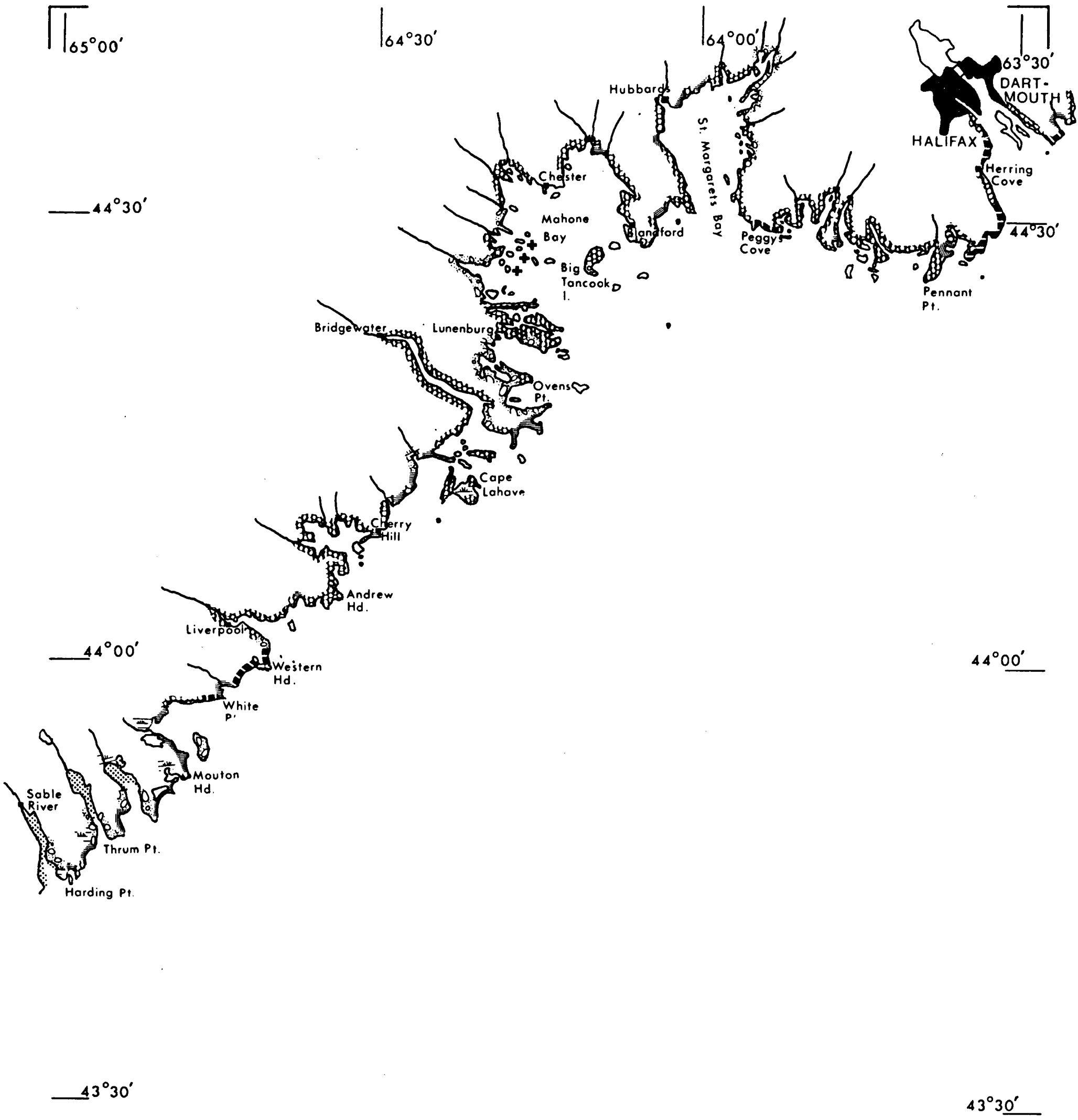
Spring	—
Summer	—
Fall	—
Winter	—

Mean Concentration of Sea Ice (Winter):

10/10	■
>7/10	■

E. MISCELLANEOUS

International Biological Programme Site	★
Oil Transfer Point	★
Dredging Disposal Site	ⓓ
Offshore Drilling Site:	
Oil Shows	⊕
Gas Shows	⊕
Oil & Gas Shows	⊕

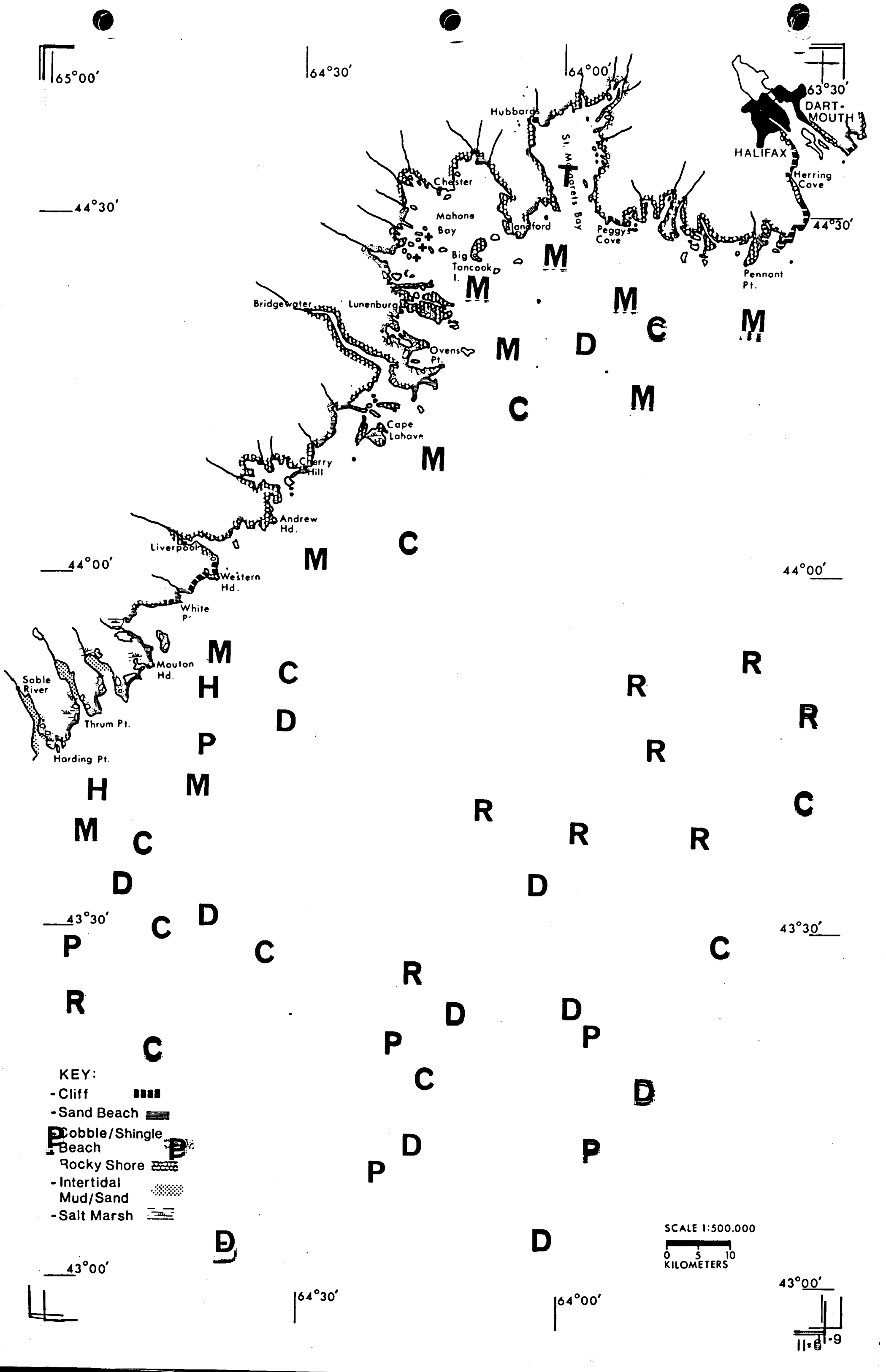


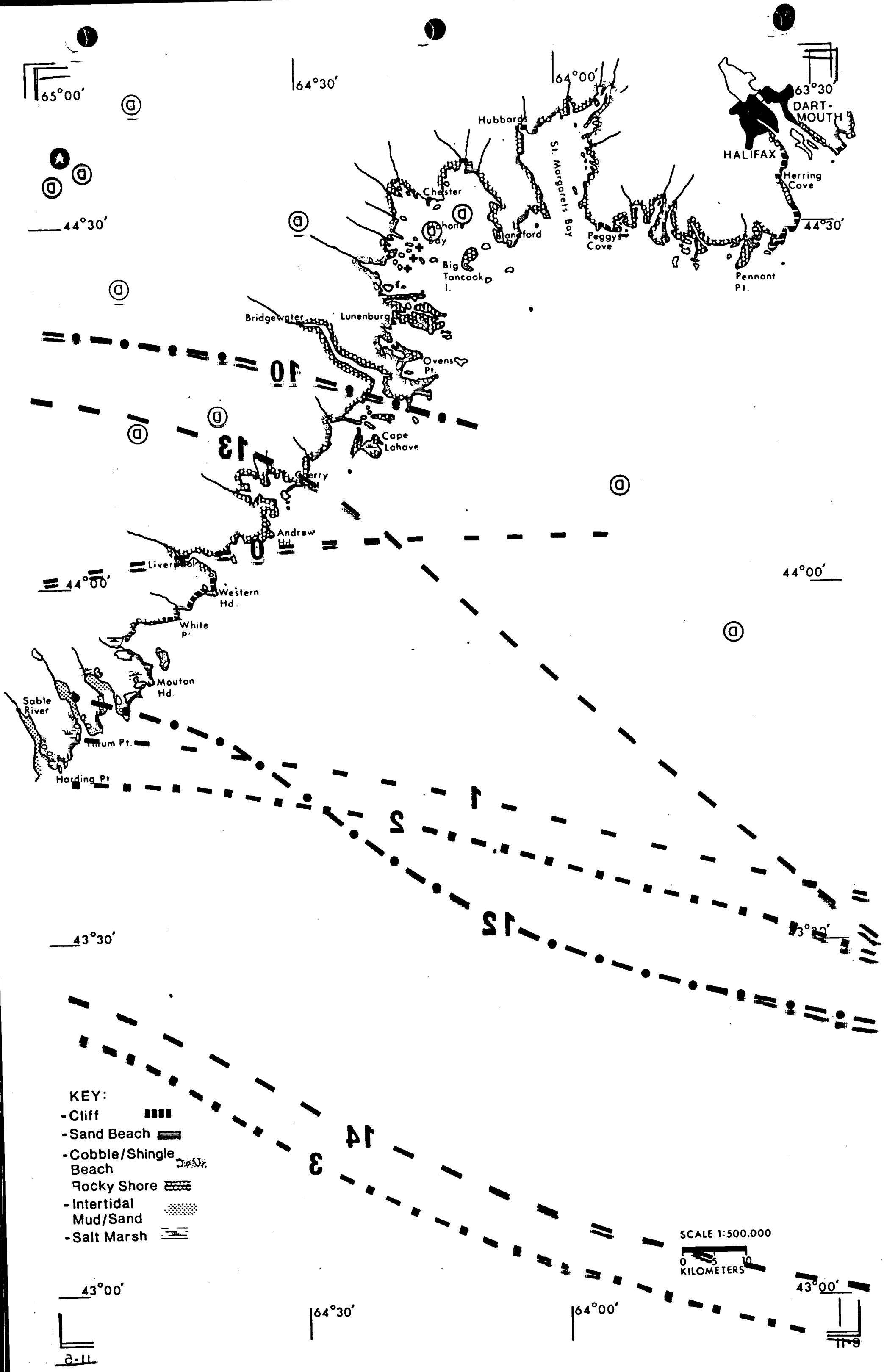
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- Rocky Shore ■■■■
- Intertidal Mud/Sand ■■■■
- Salt Marsh ■■■■

SCALE 1:500,000







65°00'

64°30'

64°00'

63°30'

DART-MOUTH

HALIFAX

Herring Cove

Pennant Pt.

44°30'

44°30'

Hubbard

Chester

Aahona Bay

Blanford

Peggy's Cove

Big Tancook I.

Bridgewater

Lunenburg

Ovens Pt.

Cape Lahave

Cherry Hill

Andrew Hd.

Liverpool

Western Hd.

White P.

Mouton Hd.

Thrum Pt.

Harding Pt.

44°00'

44°00'

43°30'

43°30'

43°00'

64°30'

64°00'

43°00'

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0 5 10
KILOMETERS

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64°00'

63°30'

DART-MOUTH

HALIFAX

Herring Cove

Pennant Pt.

Hubbard

St. Margaret's Bay

Chester

Mahone Bay

Landford

Peggy's Cove

Big Tancook I.

Bridgewater

Lunenburg

Ovens Pt.

Cape Lhave

Cherry Hill

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Sable River

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43°00'

64°30'

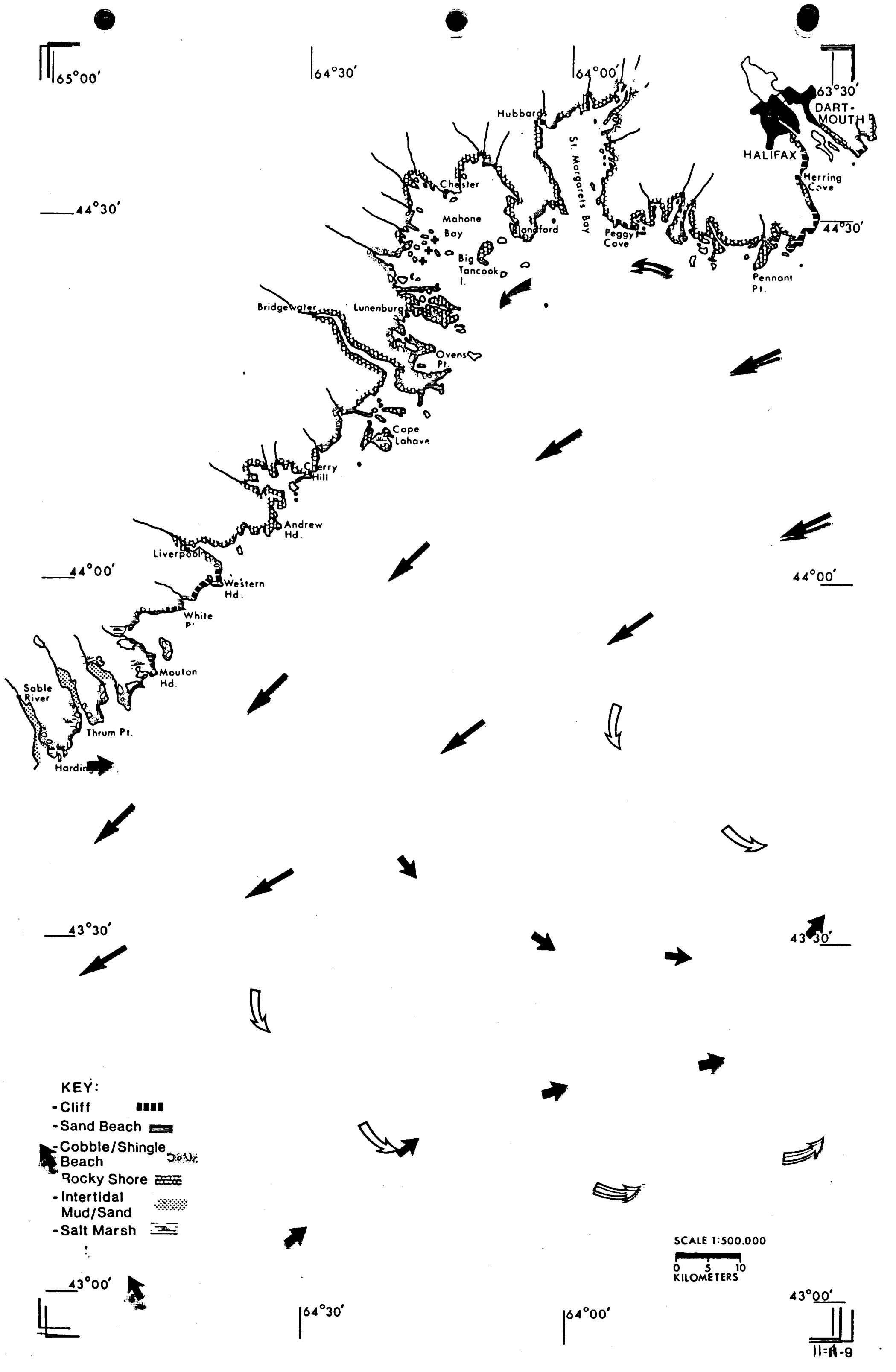
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43°00'

SCALE 1:500,000

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KILOMETERS

11-9



65°00'

64°30'

64°00'

63°30'

44°30'

HALIFAX

DART-MOUTH

Herring Cove

44°30'

Pennant Pt.

Bridgewater

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Ovens Pt.

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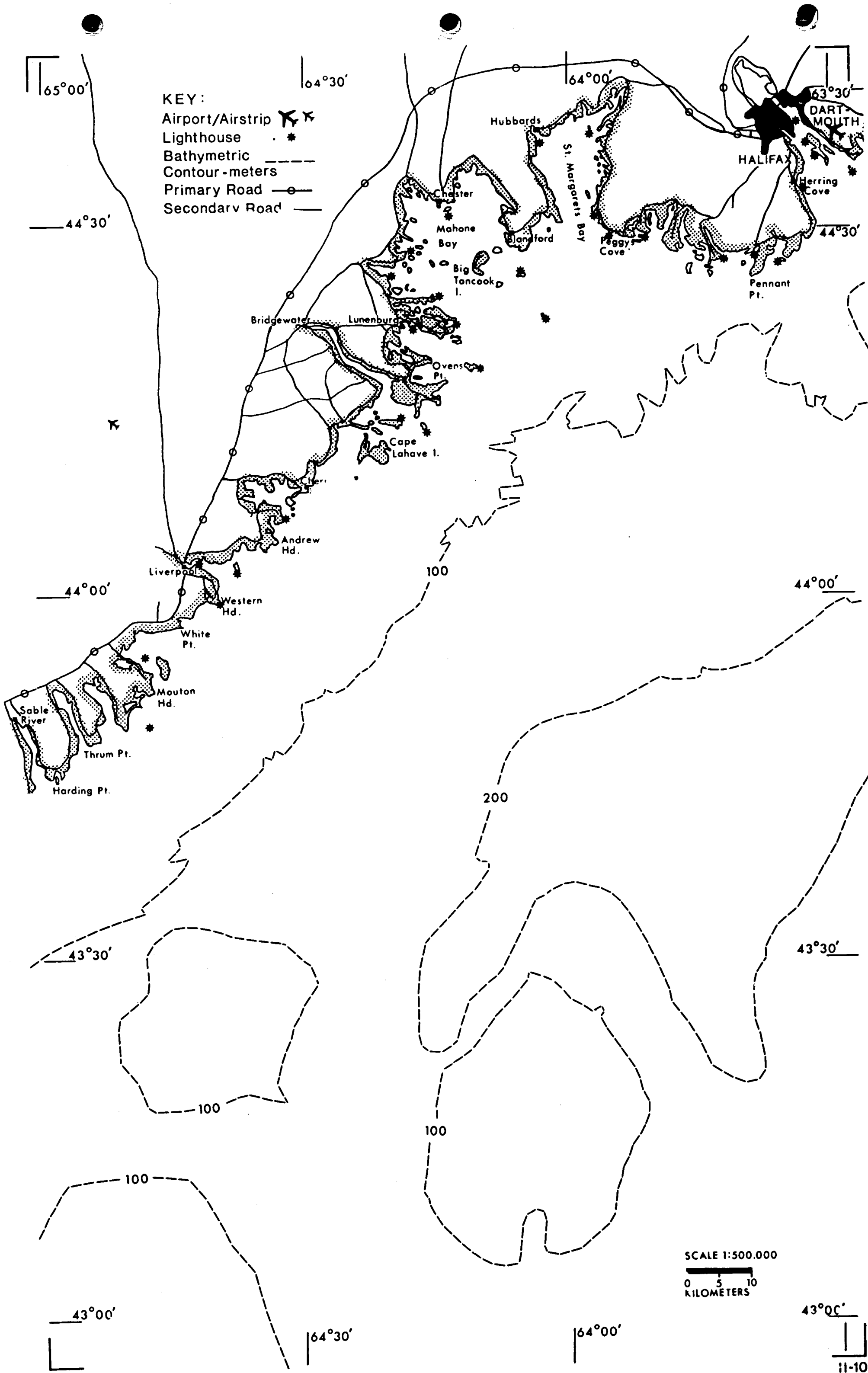
43°00'

64°30'

64°00'

43°00'

11-A-9



ENVIRONMENTAL ATLAS

OF

EASTERN NOVA SCOTIA

SECTION III

**HALIFAX TO
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ENVIRONMENT CANADA

ENVIRONMENTAL PROTECTION SERVICE

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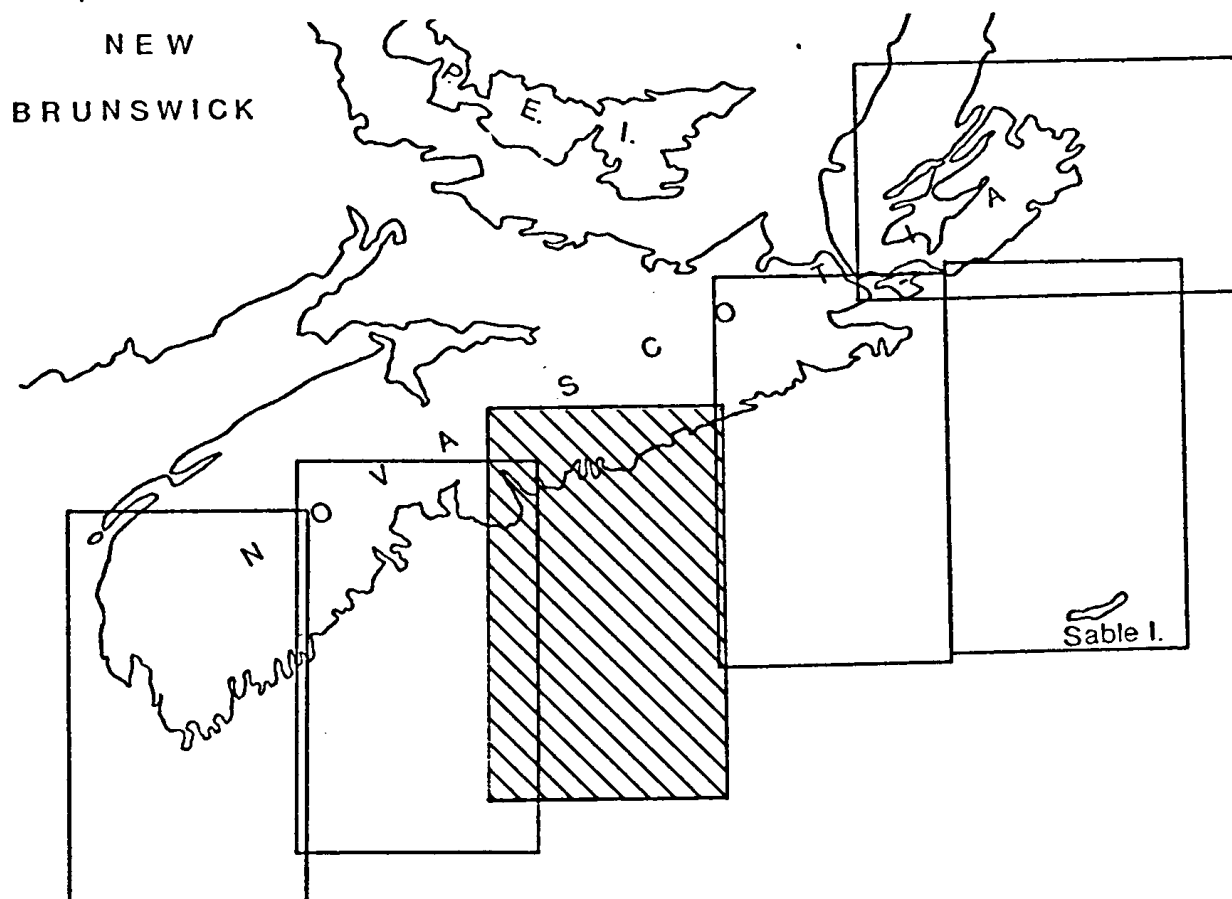
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4. Liscomb Point to Chedabucto Bay
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KEY TO OVERLAYS

A. MARINE MAMMALS

Grey Seals Breeding Area - Winter		
Migration Route for Grey Seals - Summer		
Overwintering Area for Whales	.....	.....
Feeding Area for Whales - Summer	.....	.....

B. AVIFAUNA

Seabird Breeding Colony	.....	.....
Migration Route for Ducks & Geese - Spring & Fall	.....	.....
Migration Route for Shorebirds - Spring & Fall	.....	.....
Migratory Bird Stop-over Zone - Spring & Fall	.....	.....
Overwintering Habitat - Primarily Eiders	.....	.....
Ducks & Geese	.....	.....
Migratory Bird Sanctuary	.....	.....
Pelagic Seabird Concentrations :	.....	.....
Spring	.....	.....
Winter	.....	.....

C. FISHERIES

Major Commercial Species - Primary Fishing Areas

Tuna	.....	T
Cod	.....	C
Hake	.....	K
Haddock	.....	D
Redfish	.....	R
Pollock	.....	P
Herring	.....	H
Mackerel	.....	M
Queen Crabs	.....	Q
American Plaice	.....	L
Yellowtail	.....	Y
Clams	.....	▲
Oysters	.....	△
Scallops	.....	○
Gaspereau	.....	g
Salmon	.....	s
Smelt	.....	m
Eels	.....	e
Baitworms	.....	b
Seaweed Harvesting	.....	●
Salmon Trap or Net	.....	T
Fish Trap	.....	†
Squid	.....	◆
Herring Spawning Area	.....	■
Overwintering Area for Herring	.....	●
Silver Hake Spawning Area	.....	⊥
Fish Processing Plant	.....	F
Lobster Pound	.....	L
Trout Farming	.....	▣

D. OCEANOGRAPHY

Primary Surface Currents:

Summer	.....	.....
Winter	.....	.....
All Seasons	.....	.....

Sea Surface Temperature (°C):

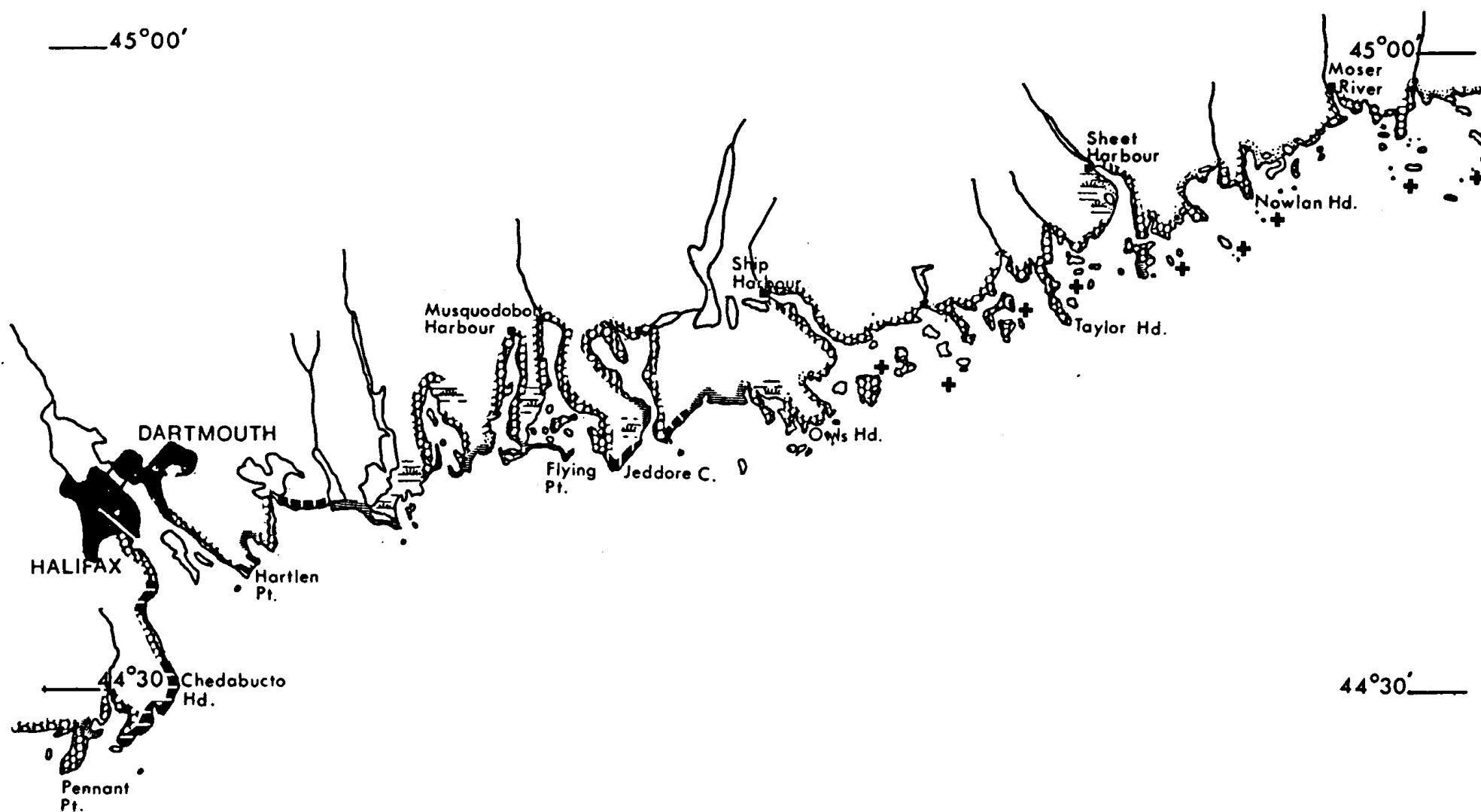
Spring	.....	.....
Summer	.....	.....
Fall	.....	.....
Winter	.....	.....

Mean Concentration of Sea Ice (Winter):

10/10	.....	.....
>7/10	.....	.....

E. MISCELLANEOUS

International Biological Programme Site	.....	.....
Oil Transfer Point	.....	.....
Dredging Disposal Site		
Offshore Drilling Site:		
Oil Shows		
Gas Shows		
Oil & Gas Shows		



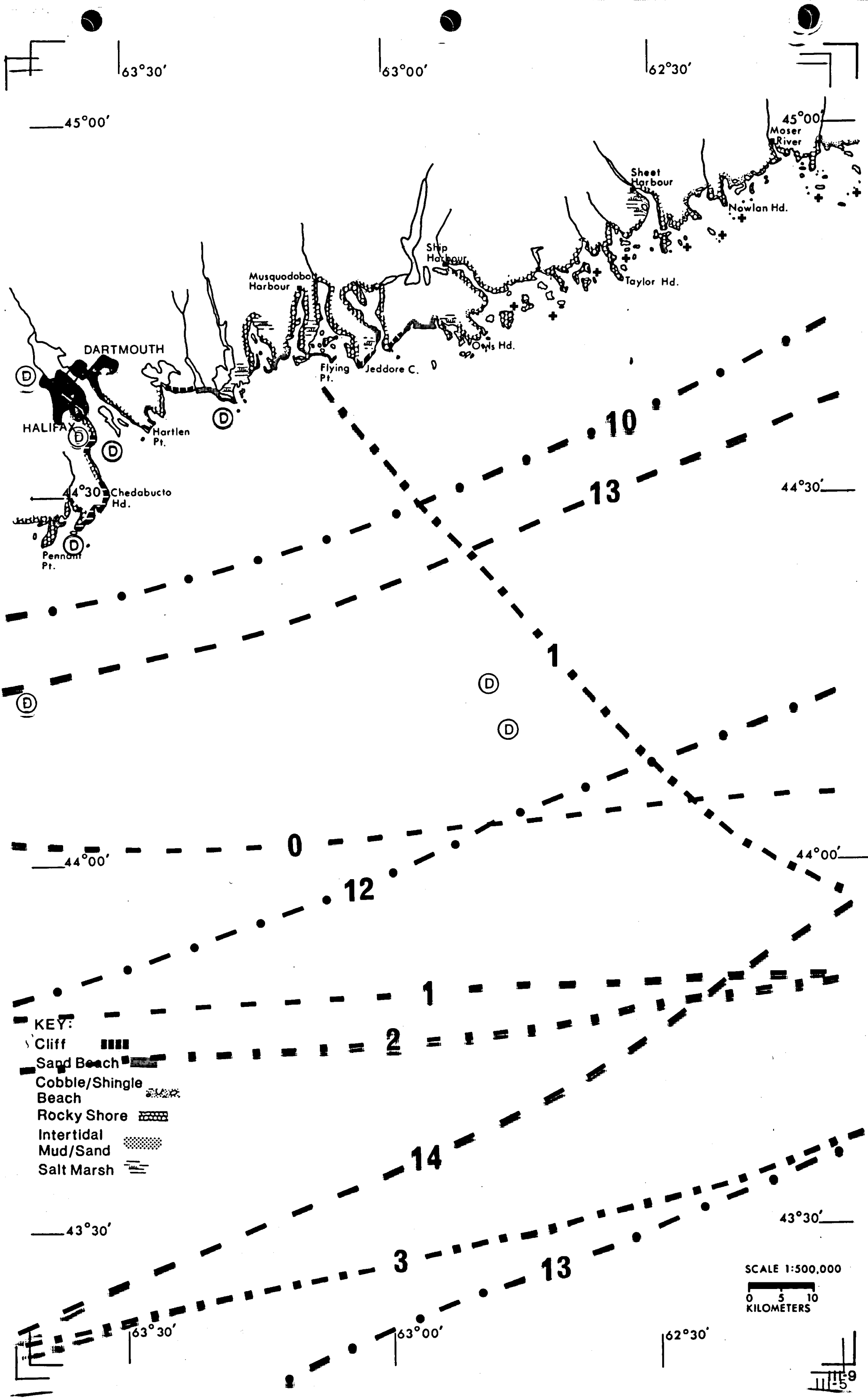
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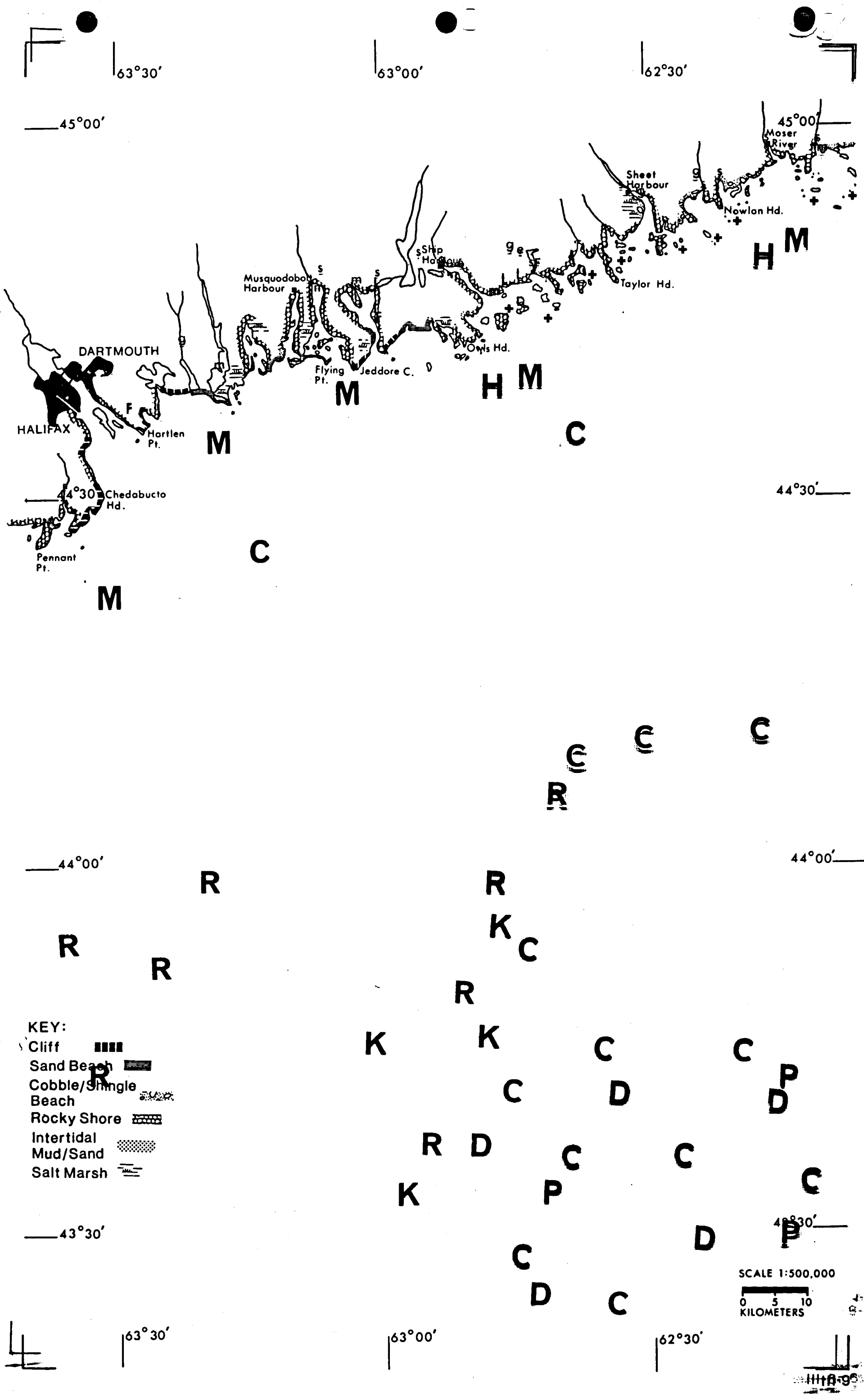
- Cliff
- Sand Beach
- Cobble/Shingle Beach
- Rocky Shore
- Intertidal Mud/Sand
- Salt Marsh

SCALE 1:500,000

0 5 10
KILOMETERS







63°30' 63°00' 62°30'

45°00'

44°30'

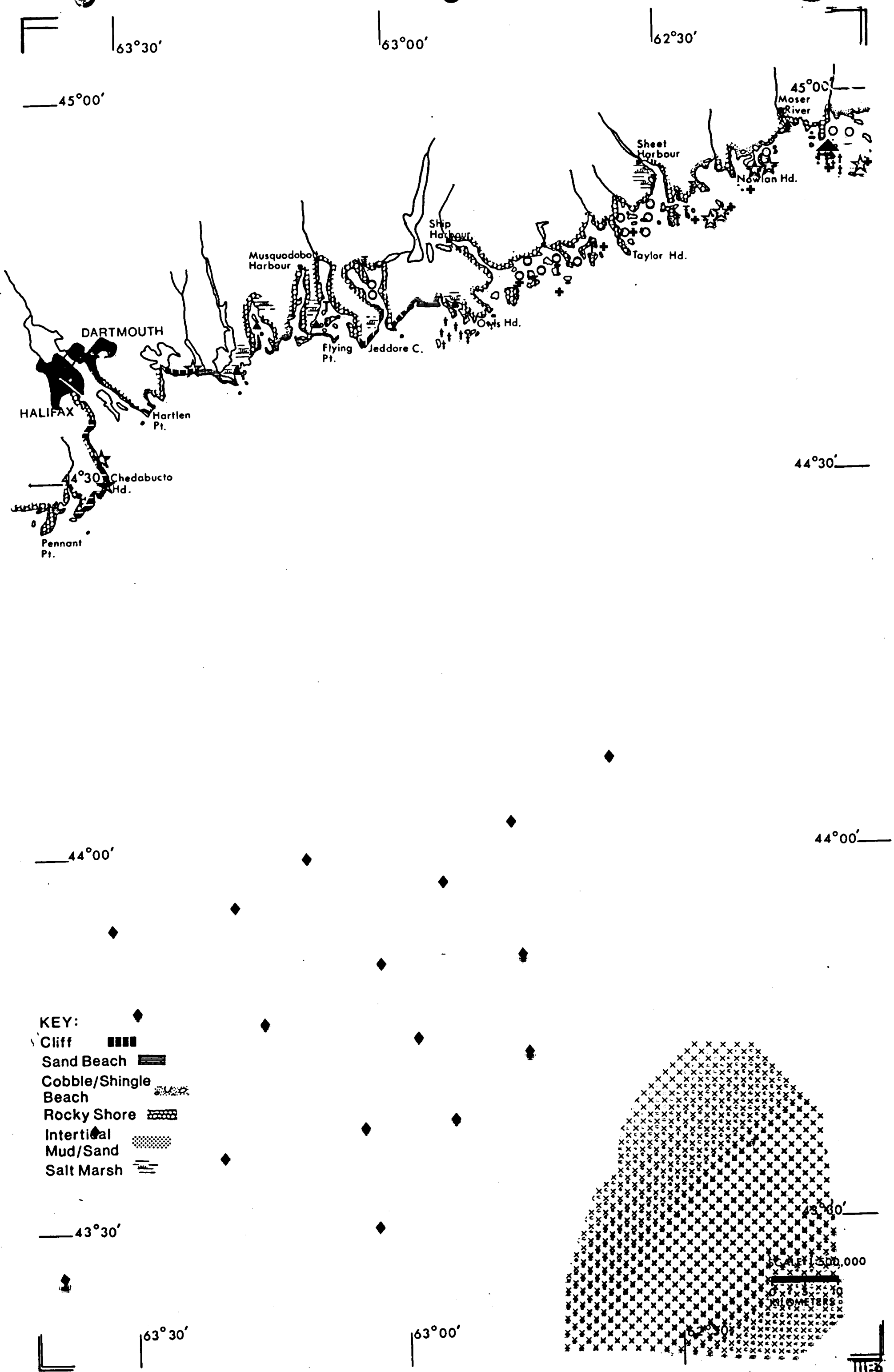
44°00'

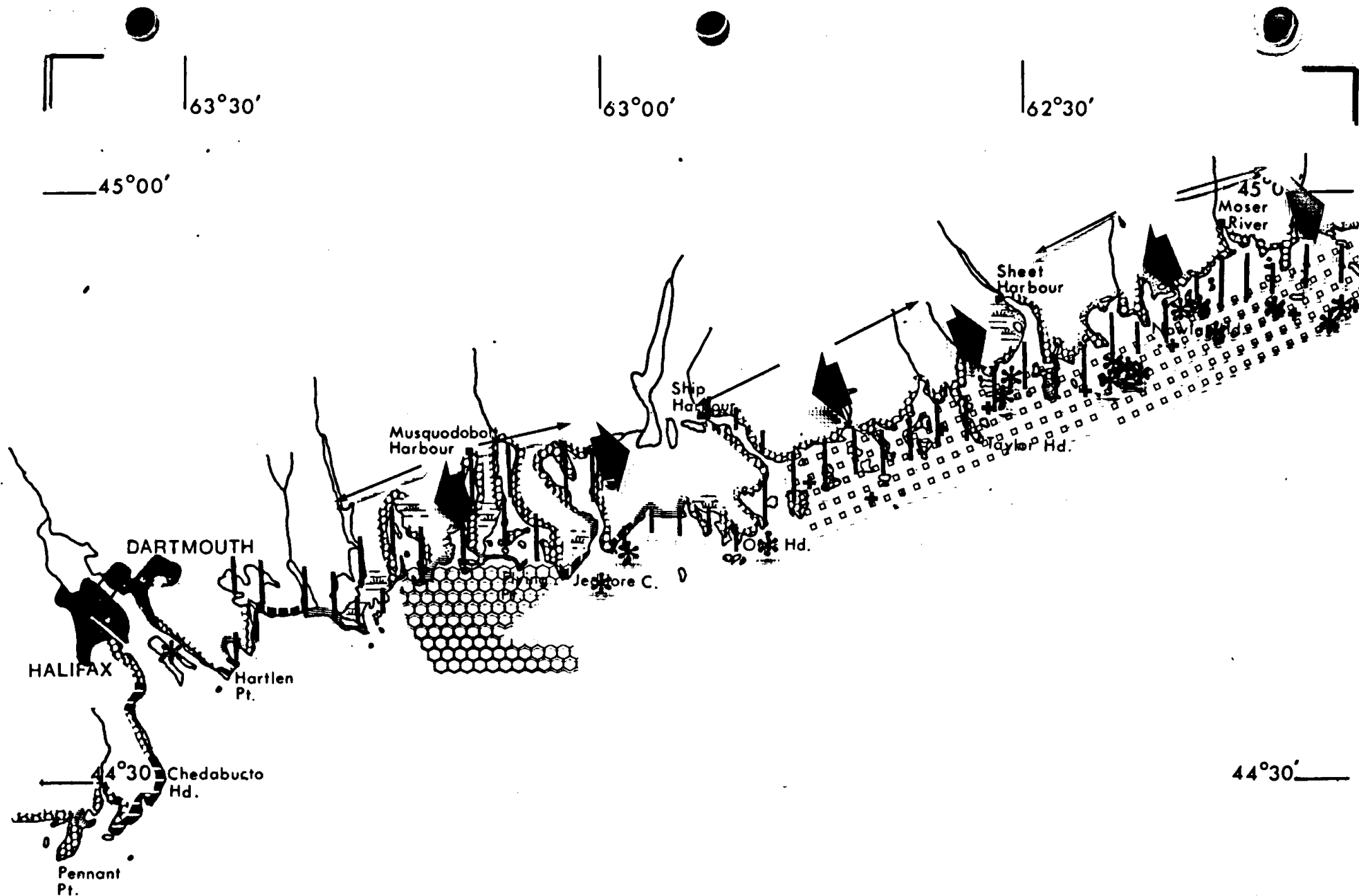
43°30'

63°30' 63°00' 62°30'

KEY:
Cliff
Sand Beach
Cobble/Shingle Beach
Rocky Shore
Intertidal Mud/Sand
Salt Marsh

SCALE 1:500,000
0 5 10 KILOMETERS

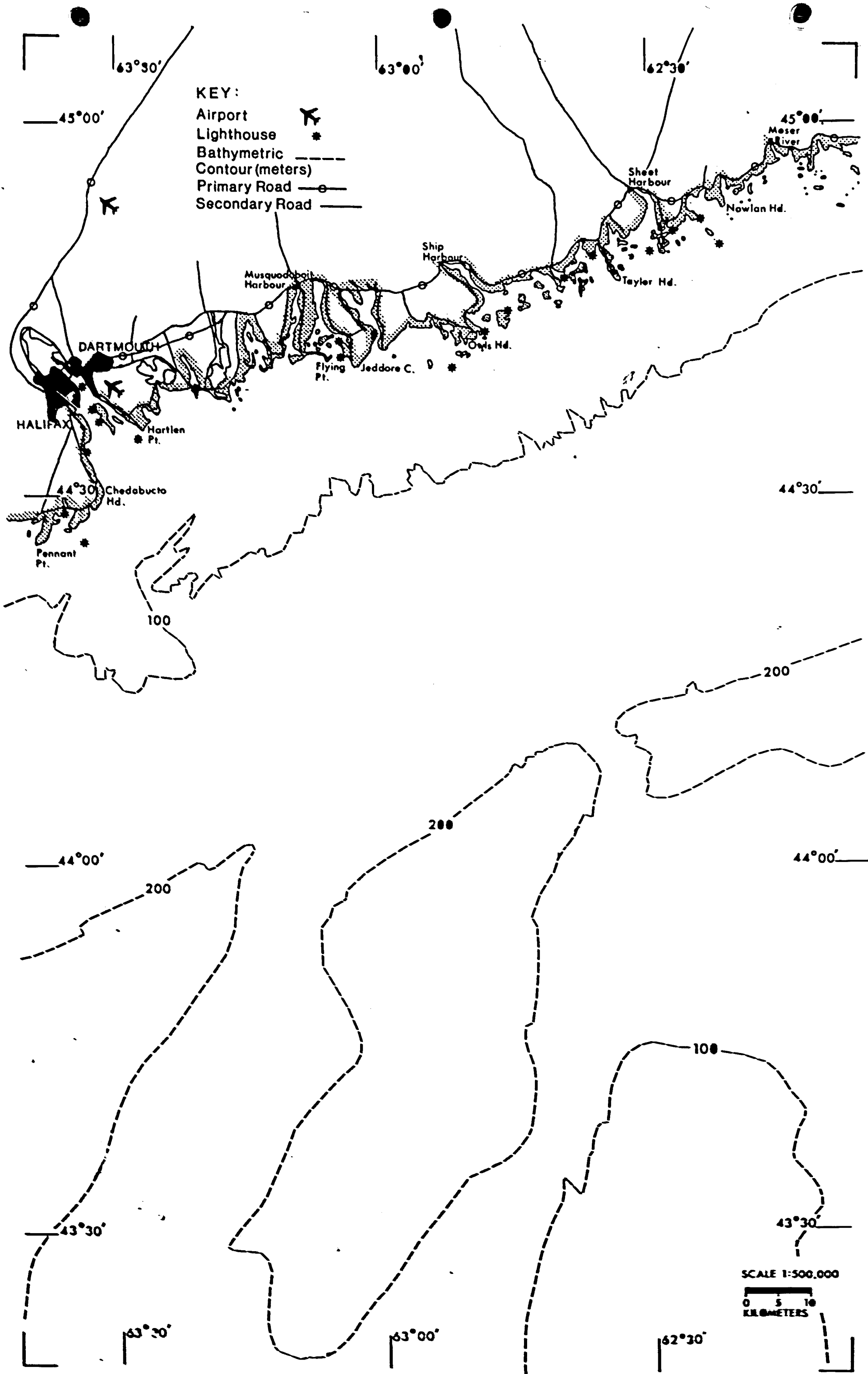




KEY:

- Cliff
- Sand Beach
- Cobble/Shingle Beach
- Rocky Shore
- Intertidal Mud/Sand
- Salt Marsh

SCALE 1:500,000
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KILOMETERS



ENVIRONMENTAL ATLAS

OF

EASTERN NOVA SCOTIA

SECTION IV

LISCOMB POINT TO

CHEDABUCTO BAY

ENVIRONMENT CANADA

ENVIRONMENTAL PROTECTION SERVICE

ATLANTIC REGION

MARCH 1989

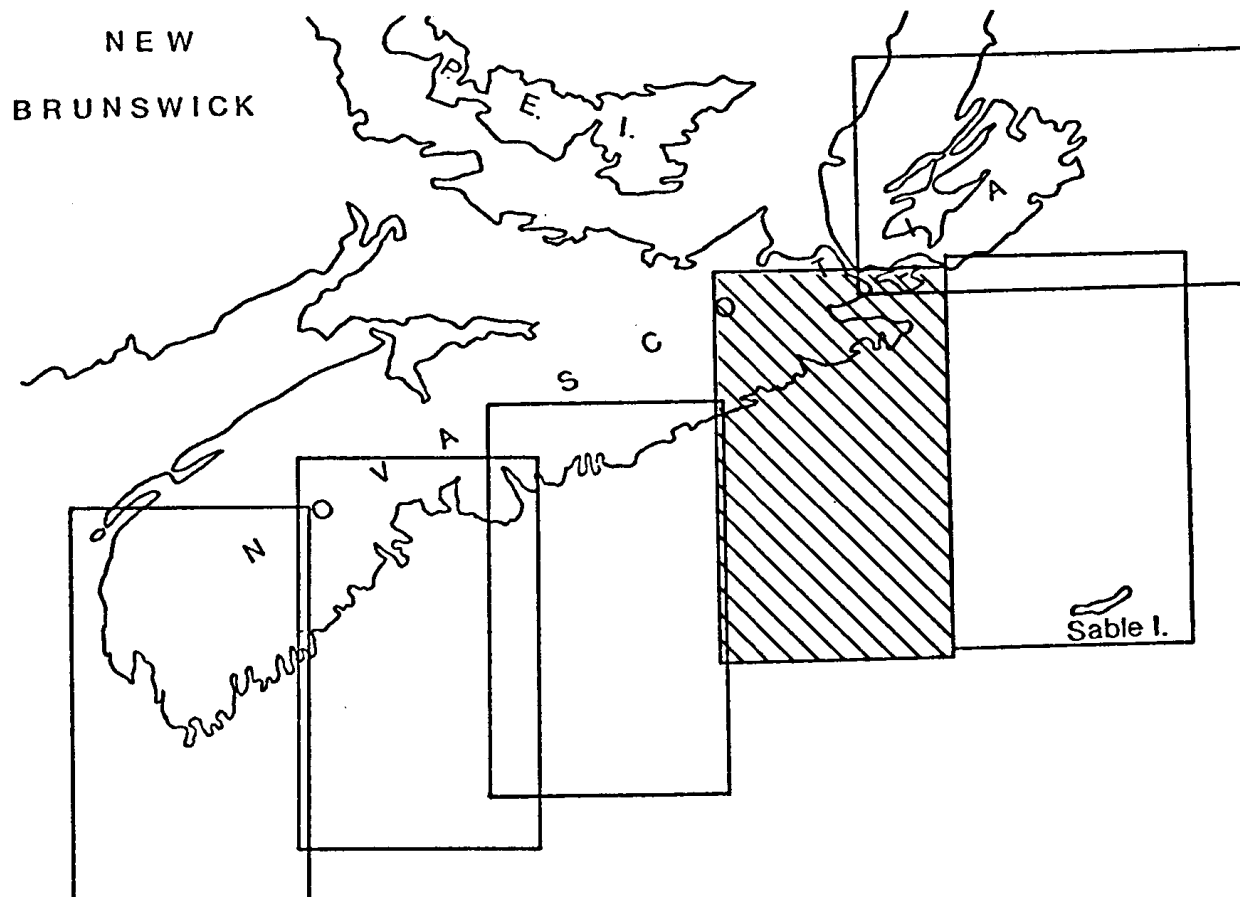
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KEY TO OVERLAYS

A. MARINE MAMMALS

Grey Seals Breeding Area - Winter		▲
Migration Route for Grey Seals - Summer		➤
Overwintering Area for Whales	.....	+ + + +
Feeding Area for Whales - Summer	.....	x x x x x

B. AVIFAUNA

Seabird Breeding Colony	.....	*
Migration Route for Ducks & Geese - Spring & Fall	.....	➤
Migration Route for Shorebirds - Spring & Fall	.....	|||
Migratory Bird Stop-over Zone - Spring & Fall	.....	|||
Overwintering Habitat - Primarily Eiders	.....	□ □ □ □
Ducks & Geese	.....	○ ○ ○ ○
Migratory Bird Sanctuary	.....	⬢ ⬢ ⬢
Pelagic Seabird Concentrations :		=====
Spring	.....	=====
Winter	.....	|||

C. FISHERIES

Major Commercial Species - Primary Fishing Areas

Tuna	.....	T
Cod	.....	C
Hake	.....	K
Haddock	.....	D
Redfish	.....	R
Pollock	.....	P
Herring	.....	H
Mackerel	.....	M
Queen Crabs	.....	Q
American Plaice	.....	L
Yellowtail	.....	Y
Clams	.....	▲
Oysters	.....	△
Scallops	.....	○ ○
Gaspereau	.....	g
Salmon	.....	s
Smelt	.....	m
Eels	.....	e
Baitworms	.....	b
Seaweed Harvesting	.....	●
Salmon Trap or Net	.....	T
Fish Trap	.....	†
Squid	.....	◆
Herring Spawning Area	.....	■ ■
Overwintering Area for Herring	.....	● ● ●
Silver Hake Spawning Area	.....	⊥ ⊥
Fish Processing Plant	.....	F
Lobster Pound	.....	L
Trout Farming	.....	▣

D. OCEANOGRAPHY

Primary Surface Currents:

Summer	.....	➤
Winter	.....	➤
All Seasons	.....	➤

Sea Surface Temperature (°C):

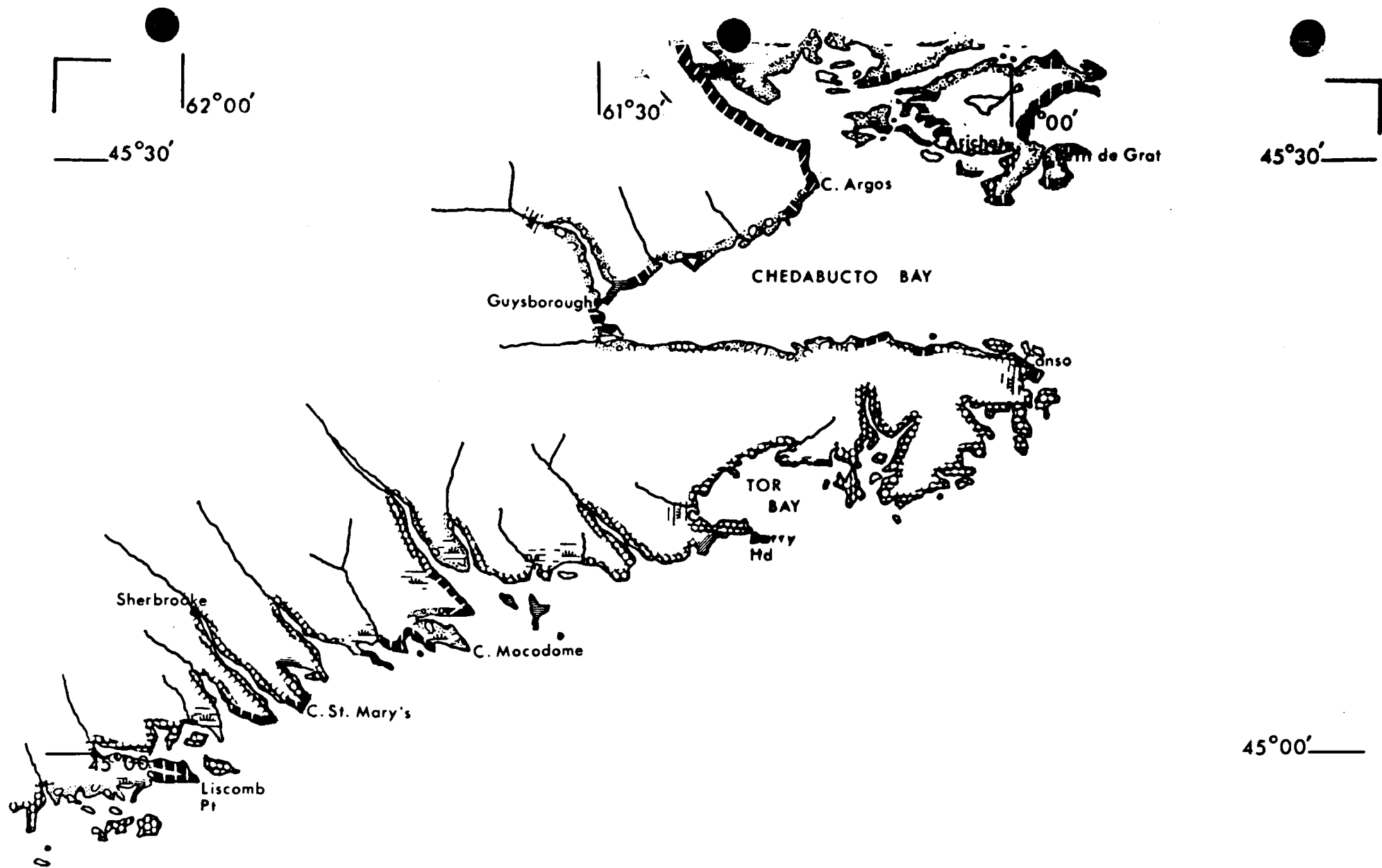
Spring	.....	— — —
Summer	.....	— — —
Fall	.....	— ● —
Winter	.....	— — —

Mean Concentration of Sea Ice (Winter):

10/10	.....	▣
> 7/10	.....	▣

E. MISCELLANEOUS

International Biological Programme Site	.....	☆
Oil Transfer Point	.....	⊙
Dredging Disposal Site	.....	⊙
Offshore Drilling Site:		⊙
Oil Shows	.....	⊙
Gas Shows	.....	⊙
Oil & Gas Shows	.....	⊙

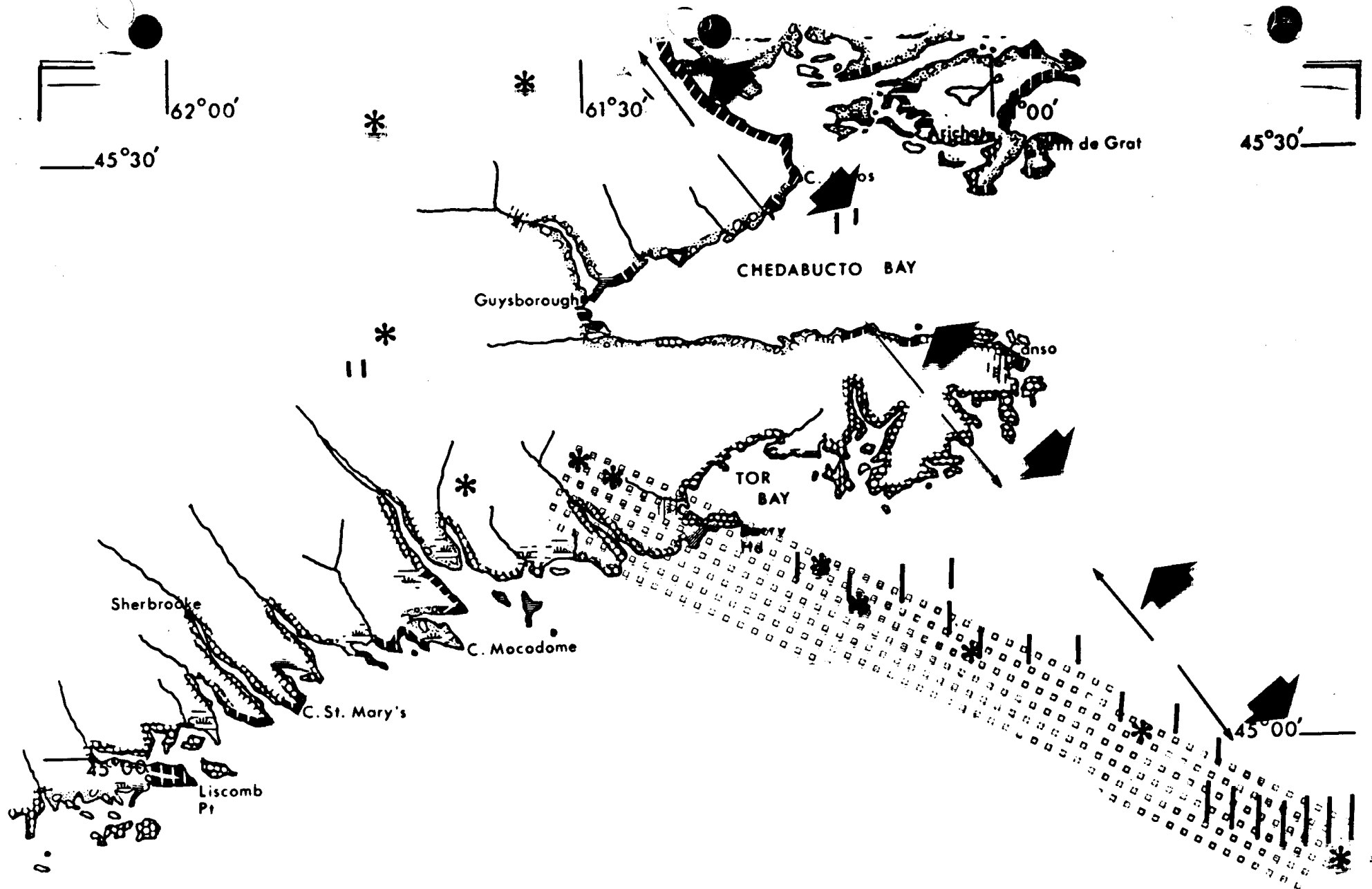


KEY

- Cliff
- Sand Beach
- Cobble/Shingle Beach
- Rocky Shore
- Intertidal Mud/Sand
- Salt Marsh

SCALE 1:500,000

0 5 10
KILOMETERS



KEY.

- Cliff
- Sand Beach
- Cobble/Shingle Beach
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- Salt Marsh

SCALE 1:500,000

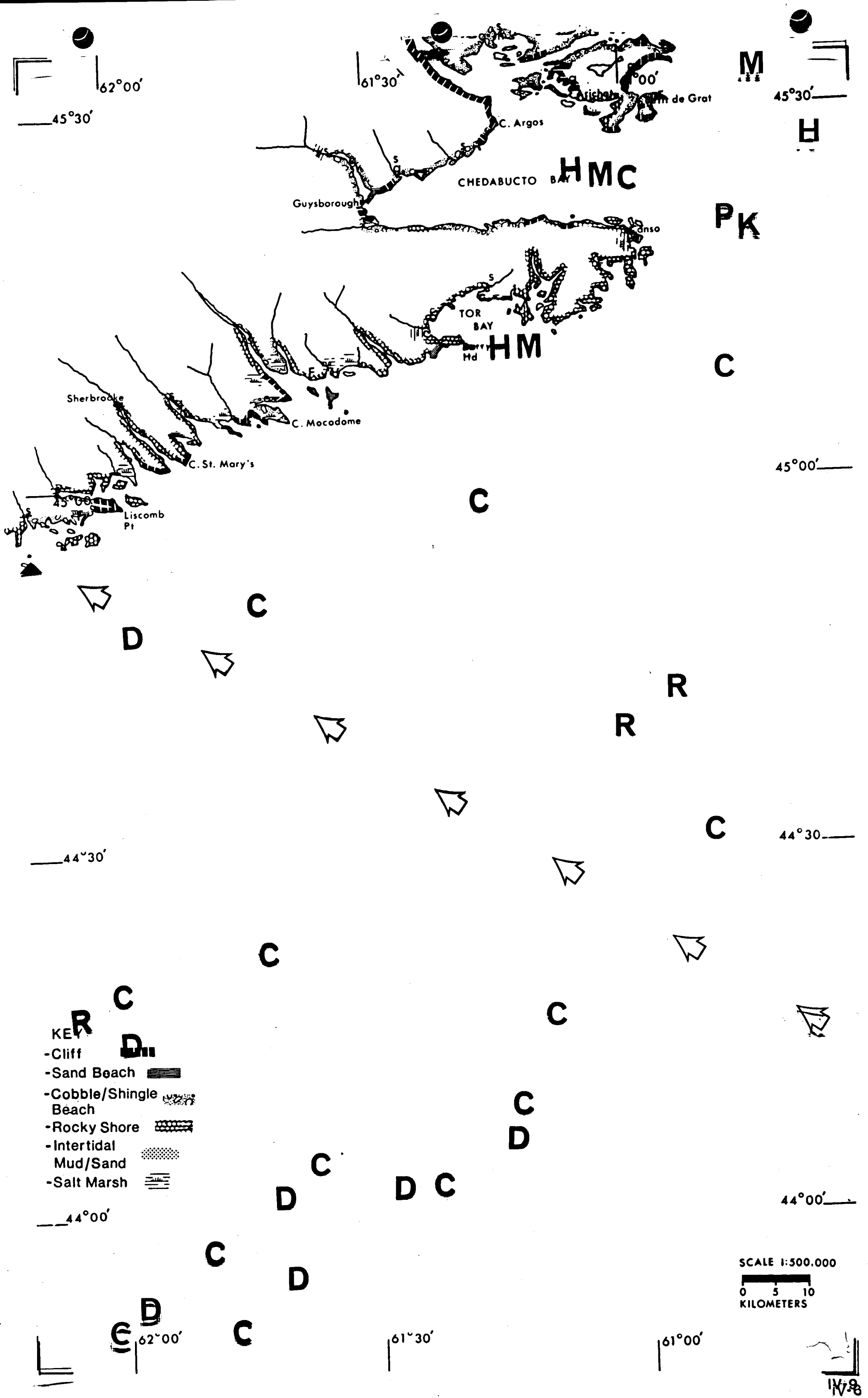
0 5 10
KILOMETERS

62°00'

61°30'

61°00'

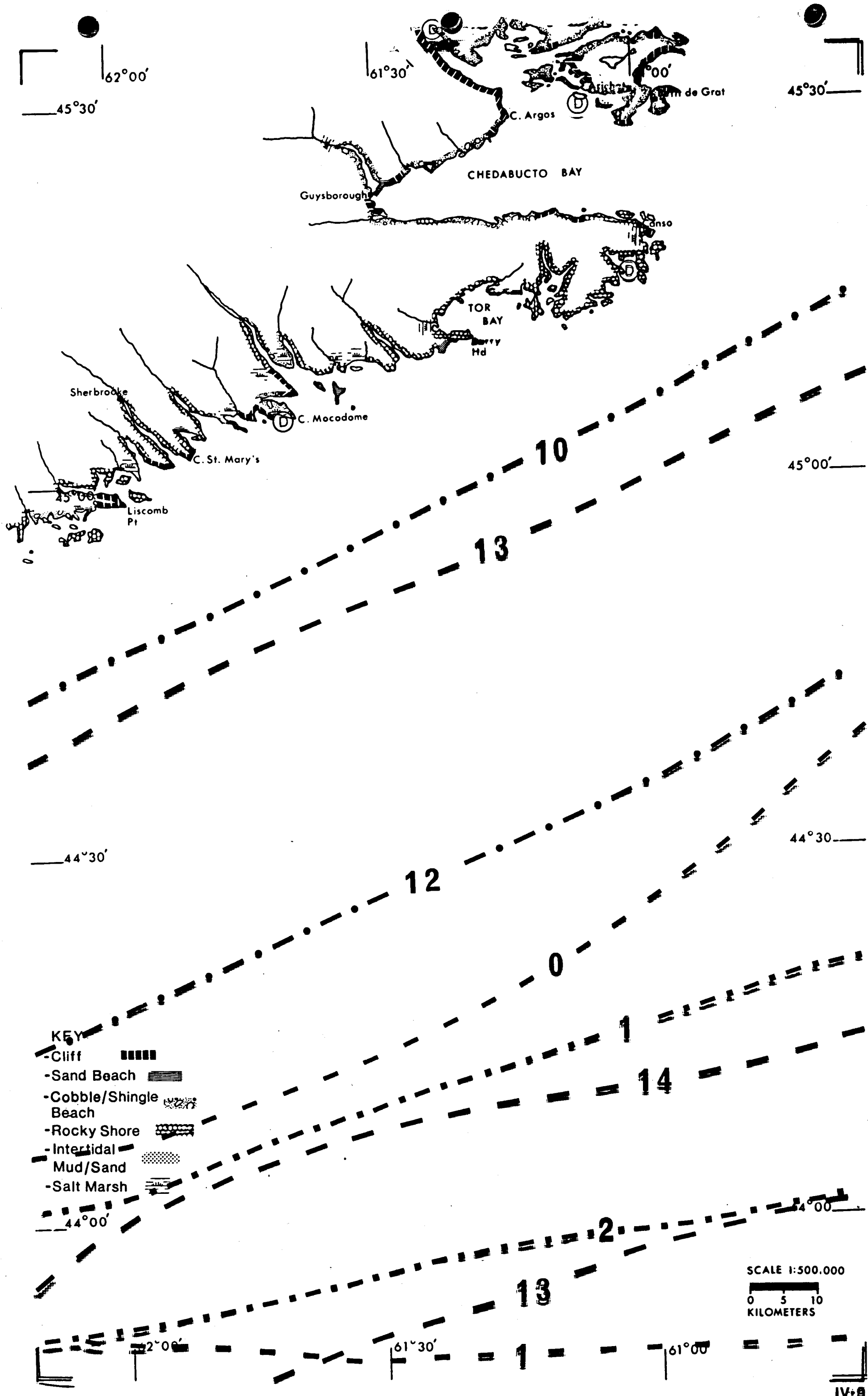
IV-9



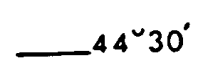
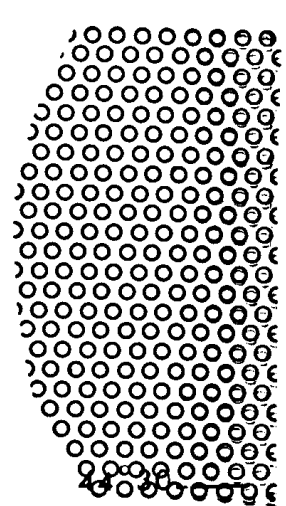
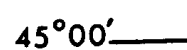
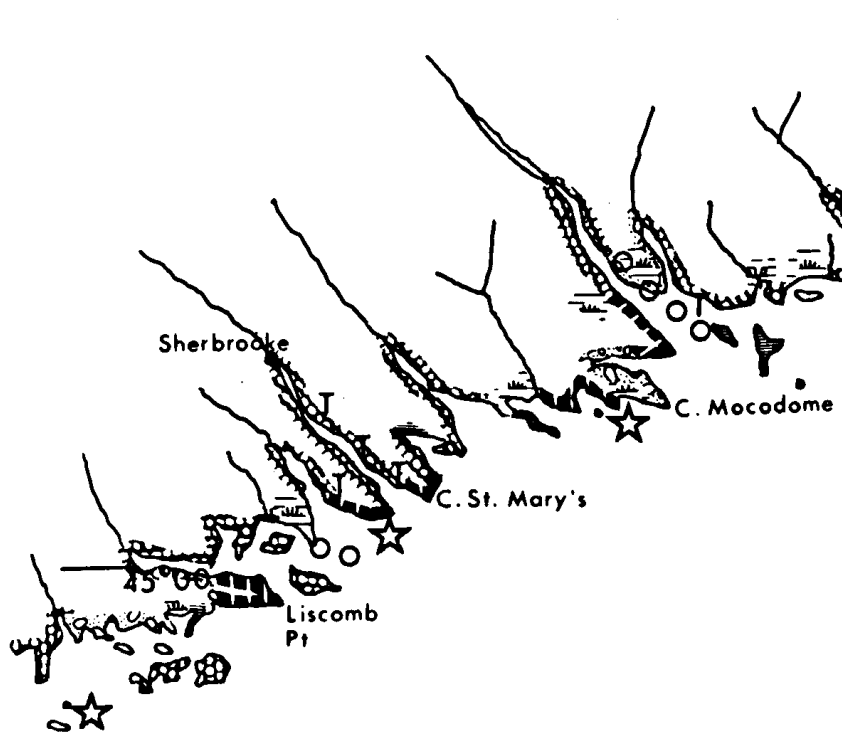
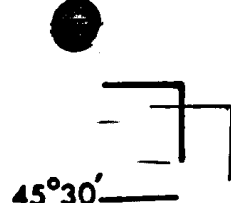
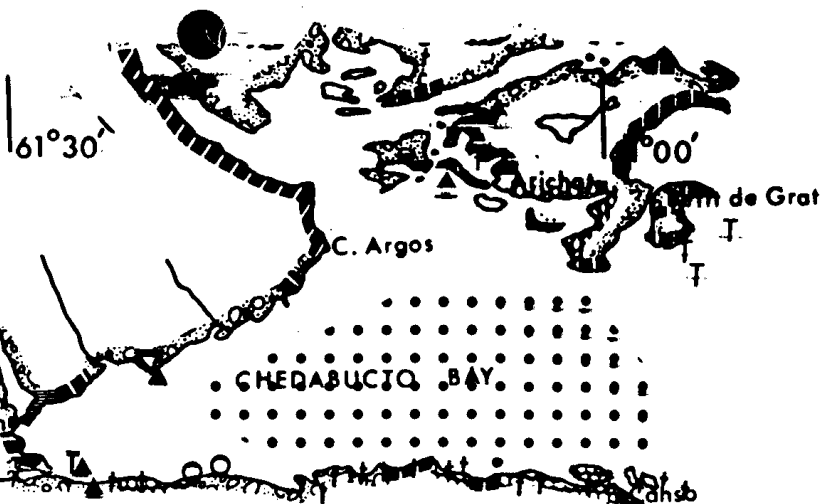
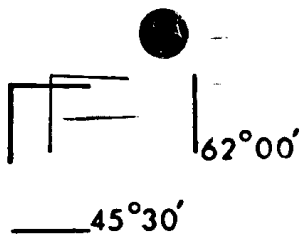
- KEY
- Cliff
 - Sand Beach
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 - Intertidal Mud/Sand
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SCALE 1:500,000

0 5 10 KILOMETERS

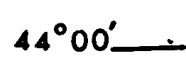
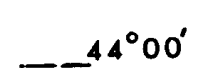






KEY

- Cliff
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- Salt Marsh



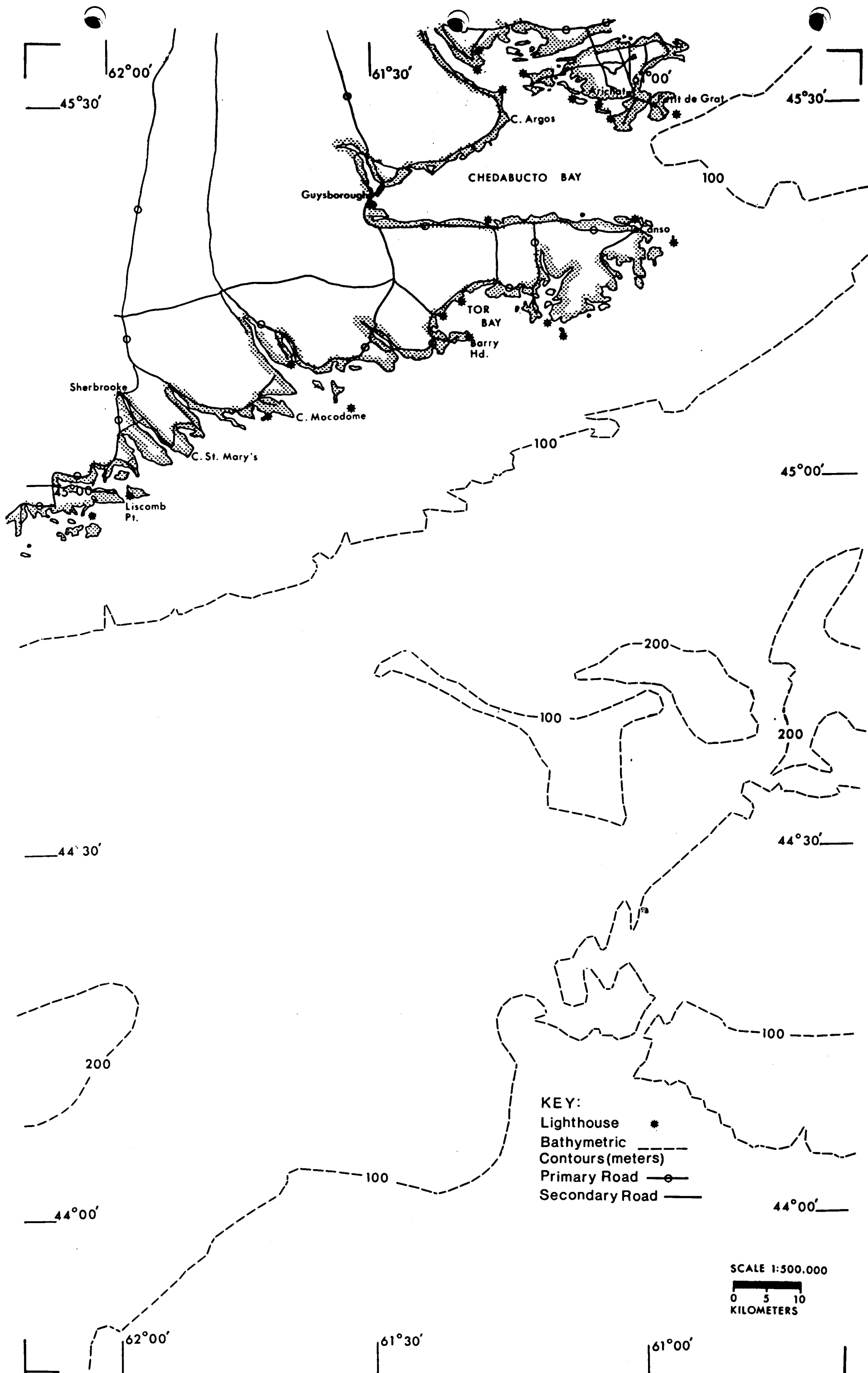
SCALE 1:500,000
0 5 10
KILOMETERS



62°00'

61°30'

61°00'



ENVIRONMENTAL ATLAS

OF

EASTERN NOVA SCOTIA

SECTION V

SABLE ISLAND

ENVIRONMENT CANADA

ENVIRONMENTAL PROTECTION SERVICE

ATLANTIC REGION

MARCH 1980

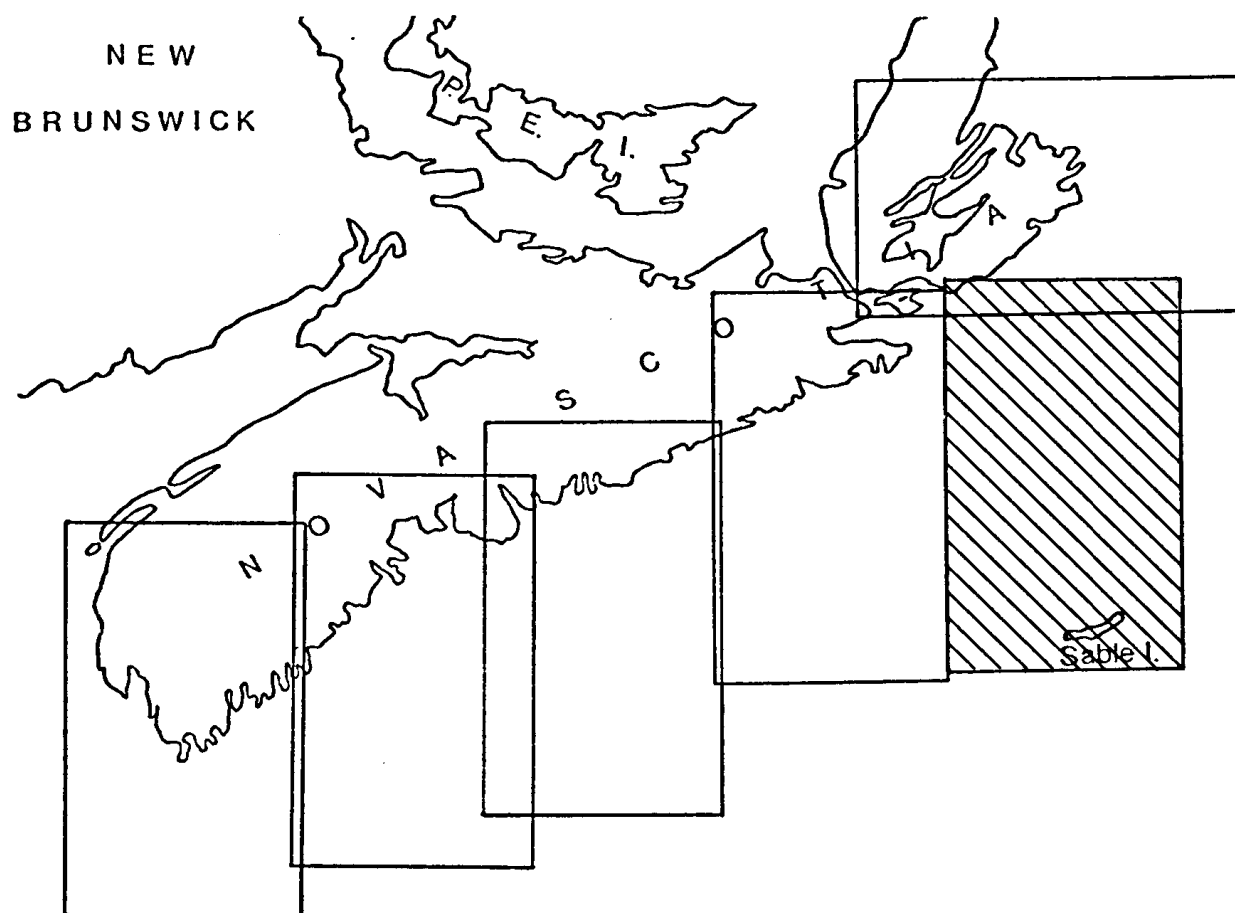
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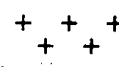
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Grey Seals Breeding Area - Winter	
Migration Route for Grey Seals - Summer	
Overwintering Area for Whales	
Feeding Area for Whales - Summer	

B. AVIFAUNA

Seabird Breeding Colony	
Migration Route for Ducks & Geese - Spring & Fall	
Migration Route for Shorebirds - Spring & Fall	
Migratory Bird Stop-over Zone - Spring & Fall	
Overwintering Habitat - Primarily Eiders	
Ducks & Geese	
Migratory Bird Sanctuary	
Pelagic Seabird Concentrations :	
Spring	
Winter	

C. FISHERIES

Major Commercial Species - Primary Fishing Areas

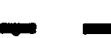
Tuna	T
Cod	C
Hake	K
Haddock	D
Redfish	R
Pollock	P
Herring	H
Mackerel	M
Queen Crabs	Q
American Plaice	L
Yellowtail	Y
Clams	▲
Oysters	△
Scallops	○ ○
Gaspereau	g
Salmon	s
Smelt	m
Eels	e
Baitworms	b
Seaweed Harvesting	●
Salmon Trap or Net	T
Fish Trap	t
Squid	◆
Herring Spawning Area	■ ■
Overwintering Area for Herring	● ● ●
Silver Hake Spawning Area	┬ ┬ ┬
Fish Processing Plant	F
Lobster Pound	L
Trout Farming	▣

D. OCEANOGRAPHY

Primary Surface Currents:

Summer	
Winter	
All Seasons	

Sea Surface Temperature (°C):

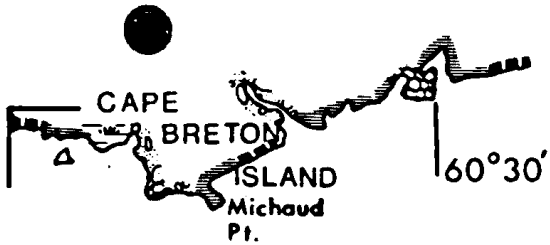
Spring	
Summer	
Fall	
Winter	

Mean Concentration of Sea Ice (Winter):

10/10	
>7/10	

E. MISCELLANEOUS

International Biological Programme Site	☆
Oil Transfer Point	★
Dredging Disposal Site	ⓓ
Offshore Drilling Site:	
Oil Shows	⊕
Gas Shows	⊕
Oil & Gas Shows	⊕



45°30'

60°00'

59°30'

45°30'

45°00'

45°00'

44°30'

44°30'

KEY:

- Cliff
- Sand Beach
- Cobble/Shingle Beach
- Rocky Shore
- Intertidal Mud/Sand
- Salt Marsh

44°00'

SCALE 1:500,000

0 5 10
KILOMETERS

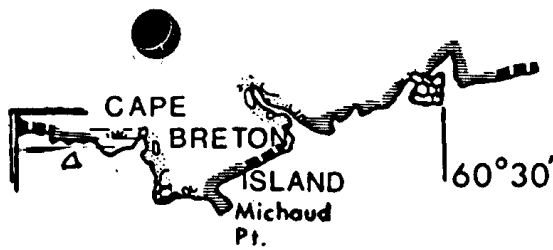
60°30'

60°00'

44°00'

59°30'





45°30'

60°00'

59°30'

45°30'

45°00'

45°00'

44°30'

44°30'

44°00'

59°30'

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- Intertidal
- Salt Marsh

SCALE 1:500,000

0 5 10
KILOMETERS

SABLE ISLAND

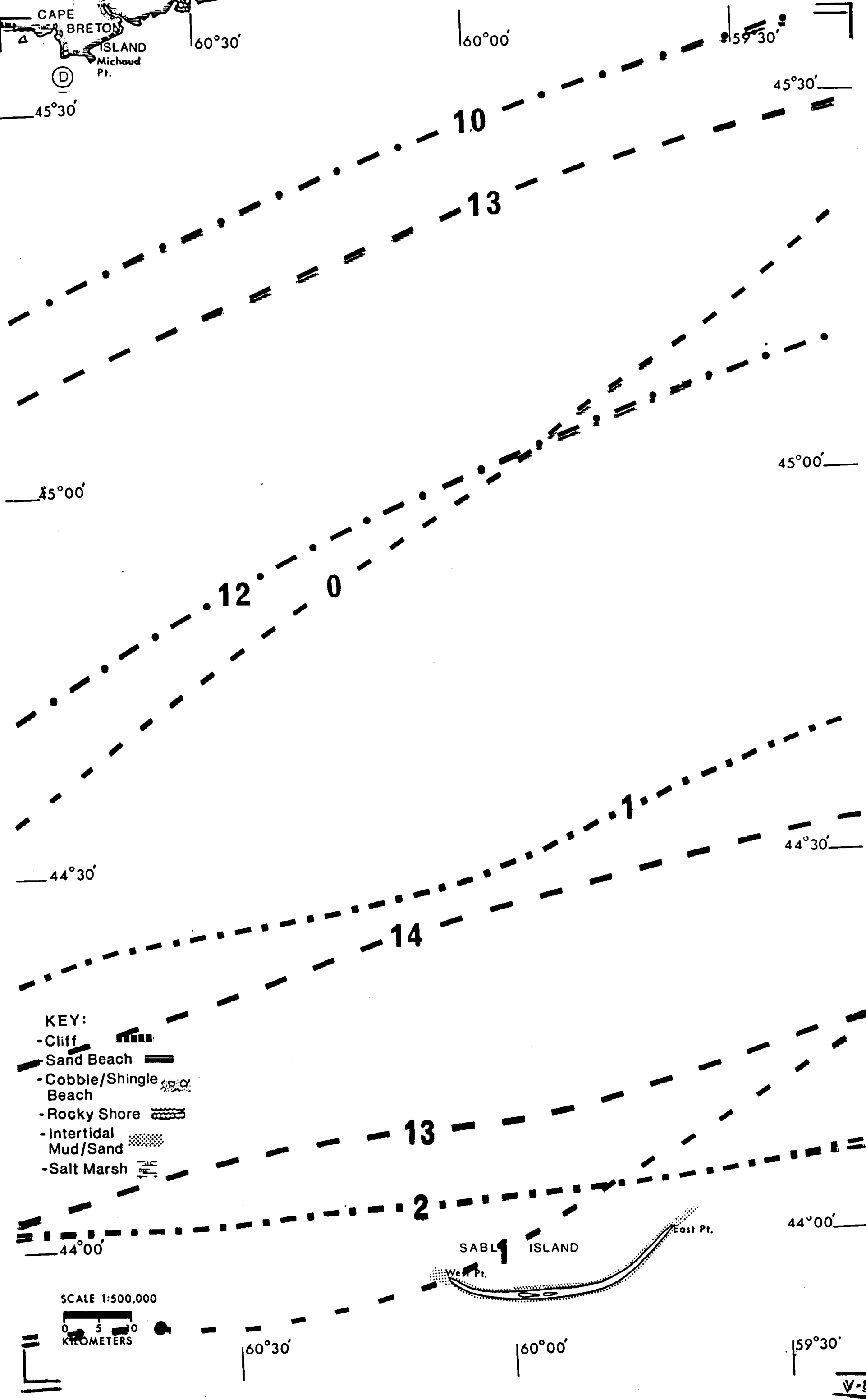
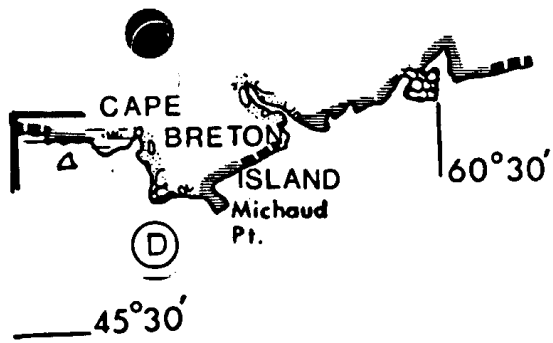
East Pt.

West Pt.

60°30'

60°00'

W-48



KEY:

- Cliff
- Sand Beach
- Cobble/Shingle Beach
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SCALE 1:500,000

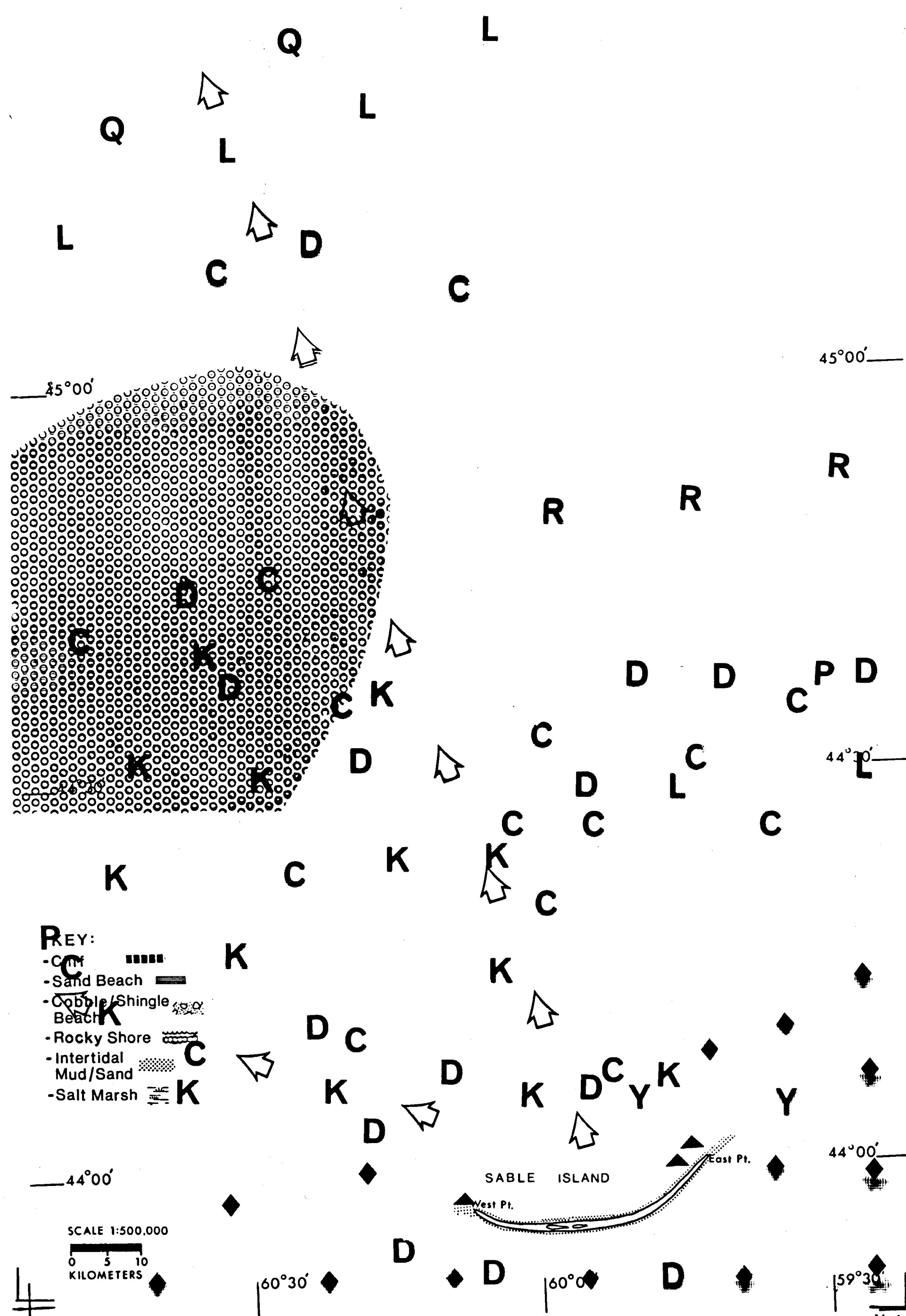
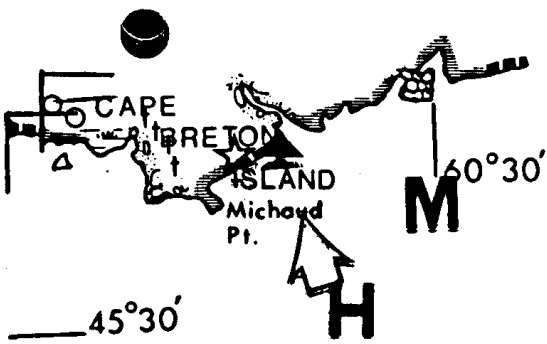


SABLE ISLAND

West Pt.

East Pt.

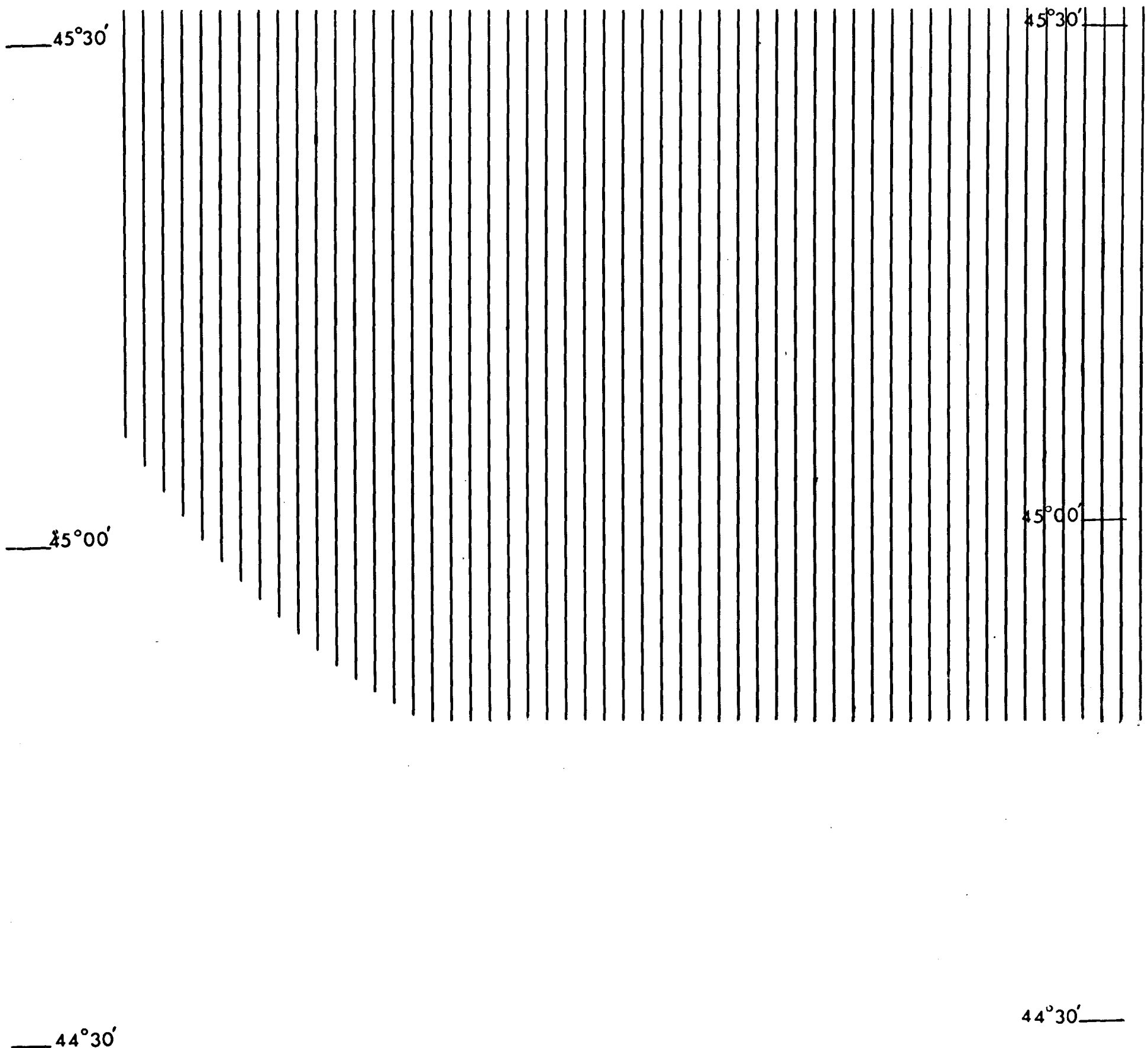
V-8



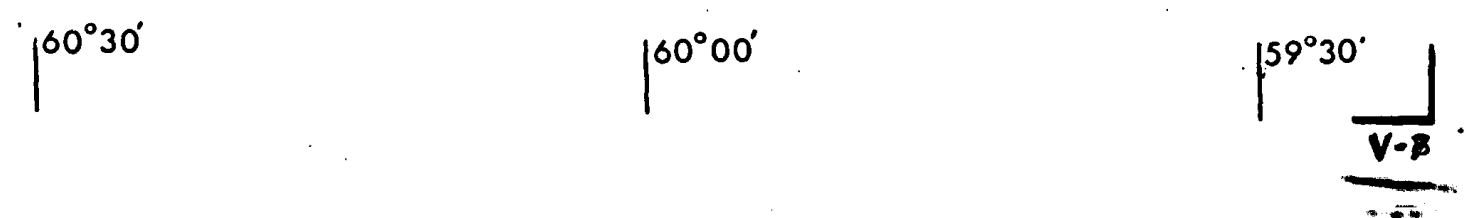
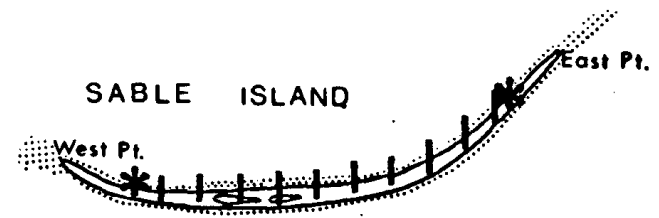
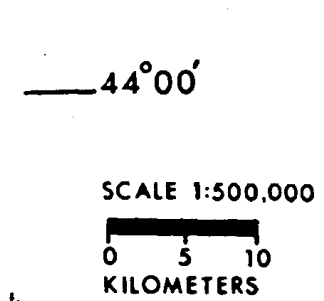
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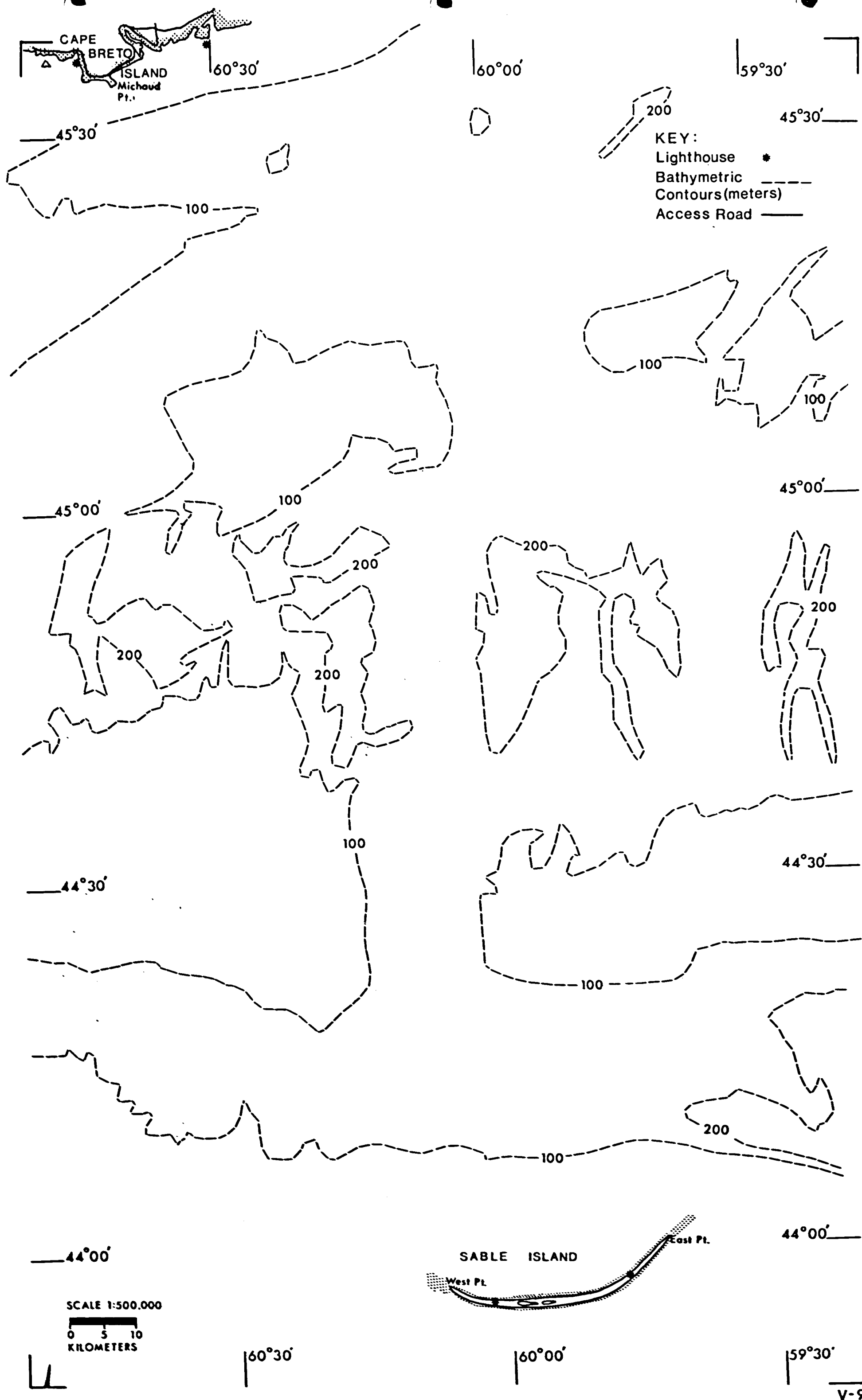
- C M
- Sand Beach
- Cobble/Shingle Beach
- Rocky Shore
- Intertidal Mud/Sand
- Salt Marsh

SCALE 1:500,000
0 5 10 KILOMETERS



- KEY:
- Cliff
 - Sand Beach
 - Cobble/Shingle Beach
 - Rocky Shore
 - Intertidal Mud/Sand
 - Salt Marsh





ENVIRONMENTAL ATLAS

OF

EASTERN NOVA SCOTIA

SECTION VI

SOUTHEASTERN

CAPE BRETON ISLAND

ENVIRONMENT CANADA

ENVIRONMENTAL PROTECTION SERVICE

ATLANTIC REGION

MARCH 1980

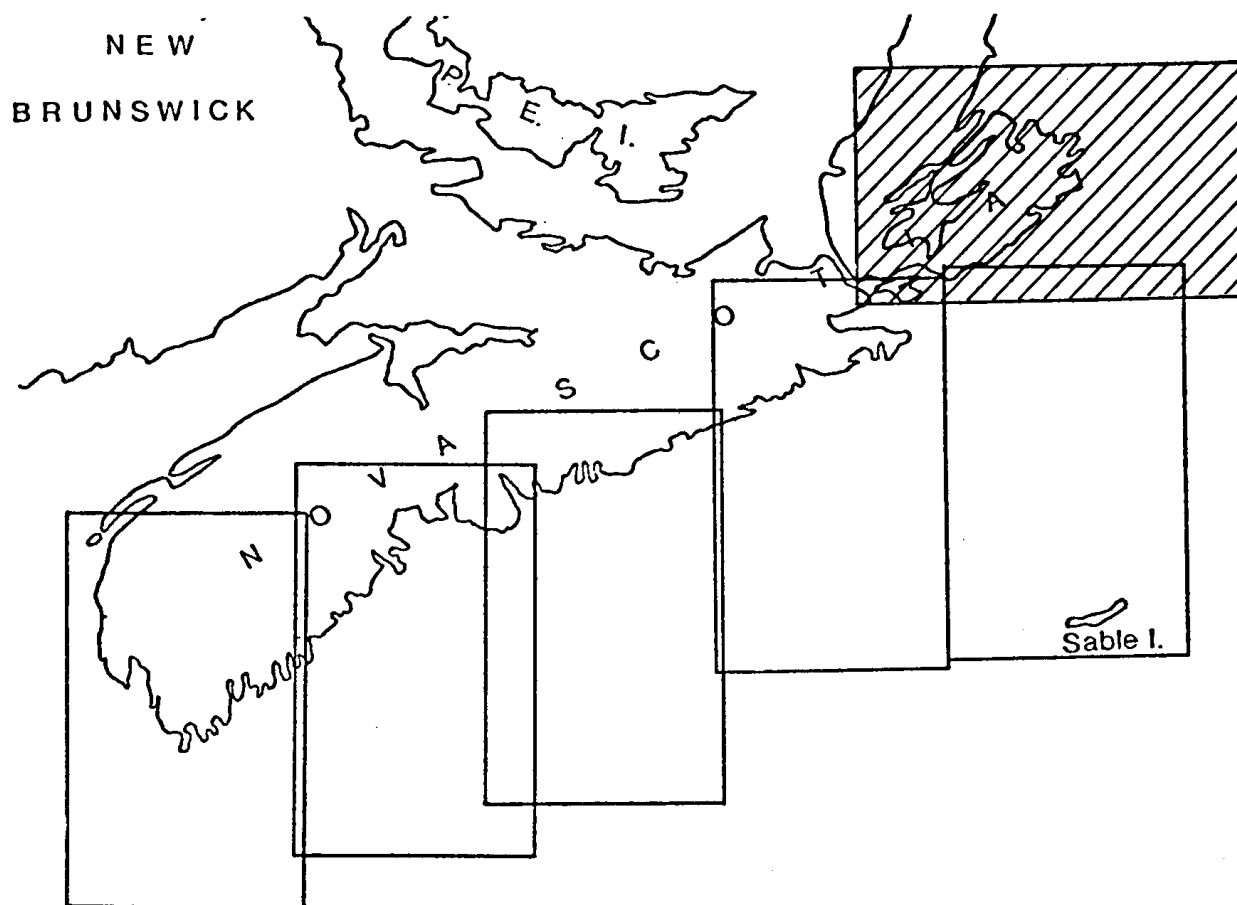
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The appendix contains monthly wind and visibility data presented in a series of twelve tables. This type of information is provided for the following coastal stations: Yarmouth, Shearwater, Sable Island and Sydney. Tables listing tidal ranges, fish processing plants, lobster pounds and fisheries protection officers are also provided. A list of the references utilized has been included, however, personal communications and observations could not be cited.

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The scientific advice of numerous E.P.S. personnel is also acknowledged. In particular, I would like to thank Mr. R. Percy, Mr. A. McIver, Mr. J. Swiss and Dr. C. Duerden for their help in the preparation of this report.

KEY TO OVERLAYS

A. MARINE MAMMALS

Grey Seals Breeding Area - Winter	.....	▲
Migration Route for Grey Seals - Summer	.....	➡
Overwintering Area for Whales	.....	+ + + +
Feeding Area for Whales - Summer	.....	x x x x x

B. AVIFAUNA

Seabird Breeding Colony	.....	*
Migration Route for Ducks & Geese - Spring & Fall	.....	➡
Migration Route for Shorebirds - Spring & Fall	.....	|||
Migratory Bird Stop-over Zone - Spring & Fall	.....	|||
Overwintering Habitat - Primarily Eiders	.....	□ □ □ □
Ducks & Geese	.....	○ ○ ○ ○
Migratory Bird Sanctuary	.....	⊗ ⊗
Pelagic Seabird Concentrations :		
Spring	.....	—
Winter	.....	||||

C. FISHERIES

Major Commercial Species - Primary Fishing Areas

Tuna	.....	T
Cod	.....	C
Hake	.....	K
Haddock	.....	D
Redfish	.....	R
Pollock	.....	P
Herring	.....	H
Mackerel	.....	M
Queen Crabs	.....	Q
American Plaice	.....	L
Yellowtail	.....	Y
Clams	.....	▲
Oysters	.....	△
Scallops	.....	○ ○
Gaspereau	.....	g
Salmon	.....	s
Smelt	.....	m
Eels	.....	e
Baitworms	.....	b
Seaweed Harvesting	.....	●
Salmon Trap or Net	.....	T
Fish Trap	.....	†
Squid	.....	◆
Herring Spawning Area	.....	■ ■
Overwintering Area for Herring	.....	● ● ● ●
Silver Hake Spawning Area	.....	⊥ ⊥
Fish Processing Plant	.....	F
Lobster Pound	.....	L
Trout Farming	.....	▣

D. OCEANOGRAPHY

Primary Surface Currents:

Summer	.....	➡
Winter	.....	➡
All Seasons	.....	➡

Sea Surface Temperature (°C):

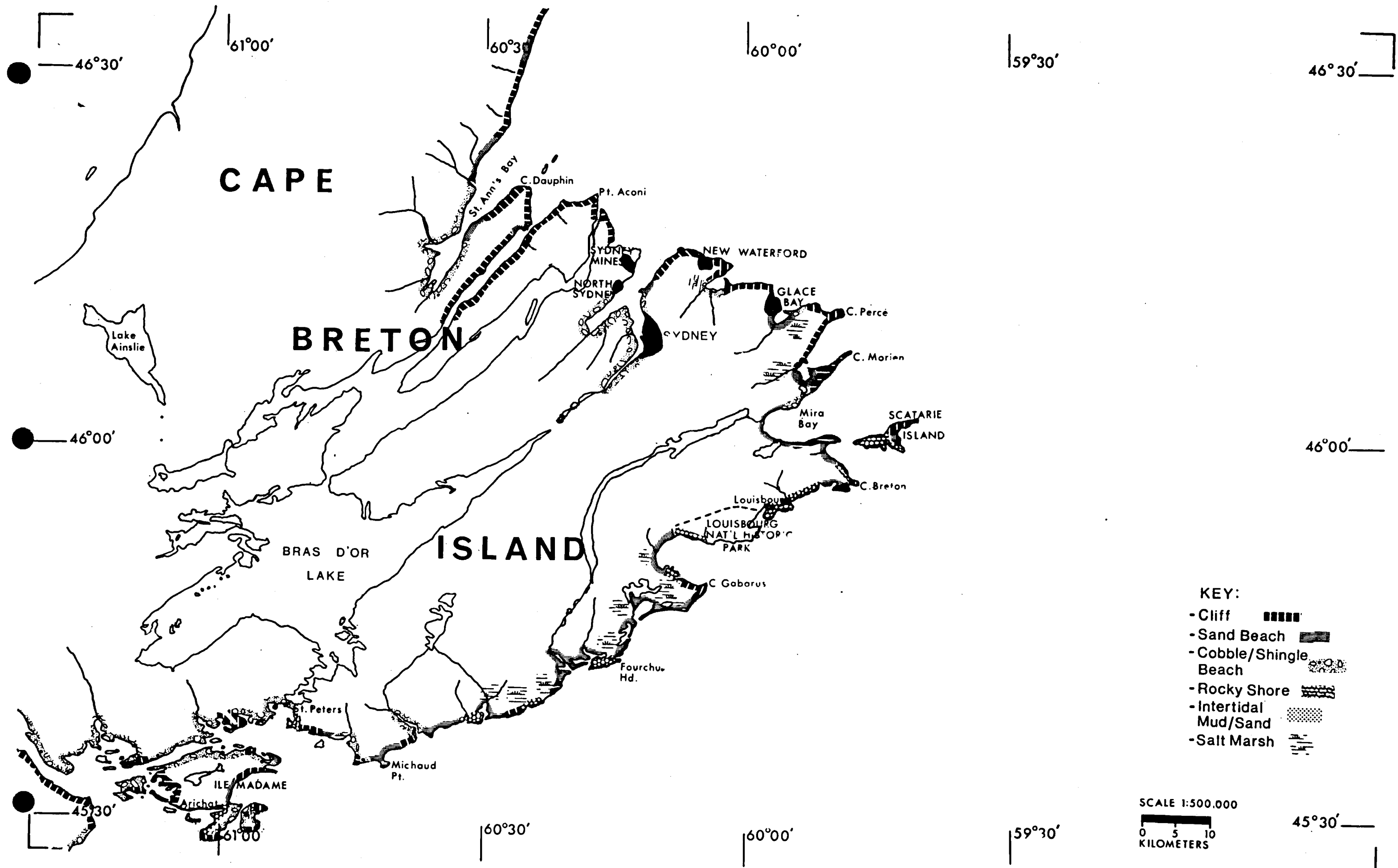
Spring	.....	—
Summer	.....	—
Fall	.....	—
Winter	.....	—

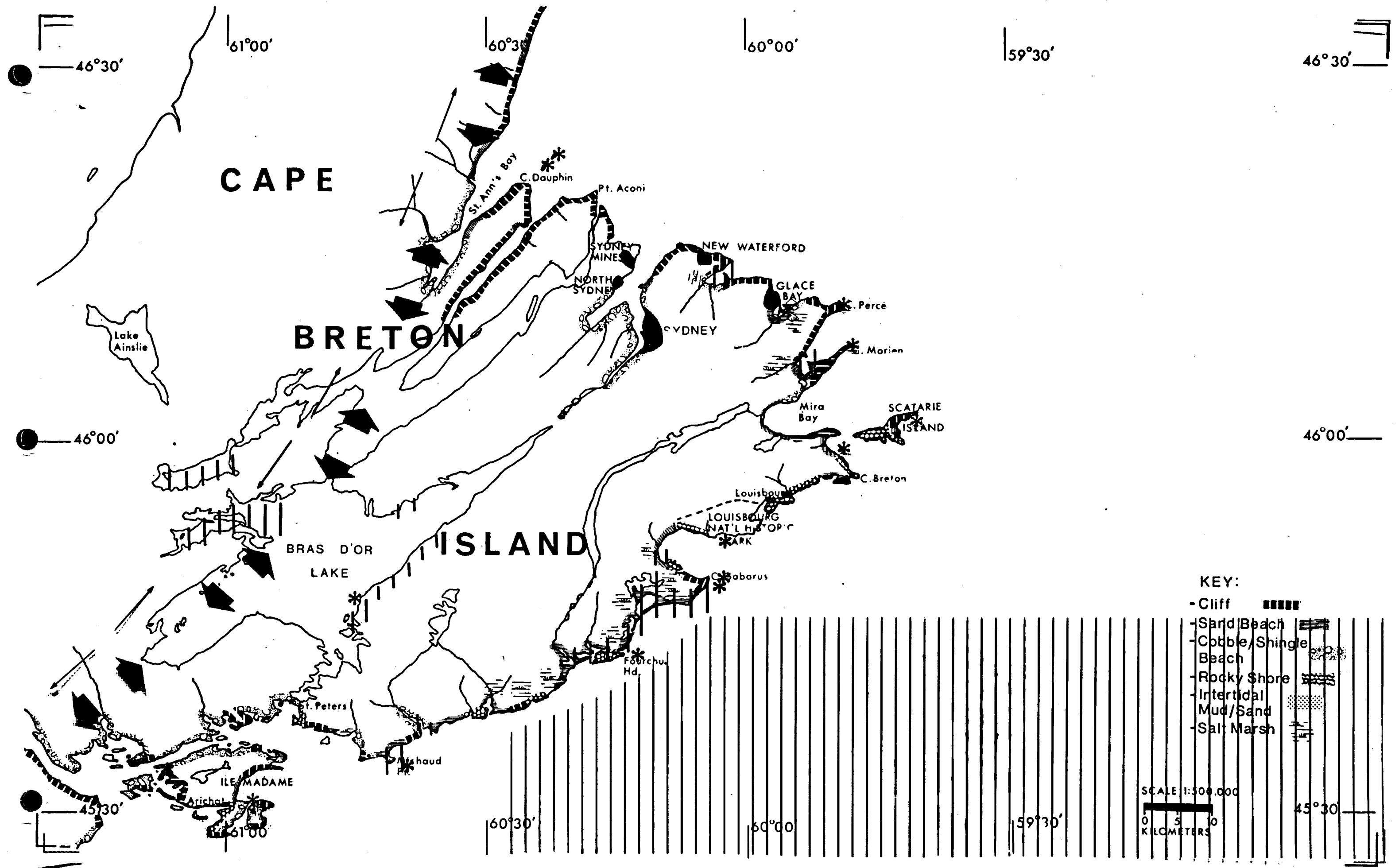
Mean Concentration of Sea Ice (Winter):

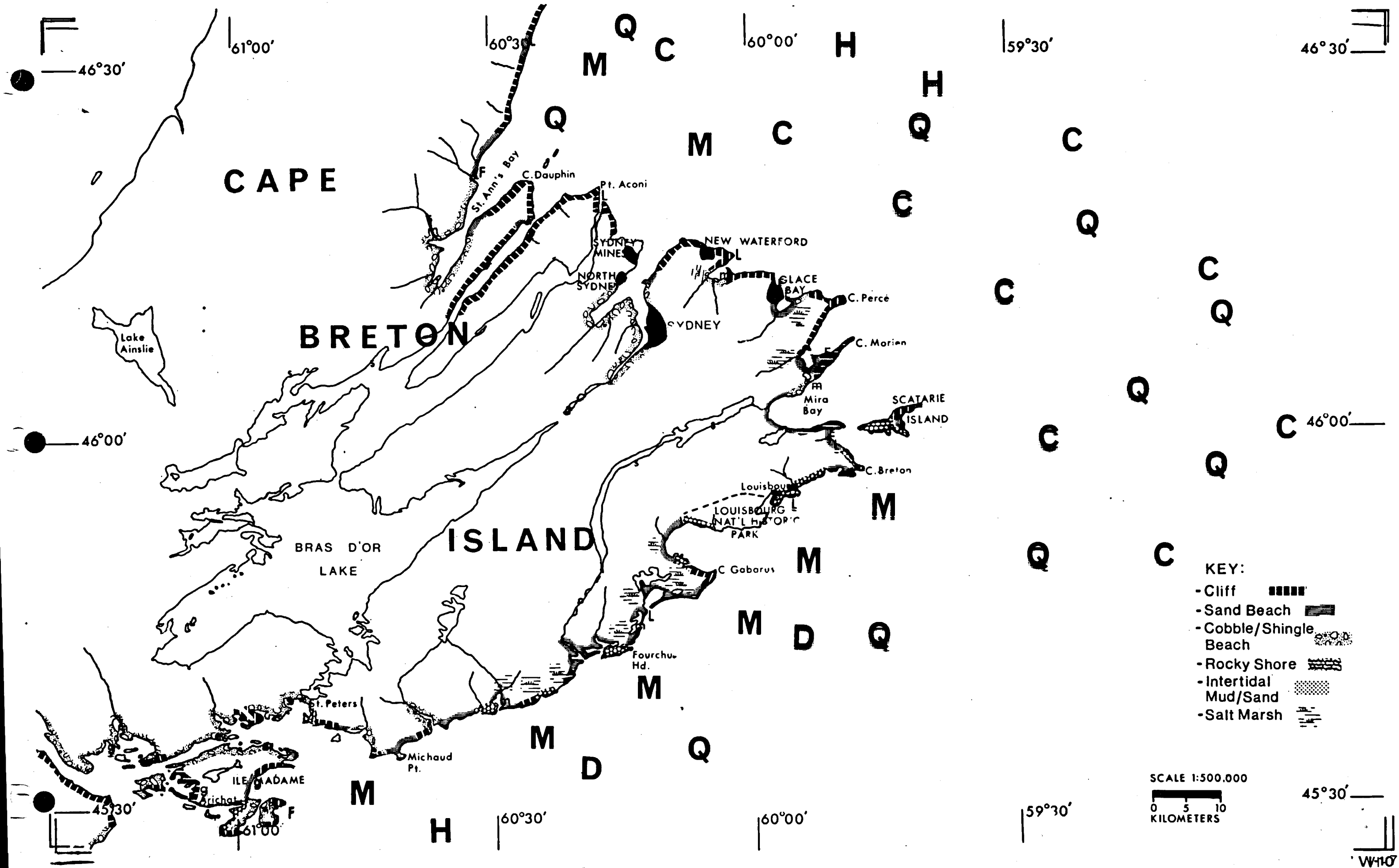
10/10	.....	■ ■ ■ ■
>7/10	.....	■ ■ ■ ■

E. MISCELLANEOUS

International Biological Programme Site	.....	☆
Oil Transfer Point	.....	⊗
Dredging Disposal Site	.....	Ⓚ
Offshore Drilling Site:		
Oil Shows	.....	⊕
Gas Shows	.....	⊕
Oil & Gas Shows	.....	⊕

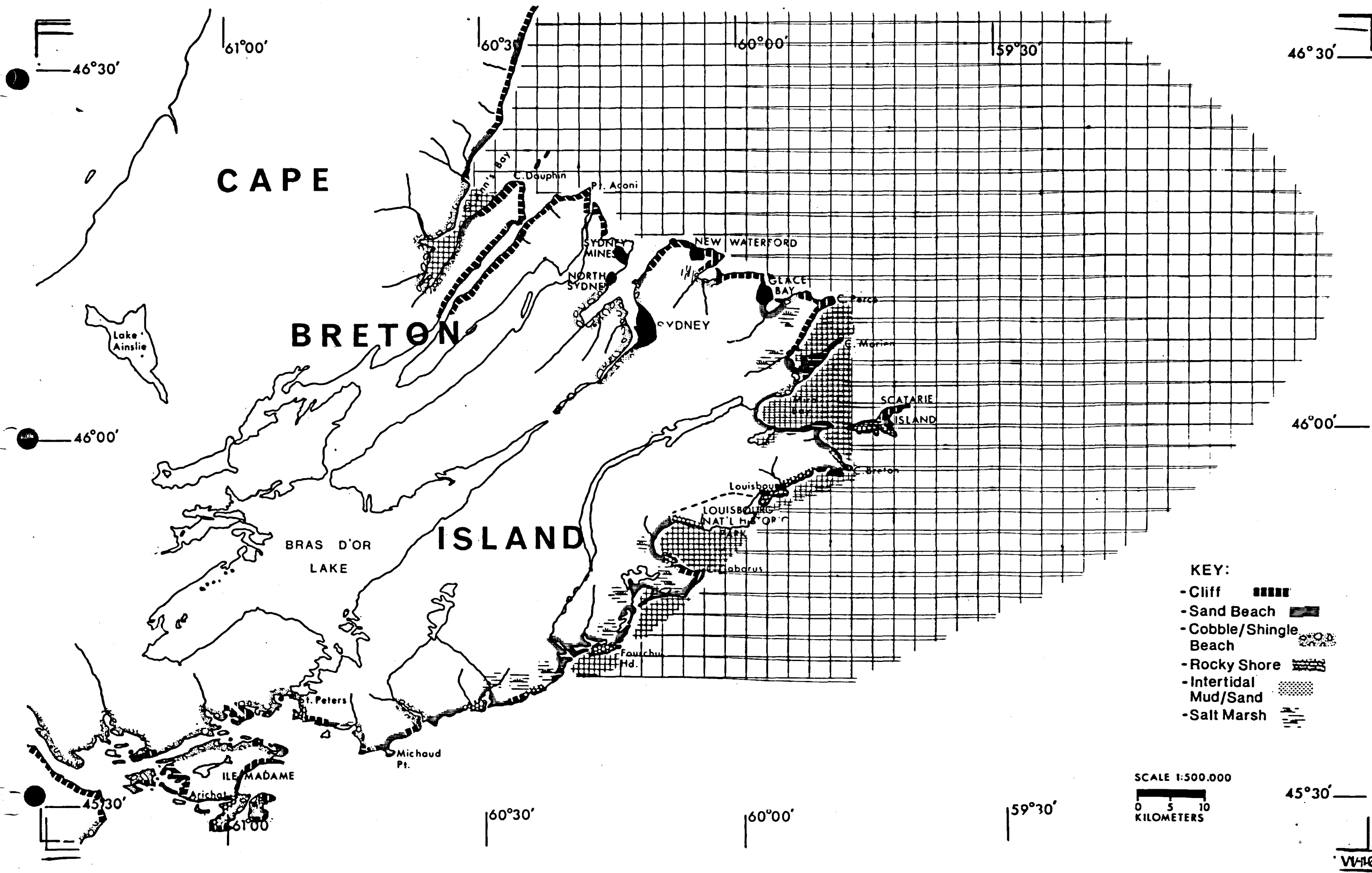






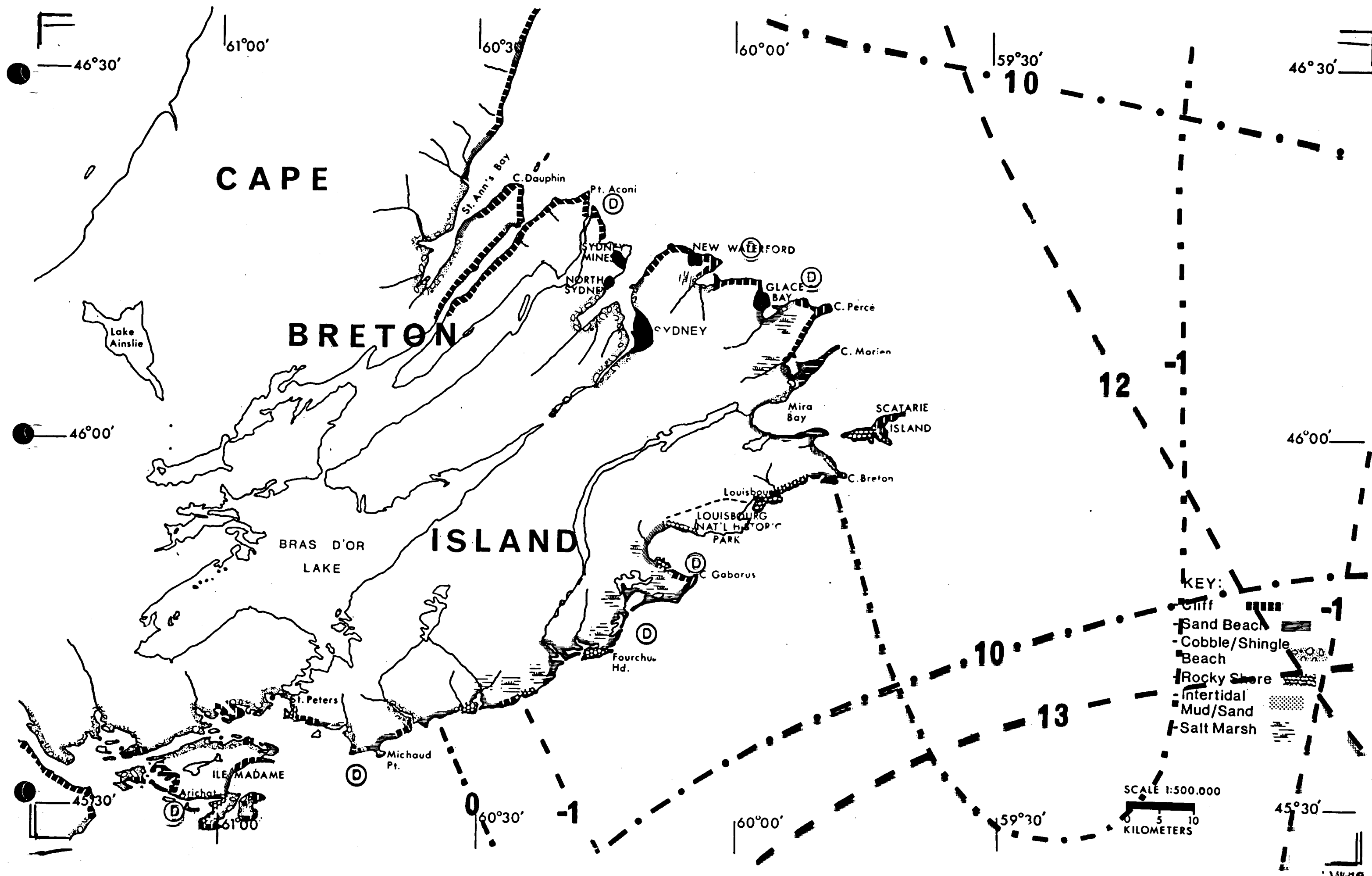
- KEY:
- Cliff
 - Sand Beach
 - Cobble/Shingle Beach
 - Rocky Shore
 - Intertidal Mud/Sand
 - Salt Marsh

SCALE 1:500,000
0 5 10
KILOMETERS



- KEY:**
- Cliff
 - Sand Beach
 - Cobble/Shingle Beach
 - Rocky Shore
 - Intertidal Mud/Sand
 - Salt Marsh

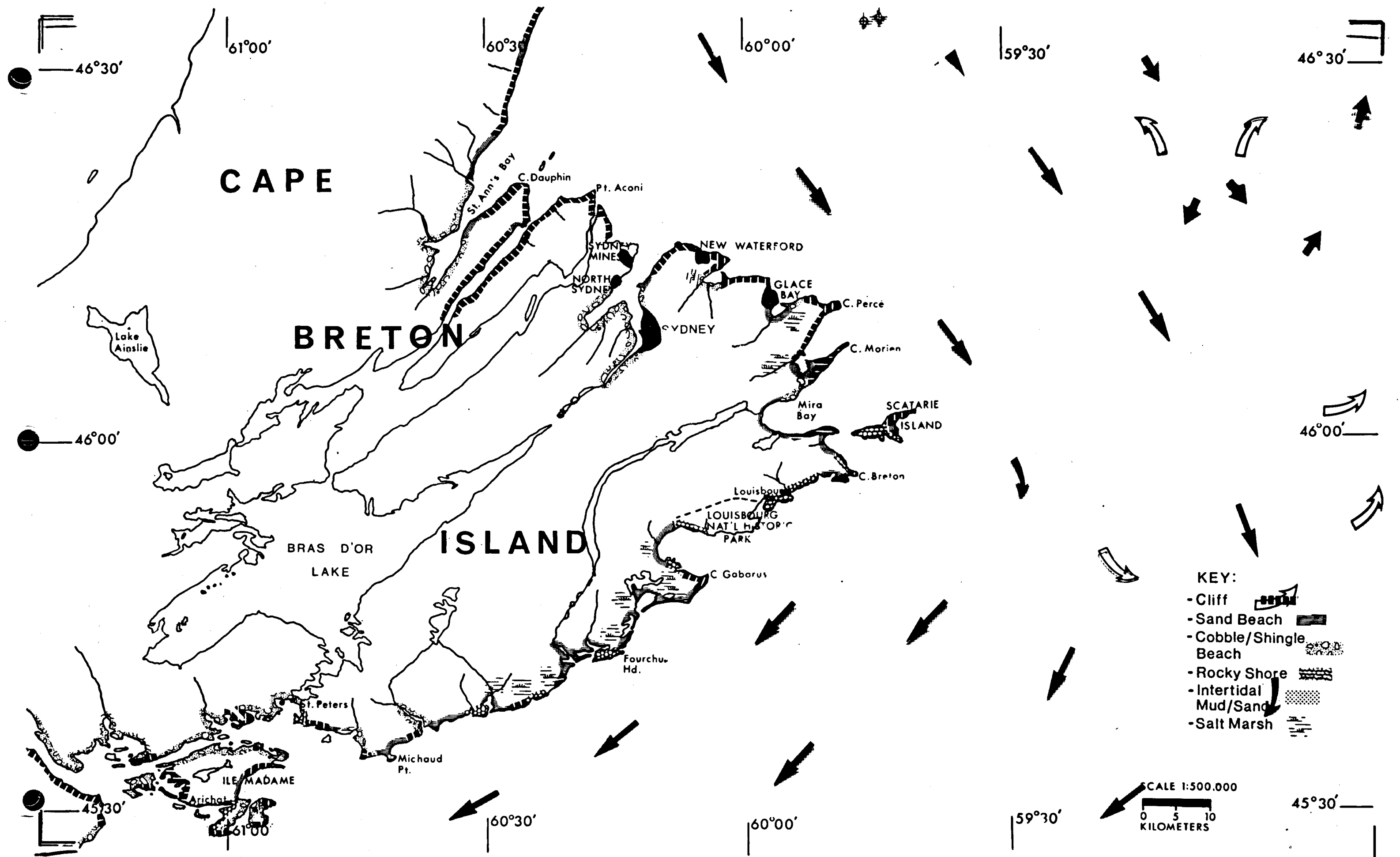
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KILOMETERS

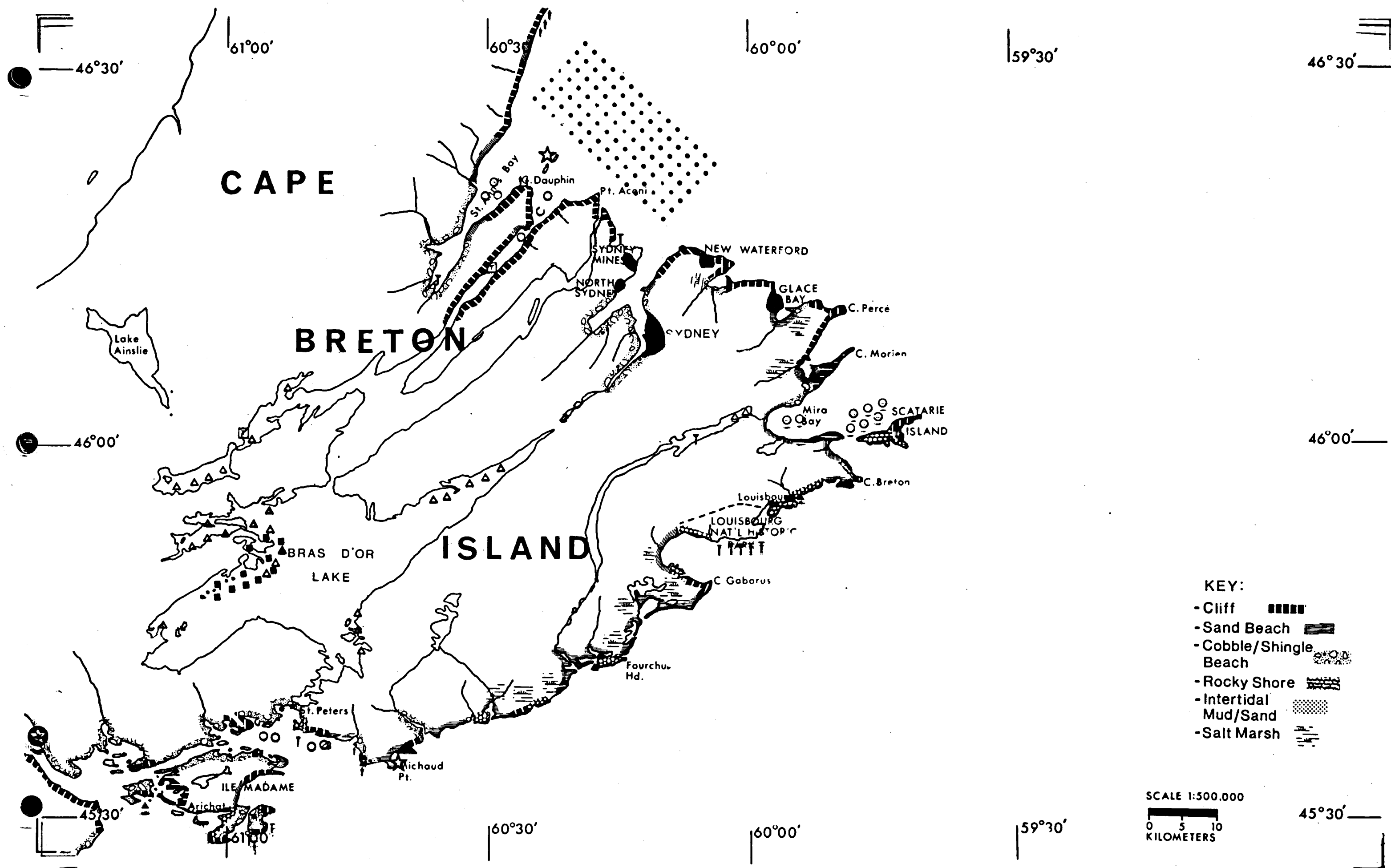


KEY:

- Cliff
- Sand Beach
- Cobble/Shingle Beach
- Rocky Shore
- Intertidal Mud/Sand
- Salt Marsh

SCALE 1:500,000
0 5 10
KILOMETERS

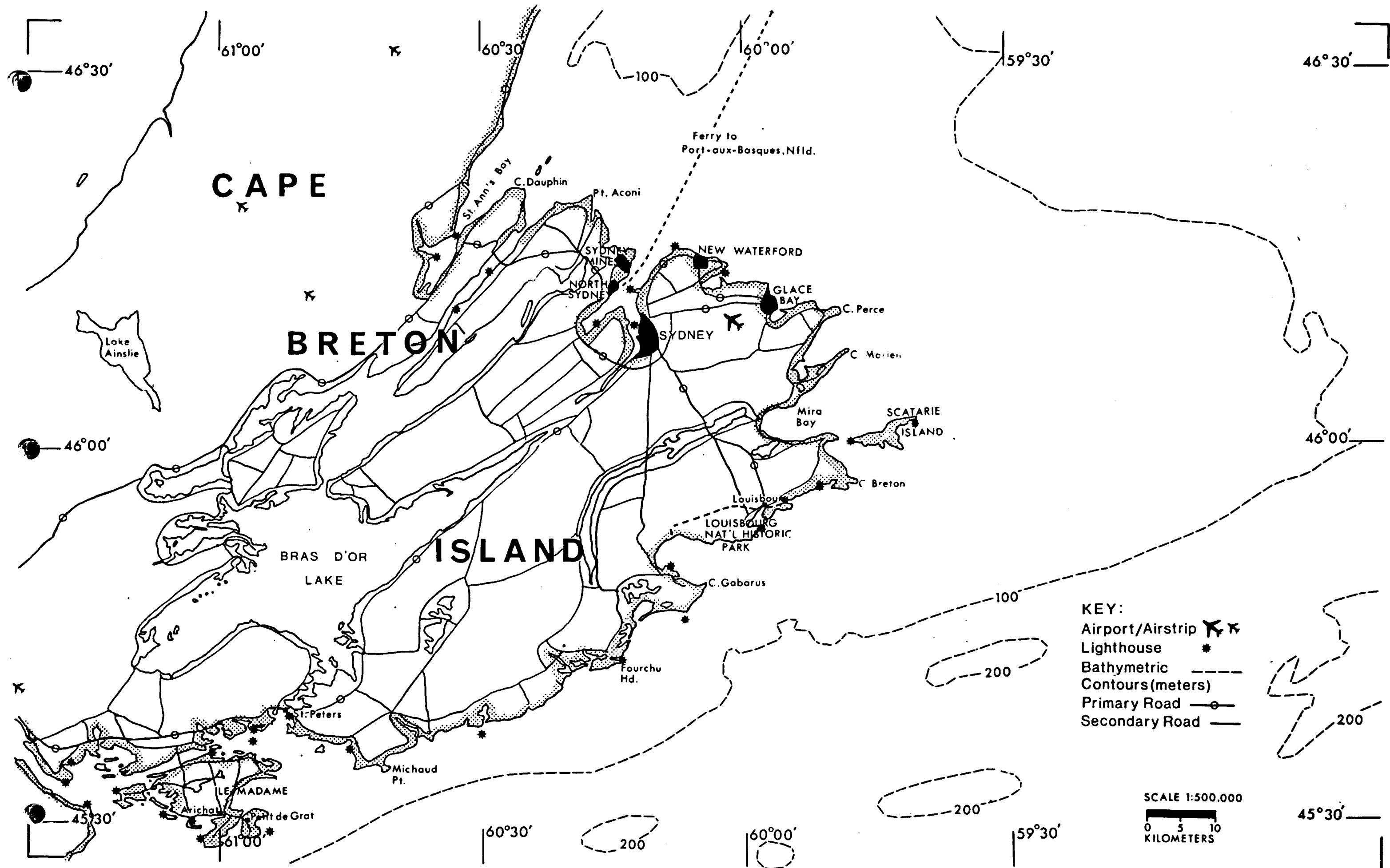




KEY:

- Cliff
- Sand Beach
- Cobble/Shingle Beach
- Rocky Shore
- Intertidal Mud/Sand
- Salt Marsh

SCALE 1:500,000
0 5 10
KILOMETERS



KEY:

- Airport/Airstrip
- Lighthouse
- Bathymetric Contours (meters)
- Primary Road
- Secondary Road

SCALE 1:500,000
0 5 10
KILOMETERS

MONTHLY WIND DATA FOR EASTERN NOVA SCOTIA

A. Yarmouth Period 1955-72

Average Wind Speed (KM/HR)

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
N	20.	17.9	19.3	17.2	16.4	13.7	12.9	13.2	14.2	17.6	17.7	18.7	16.6
NNE	17.4	17.1	17.9	18.5	17.4	16.0	11.6	12.4	15.0	16.8	17.2	16.3	16.1
NE	14.8	17.7	16.6	18.5	15.5	15.0	11.0	13.2	13.2	15.2	15.6	14.8	15.2
ENE	19.7	18.7	21.0	20.5	19.7	16.6	11.3	15.0	15.0	15.3	16.8	17.1	17.2
E	20.8	22.7	21.1	20.6	19.3	17.7	12.4	13.1	14.5	15.6	17.4	18.2	17.7
ESE	18.9	21.8	24.2	19.7	17.7	16.6	12.2	15.8	16.4	18.7	19.2	20.6	18.5
SE	17.9	20.3	20.5	19.0	17.2	15.6	13.1	14.5	16.4	19.2	20.2	20.2	17.9
SSE	19.5	21.9	20.6	19.8	17.6	15.0	14.0	13.5	18.2	17.9	20.8	23.1	18.5
S	22.1	21.6	21.8	21.1	19.2	16.8	16.1	16.0	18.4	19.3	23.2	23.8	20.0
SSW	25.0	22.2	22.7	20.5	21.3	19.3	17.7	19.6	19.8	19.3	22.1	25.5	21.3
SW	21.6	21.8	19.8	18.4	18.5	17.9	16.9	17.4	17.7	16.9	21.3	22.9	19.3
WSW	20.5	20.8	20.0	17.4	18.1	16.6	14.5	15.0	15.6	16.6	20.0	23.8	18.2
W	24.0	22.2	21.8	18.1	16.0	14.3	12.9	13.9	14.3	18.2	20.8	25.5	18.5
WNW	27.4	24.8	24.3	19.7	16.4	15.0	14.0	14.5	15.6	19.8	23.4	26.3	20.2
NW	24.7	22.9	22.1	19.5	17.2	14.7	13.9	14.7	15.6	18.5	22.4	25.2	19.3
NNW	23.4	22.2	21.9	20.0	18.4	15.0	13.7	14.5	16.1	19.3	20.3	22.9	19.0
ALL DIRECTIONS	21.1	20.3	20.3	18.4	16.9	15.2	13.5	14.2	15.2	17.1	19.2	21.0	17.7

A. Yarmouth

Period 1955-72

Percentage Frequency

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
N	11	9	10	7	5	3	2	3	6	8	9	9	7
NNE	5	4	5	4	2	2	1	1	3	3	6	5	3
NE	4	4	5	5	2	2	1	2	3	4	5	5	4
ENE	5	4	4	3	2	2	1	1	3	4	5	5	3
E	7	7	7	5	5	4	3	3	6	5	7	9	6
ESE	3	4	4	3	3	3	2	2	3	3	4	4	3
SE	3	4	3	4	4	4	4	4	3	4	4	3	4
SSE	2	3	2	4	4	6	6	5	4	4	3	2	4
S	3	5	4	8	11	14	16	12	9	9	7	4	9
SSW	3	2	3	4	6	9	8	9	6	5	4	3	5
SW	4	4	3	6	9	11	11	11	9	7	4	4	7
WSW	4	4	4	6	8	10	9	9	7	6	5	4	6
W	7	8	10	11	12	11	13	12	10	10	7	6	10
WNW	9	9	9	8	6	5	6	6	7	7	8	8	7
NW	15	14	13	10	9	5	6	9	10	9	10	15	10
NNW	11	10	9	7	6	3	3	4	5	7	8	10	7
Calm	4	5	5	5	6	6	8	7	6	5	4	4	5

MONTHLY WIND DATA FOR EASTERN NOVA SCOTIA

B. Shearwater

Period 1955-72

Average Wind Speed (KM/HR)

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
N	21.4	22.1	25.3	23.7	24.0	20.3	15.2	15.5	18.5	19.8	20.8	20.2	20.6
NNE	21.4	22.2	25.0	24.0	22.1	20.6	16.3	17.9	19.5	20.5	22.4	21.3	21.1
NE	18.4	20.3	20.5	21.3	15.5	15.5	13.5	16.4	16.4	17.9	20.2	18.9	17.9
ENE	27.9	25.0	26.3	25.5	21.4	18.5	14.7	17.2	18.7	20.6	24.7	20.6	21.8
E	31.1	32.7	25.5	23.1	21.1	18.5	15.8	16.9	16.6	20.2	23.7	29.2	22.9
ESE	28.9	26.8	27.1	20.5	17.6	15.5	13.7	14.3	19.0	21.4	23.7	28.9	21.4
SE	22.4	21.8	17.4	17.4	13.1	12.1	11.9	12.1	16.9	21.6	22.1	27.4	18.1
SSE	24.8	21.8	17.4	17.6	16.0	14.3	14.0	13.9	16.9	20.8	23.7	26.0	18.9
S	21.3	21.3	20.2	17.9	16.8	15.5	14.3	14.8	16.4	18.5	22.2	22.6	18.5
SSW	24.3	21.1	21.8	21.3	19.0	17.6	15.8	16.4	18.5	19.5	23.4	23.1	20.2
SW	23.2	21.4	20.3	19.8	19.1	17.4	15.3	15.3	18.7	17.7	21.3	21.9	19.3
WSW	20.0	19.7	21.3	17.1	17.7	15.8	13.4	13.7	15.8	16.6	19.7	22.2	17.7
W	22.1	21.0	20.2	17.2	16.2	13.7	12.1	12.9	14.8	17.4	19.5	22.7	17.6
WNW	24.0	23.1	23.9	21.3	19.1	16.9	13.9	14.3	16.8	18.9	21.6	24.0	19.8
NW	21.0	19.3	19.7	18.5	18.5	16.1	13.4	14.5	15.5	16.6	18.2	20.0	17.6
NNW	22.6	20.3	25.1	21.8	21.0	18.2	14.7	14.8	15.8	18.2	18.5	18.9	19.2
ALL DIRECTIONS	22.1	21.1	22.1	19.7	17.7	15.5	13.2	13.7	16.0	17.7	20.2	21.3	18.4

B. Shearwater

Period 1955-72

Percentage Frequency

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
N	7	7	10	10	7	5	3	3	6	7	7	8	7
NNE	4	5	7	5	4	3	2	2	5	5	5	5	5
NE	4	3	4	3	2	2	1	2	3	3	5	5	3
ENE	4	4	5	4	3	2	2	2	3	3	4	4	3
E	4	4	5	5	6	6	4	3	4	3	4	3	4
ESE	2	3	3	3	5	5	3	3	3	3	3	2	3
SE	1	2	2	3	3	3	3	2	2	2	3	2	2
SSE	2	3	2	5	6	7	8	5	4	4	4	2	4
S	3	4	5	7	10	12	16	12	7	7	5	4	8
SSW	4	5	4	6	9	10	11	10	8	7	6	4	7
SW	4	4	4	7	8	11	11	12	9	7	5	5	7
WSW	6	8	7	6	7	9	9	10	9	10	7	7	8
W	10	9	8	6	5	5	5	7	6	9	9	10	8
WNW	15	14	12	9	7	5	5	8	9	10	11	13	10
NW	14	11	9	8	5	4	4	6	8	8	9	13	8
NNW	12	10	10	9	7	4	4	5	8	7	9	10	8
Calm	4	4	3	4	6	7	9	8	6	5	4	3	5

MONTHLY WIND DATA FOR EASTERN NOVA SCOTIA

C. Sydney

Period 1955-72

Average Wind Speed (KM/HR)

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
N	26.4	24.5	25.2	24.2	22.6	20.8	18.7	19.2	20.8	24.8	27.9	24.4	23.2
NNE	23.2	21.1	22.2	19.8	18.7	18.2	15.8	16.8	19.2	22.7	23.4	22.7	20.3
NE	21.8	21.8	21.4	18.7	17.4	16.0	15.0	16.1	14.8	20.0	21.6	20.5	18.9
ENE	27.7	25.8	24.7	21.9	16.3	17.6	14.8	19.3	16.9	19.2	22.2	22.2	21.0
E	26.6	26.9	25.8	22.1	18.2	17.1	15.8	17.6	16.1	18.7	24.2	24.2	21.2
ESE	31.1	32.1	30.6	24.0	21.6	18.9	16.8	19.7	20.5	21.8	28.7	28.7	24.0
SE	28.4	29.7	27.3	23.8	19.8	20.5	16.8	17.6	18.7	23.7	23.7	28.4	23.2
SSE	26.6	26.6	27.4	23.4	21.9	18.9	20.2	19.5	21.1	24.5	27.6	26.4	23.7
S	23.1	23.1	23.9	24.0	24.2	22.9	21.3	21.0	21.8	22.4	26.0	24.2	23.1
SSW	23.5	23.7	24.2	26.1	23.5	24.5	22.6	21.9	23.2	22.4	22.7	21.8	23.5
SW	20.3	20.6	21.2	22.9	22.6	22.9	20.3	19.8	19.8	20.6	20.4	22.1	21.1
WSW	23.5	23.4	24.8	21.9	22.4	19.5	19.0	18.7	19.0	21.0	24.0	25.5	21.9
W	26.8	26.3	25.5	23.7	22.9	19.7	20.6	20.0	20.0	21.9	23.4	26.0	23.1
WNW	27.1	27.7	28.2	24.7	23.4	21.0	21.0	21.3	22.2	23.5	24.8	26.3	24.4
NW	27.4	27.3	25.5	25.8	23.1	20.0	19.8	19.8	22.2	24.5	25.6	26.3	24.0
NNW	30.8	29.9	28.2	28.2	26.0	21.9	18.9	21.2	23.2	26.9	28.5	27.4	26.0
ALL DIRECTIONS	25.2	24.8	24.8	23.4	22.1	20.6	19.5	19.5	20.0	22.2	24.0	24.5	22.6

C. Sydney

Period 1955-72

Percentage Frequency

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
N	5	7	12	11	11	8	5	4	6	6	6	6	7
NNE	3	4	5	5	4	4	3	2	3	3	3	3	4
NE	3	3	5	4	4	4	3	2	3	3	3	3	3
ENE	3	2	3	3	2	2	2	2	2	2	3	2	2
E	4	3	4	4	4	3	4	3	3	2	5	3	4
ESE	2	3	3	2	3	2	2	2	2	2	2	2	2
SE	3	4	3	3	4	4	4	3	3	4	4	4	4
SSE	3	2	2	3	3	4	3	3	3	4	5	3	3
S	6	7	6	8	11	11	14	13	9	9	9	7	9
SSW	6	7	7	8	12	16	19	15	11	10	8	7	11
SW	11	10	9	10	12	18	18	22	18	15	11	12	14
WSW	10	9	7	6	5	6	6	9	9	9	9	12	8
W	16	16	11	9	6	5	7	8	10	11	11	13	10
WNW	9	8	7	6	4	3	3	4	6	6	8	8	6
NW	9	7	7	7	7	4	3	4	6	7	7	8	6
NNW	6	6	8	9	6	4	2	2	4	6	5	6	5
Calm	1	2	1	2	2	2	2	2	2	1	1	1	2

MONTHLY WIND DATA FOR EASTERN NOVA SCOTIA

D. Sable Island

Period 1955-72

Average Wind Speed (KM/HR)

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
N	28.1	27.4	30.3	25.5	22.4	16.6	14.8	19.7	22.1	28.1	30.3	27.9	24.5
NNE	28.5	28.5	31.1	28.5	25.0	19.7	16.8	18.5	24.0	28.9	32.9	30.8	26.1
NE	30.3	26.4	31.4	27.9	21.8	17.4	19.0	18.7	21.6	24.3	30.3	30.3	25.0
ENE	34.3	32.9	29.3	26.0	24.7	21.0	20.3	22.1	20.0	26.9	29.8	27.2	26.3
E	30.0	28.5	31.4	29.5	25.5	23.4	18.5	18.1	18.7	19.7	27.2	27.2	24.8
ESE	34.3	37.2	34.2	29.7	27.6	23.4	21.6	20.2	22.4	26.0	30.3	34.5	28.4
SE	32.9	32.3	28.9	26.4	25.0	21.0	18.1	18.7	20.6	26.9	29.7	31.8	26.0
SSE	30.8	32.1	27.1	23.4	23.9	23.1	20.0	21.0	21.8	26.3	33.4	31.3	26.1
S	30.3	27.7	26.4	24.0	23.1	21.4	18.9	20.3	21.3	25.0	28.7	29.3	24.7
SSW	29.2	28.4	26.4	27.4	24.8	22.2	20.0	20.3	22.2	23.2	25.0	27.9	24.8
SW	29.3	28.5	26.4	25.5	22.9	21.3	19.3	19.7	21.9	22.9	26.1	29.2	24.5
WSW	33.2	34.0	32.1	27.2	24.3	21.9	19.5	21.0	23.2	25.8	29.7	35.5	27.2
W	33.9	32.7	31.0	26.6	22.2	18.7	17.1	18.2	21.1	24.8	28.5	33.5	25.6
WNW	34.2	32.7	33.1	28.4	23.2	18.2	15.8	19.2	23.4	28.1	32.2	34.2	26.9
NW	34.2	32.9	30.8	27.4	23.7	17.6	14.8	18.4	23.7	28.2	31.9	33.5	26.4
NNW	31.8	30.8	30.0	29.3	25.2	17.6	16.9	20.6	24.3	28.2	33.5	32.2	26.8
ALL													
DIRECTIONS	32.1	31.1	30.2	26.9	23.7	20.6	18.5	19.5	21.9	25.8	29.8	31.8	26.0

D. Sable Island

Period 1955-72

Percentage Frequency

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
N	6	7	9	6	5	4	3	3	6	6	6	6	6
NNE	3	4	5	4	4	3	2	2	4	4	4	4	3
NE	4	4	8	6	6	5	2	4	7	5	6	5	5
ENE	3	3	4	3	4	3	2	2	4	2	4	2	3
E	6	6	5	7	4	3	2	3	5	3	5	5	5
ESE	2	4	3	4	3	3	3	3	3	3	3	3	3
SE	4	5	5	6	6	5	6	6	6	7	8	6	6
SSE	2	2	2	3	4	4	5	4	5	4	5	3	4
S	4	4	4	5	9	10	12	9	6	7	6	5	7
SSW	4	3	3	5	8	12	13	10	5	4	4	3	6
SW	6	6	7	10	14	22	24	21	13	8	7	6	12
WSW	5	6	7	8	9	9	10	12	9	8	5	5	8
W	15	15	12	11	9	7	7	10	10	14	11	15	11
WNW	13	10	8	6	4	3	3	3	5	7	9	12	7
NW	17	15	12	10	7	5	5	5	8	11	12	14	10
NNW	5	6	6	6	4	2	2	2	4	6	5	6	4
Calm	1	-	-	-	-	-	-	1	-	1	-	-	-

Visibility - Eastern Nova Scotia

Mean Number of Days with Fog - Visibility less than 1 KM

Period 1941-1970

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
Yarmouth	5	5	6	8	12	14	20	19 ^a	13	9	6	4	120
Shearwater	5	4	5	7	11	12	17	12	7	5	5	4	94
Sydney	4	5	6	9	11	10	11	7	6	5	5	4	81
Sable Island	5	5	7	10	15	17	21	14	8	5	5	4	115

Percentage Frequency of Fog and Mist - Visibility less than 10KM

Period 1957-1966

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
Yarmouth	14	13	13	22	25	32	43	37	26	22	21	14	23
Shearwater	13	13	14	21	28	30	39	31	21	20	23	17	23
Sydney	11	11	17	17	20	22	25	17	15	16	21	12	17
Sable Island	16	19	16	20	33	37	43	32	19	16	19	12	24

TIDAL RANGES - EASTERN NOVA SCOTIA

	<u>MEAN TIDE (M)</u>	<u>LARGE TIDE (M)</u>
YARMOUTH	3.7	5.1
CLARK'S HARBOUR	2.5	3.5
SHELBURNE	1.8	2.6
LIVERPOOL	1.6	2.3
LUNENBURG	1.5	2.2
HALIFAX	1.4	2.1
SHEET HARBOUR	1.4	2.0
LISCOMB HARBOUR	1.4	2.0
LARRY'S RIVER	1.4	1.9
SABLE ISLAND	1.1	1.6
CANSO HARBOUR	1.3	1.9
POINT TUPPER	1.4	2.0
PETIT -de- GRAT	1.4	2.0
LOUISBURG	1.2	1.7
NORTH SYDNEY	0.9	1.4

FEDERAL FISHERIES PROTECTION OFFICERS

EASTERN NOVA SCOTIA

		<u>LOCATION</u>	<u>OFFICE TELEPHONE</u>
D.A. MACKINNON	DPO	SYDNEY	564-4565
P.M. CONRAD	F.O	SYDNEY	564-4565
A.J. MACEACHERN	F.O	SYDNEY	564-4565
J.B. BROWN	F.O	SYDNEY	564-4565
L.J. MUISE	F.O	SYDNEY	564-4565
E. MARCOUX	F.O	ARICHAT	226-2610
R.S. MACLEOD	F.O	BADDECK	295-2557
J.G. DOUCETTE	F.O	INGONISH BEACH	285-2408
S. WILSON	F.O	CANSO	366-2004
J.T. JAMIESON	F.O	CANSO	366-2777
W. BARRIE	F.O	GUYSBOROUGH	533-3408
F.H. CLEVELAND	F.O	SHERBROOKE	522-2666
W. PARSONS	F.O	SHERBROOKE	522-2666
J.H. BALCOM	F.O	SHEET HARBOUR	885-2660
J. WILLIAMS	F.O	SHEET HARBOUR	885-2660
R.E. PILON	F.O	MUSQUODOBOIT HBR.	889-2844
C.B. HENDSBEE	DPO	HALIFAX	426-2059
C.E. GOODWIN (ADMIN. OFFICE)		HALIFAX	426-2059
J. SOEDER	F.O	TANTALLOH	826-2733
R.P. MC CLUNG	F.O	HALIFAX	426-3631
R.B. BARNES	F.S	BRIDGEWATER	543-7886
G.M. MAC DONALD	F.O	BRIDGEWATER	543-7886
R.S. COLLIE	F.O	BRIDGEWATER	543-7886
J.E. JAMIESON	F.O	BRIDGEWATER	543-7886
G.J. BLACKMORE	F.O	LUNENBURG	634-8833
W. GRAVES	F.O	CHESTER	275-3949
C.G. MURPHY	A/DPO	SHELBURNE	875-2360
R. YOUNG	F.O	SHELBURNE	875-2360
R. REID	F.O	SHELBURNE	875-2360
J.J. FORBES	F.O	LIVERPOOL	354-3459
G. VIENOTTE	F.O	LIVERPOOL	354-3459
G.E. MASON	F.O	LOCKEPORT	656-2314
P.J. WINCHESTER	F.O	BARRINGTON PASSAGE	637-2944
F. HILTZ	F.O	BARRINGTON PASSAGE	637-2944
W.L. JOUDREY	F.O	BARRINGTON PASSAGE	637-2944
P.E. PARTINGTON	F.O	WEST PUBNICO	762-2978
D. BISHARA	F.O	WEST PUBNICO	762-2978
W.H. BASKIN	DPO	YARMOUTH	742-9121/22/23
W.A. NICKERSON	F.S	YARMOUTH	742-9121/22/23
S.D. FRASER	F.O	YARMOUTH	742-9121/22/23
C.W. BAGNELL	F.O	YARMOUTH	742-9121/22/23
L.J. AUCOIN	F.O	YARMOUTH	742-9121/22/23

FISH PROCESSING PLANTS

Name of Fish Processor	Mailing Address	Telephone Number	Months of Normal Operation	Products Handled
1. National Sea Products, Ltd. (North Sydney Division)	North Sydney Cape Breton Co.	794-4737	12	fresh, frozen and smoked groundfish; herring, mackerel, salmon, squid, scallops, shrimp, clams, bait
2. United Maritime Fishermen	Alder Point Cape Breton Co.	736-6248	12	fresh and frozen groundfish; mackerel, scallops, bait, meal and oil
3. H. Hopkins, Ltd.	Glace Bay Cape Breton Co.	849-2144	Apr-Jan	fresh and salted groundfish; bait
4. Cecil Touchings Supplies	Glace Bay Cape Breton Co.	849-4531	May-Dec	live lobsters, bait
5. Highland Fisheries, Ltd.	Glace Bay Cape Breton Co.	849-6016	12	frozen groundfish
6. D. Goldman & Sons, Ltd.	Glace Bay Cape Breton Co.	849-5505	12	fresh, salted and smoked groundfish; live and cooked lobsters; eels, oysters, scallops, bait
7. H. Hopkins, Ltd.	Port Morien Cape Breton Co.	737-2244	12	fresh and salted groundfish; live lobsters, bait
8. P. A. Mullins	Main-a-dieu Cape Breton Co.	733-2627	May-Dec	fresh and salted groundfish; live and cooked lobsters; scallops, bait
9. H. B. Nickerson & Sons, Ltd.	North Sydney Cape Breton Co.	794-7281	12	fresh, frozen and smoked groundfish; herring, mackerel, salmon, eels, smelts, scallops, gasper-eaux, shad, bait
10. National Sea Products, Ltd. (Louisbourg Div.)	Louisbourg Cape Breton Co.	733-2050	12	fresh, frozen and smoked groundfish; salmon, herring, mackerel, squid, shrimp, scallops, fish meal and oil
11. H. Hopkins, Ltd.	Louisbourg Cape Breton Co.	733-2424	Mar-Dec	fresh and salted groundfish; herring, mackerel, lobsters, bait
12. Richmond Fisheries, Ltd.	Petit de Grat Richmond Co.	226-2510	12	fresh and frozen groundfish
13. Isle Madame Fisherman's Co-op., Ltd.	Petit de Grat Richmond Co.	226-2733	12	fresh, frozen and salted groundfish; live lobsters, herring, mackerel, bait
14. Canso Seafoods, Ltd. (H. B. Nickerson & Sons, Ltd.)	Canso Guysborough Co.	366-2626	12	fresh and frozen groundfish; mackerel, herring, squid, fish meal and oil
15. Eastern Shore Fisheries	Larry's River Guysborough Co.	525-2431	Apr-Dec	salted groundfish; live lobsters, bait
16. Blue Ribbon Co-op	Little Dover Guysborough Co.	366-2079	Apr-Dec	fresh groundfish; live lobsters
17. National Sea Products, Ltd.	Canso Guysborough Co.	366-2995	Apr-Dec	fresh groundfish; mackerel, herring, lobsters
18. Bickerton Co-operative, Ltd.	Drum Head Guysborough Co.	387-2752	Apr-Nov	fresh and salted groundfish; live lobsters
19. Bickerton Co-operative, Ltd.	Bickerton West Guysborough Co.	364-2266	12	fresh, frozen and salted groundfish; mackerel, herring, squid, live lobsters, fish meal and oil

20.	Howard Turner & Son, Ltd.	Marie Joseph Guysborough Co.	347-2616	12	salted groundfish; pickled herring and mackerel; live lobsters
21.	Abriel Fisheries Ltd.	Tangier Halifax Co.	722-2565	12	fresh, frozen and salted groundfish; mackerel, herring, squid, bait, live lobsters
22.	Willey Krauch	Tangier Halifax Co.	772-2188	12	fresh, salted and smoked salmon, eels, herring and mackerel; fresh groundfish
23.	Jewer's Fisheries Co-op	Ecum Secum Bridge Halifax Co.	--	Apr-Dec	fresh and salted groundfish; herring, mackerel, live lobsters
24.	Harold Baker & Sons	R. R. #2, Oyster Pond, Jeddore Halifax Co.	845-2347	Mar-Dec	fresh and salted groundfish; salted herring and mackerel; alewives, live lobsters
25.	Clyde T. Henneberry	Eastern Passage Halifax County	469-0620	12	fresh and salted groundfish; lobsters
26.	National Sea Products, Ltd. (Halifax Div.)	P. O. Box 2130 Halifax Halifax Co.	422-9381	12	fresh, frozen and smoked groundfish; herring, mackerel, smelts, lobsters, scallops, shrimp, trout, monkfish
27.	Fisherman's Market, Ltd.	Ferry Wharf Halifax Halifax Co.	423-9203	12	fresh, frozen, smoked and salted groundfish; fresh and pickled herring and mackerel; shellfish schucked and in the shell
28.	Ward Little, Ltd.	Sambro Halifax Co.	868-2591	12	fresh, frozen, smoked and salted groundfish; herring, mackerel, crabs, lobsters, scallops, shrimp, eels, salmon, smelts
29.	Terrence Bay Fisheries, Ltd.	Terence Bay Halifax Co.	852-2233	12	fresh and salted groundfish; mackerel, herring, live lobsters, bait
30.	Atlantic Sea Products, Ltd.	R. R. #1, Hubbards Halifax Co.	857-3337 -3327	12	fresh and salted groundfish; herring, mackerel, bait
31.	Janel Fisheries Limited	Indian Harbour Halifax Co.	823-2938	May-Oct	fresh tuna
32.	Ryer & Ryer Lobsters, Ltd.	Indian Harbour Halifax Co.	823-2822	12	live lobsters
33.	Seldon Miller Fisheries, Ltd.	R. R. #1, Hubbards Lunenburg Co. (Northwest Cove)	857-9561	12	fresh and salted groundfish; herring, mackerel, lobsters, scallops, bait
34.	Granville Gates & Sons, Ltd.	R. R. #1, Hubbards Lunenburg Co. (Blanford)	228-2559	Mar-Dec	fresh and salted groundfish; herring, mackerel, bait
35.	National Sea Products, Ltd. (Lunenburg Div.)	P. O. Box 910 Lunenburg Lunenburg Co.	634-8811	12	fresh, frozen and smoked groundfish; marinated herring; fresh and frozen shellfish; fish meal and oil
36.	Riverport Seafoods, Ltd. (H. B. Nickerson & Sons, Ltd.)	P. O. Box 40 Riverport Lunenburg Co.	766-4246	12	fresh, frozen and smoked groundfish; fresh and frozen shellfish; herring, mackerel, squid
37.	R. E. Newell Fisheries, Ltd.	R. R. #2 Mill Village Lunenburg Co. (Voglers Cove)	677-2500	12	fresh and salted groundfish; marinated herring, lobsters, bait
38.	Chandler Bros., Ltd. (Mersey Seafoods, Ltd.)	Moose Harbour Queens Co.	354-4112	12	salted groundfish; herring mackerel, lobster, bait

39.	Nickerson Bros. Ltd. (H. B. Nickerson & Sons, Ltd.)	Port Mouton Queens Co.	683-2010	12	fresh, frozen, smoked and salted groundfish; lobsters
40.	Mersey Seafoods, Ltd.	Liverpool Queens Co.	354-3460	12	fresh and frozen groundfish; herring, mackerel, scallops, meal and oil
41.	C. W. McLeod Fisheries, Ltd.	Central Port Mouton Queens Co.	683-2000	12	fresh, frozen and salted groundfish; herring, mackerel, lobsters, scallops, bait
42.	Medway Fisheries Ltd.	Port Medway Queens Co.	677-2262	12	fresh and salted groundfish; herring, mackerel, gaspereaux, lobsters
43.	Pierce Fisheries Ltd.	Pleasant Point Shelburne Co.	656-2147	Mar-Dec	fresh and salted groundfish; live lobsters, bait
44.	National Sea Products, Ltd. (Lockeport Div.)	Lockeport Shelburne Co.	656-2321	12	fresh, frozen, smoked and salted groundfish; herring, mackerel, squid, fish meal and oil, glue, scallops
45.	Pierce Fisheries Ltd.	Lockeport Shelburne Co.	656-2413	12	fresh, frozen and salted groundfish; herring, mackerel, scallops, lobsters
46.	Roger Smith Fisheries, Ltd.	Sandy Point Shelburne Co.	875-2666	12	fresh and salted groundfish
47.	Skansen Food Packers, Ltd.	Shelburne Shelburne Co.	875-3256	12	marinated herring
48.	Continental Seafoods, Ltd.	Shelburne Shelburne Co.	875-2018	12	live and cooked lobsters
49.	National Seafoods, Ltd.	Jordan Bay Shelburne Co.	875-2068	12	fresh groundfish; lobsters
50.	Chebogue Fisheries, Ltd.	Sandy Point Shelburne Co.	875-2310	12	fresh groundfish; lobsters
51.	G. K. Blades & Son	Gunning Cove Shelburne Co.	875-3973	12	fresh and salted groundfish; lobsters
52.	Seal Point Fisheries, Ltd.	Port LaTour Shelburne Co.	768-2999	12	fresh and salted groundfish; lobsters
53.	Cape Ann Seafoods, Ltd.	Port LaTour Shelburne Co.	768-2112	12	fresh, frozen and salted groundfish; lobsters
54.	Baccaro Fisheries, Ltd.	Baccaro Shelburne Co.	768-2204	12	salted groundfish
55.	Fish Reduction, Ltd.	Barrington Shelburne Co.	637-2240	12	fish meal
56.	Kenny & Ross, Ltd.	Port Saxon Shelburne Co.	637-2616	12	fish meal, glue
57.	Scotia Marine, Ltd.	Woods Harbour Shelburne Co.	723-2080	12	seaweeds
58.	Walter Atkinson	Centreville Shelburne Co.	745-2102	Nov-Jul	lobsters (lobster pound)
59.	J. L. Mood Fisheries, Ltd.	Woods Harbour Shelburne Co.	723-2360	Nov-Jun	fresh groundfish, lobsters
60.	Mallone Bros., Ltd.	Woods Harbour Shelburne Co.	723-2195	12	fresh and salted groundfish; lobsters
61.	Neil Nickerson Fisheries, Ltd.	Woods Harbour Shelburne Co.	723-2525	12	salted groundfish, lobsters

62.	Woods Harbour Fisheries, Ltd.	Woods Harbour Shelburne Co.	723-2297	12	fresh and salted groundfish; lobsters
63.	Hopkins and Devine, Ltd.	Woods Harbour Shelburne Co.	723-2814	12	fresh and salted groundfish; lobsters
64.	Woods Harbour Fishermen's Co-op, Ltd.	Woods Harbour Shelburne Co.	723-2410	Nov-Jul	lobsters (lobster pound)
65.	B. & E. Banks Fisheries, Ltd.	Bear Point Shelburne Co.	723-2454	12	salted groundfish
66.	Alpheus Haliday	Bear Point Shelburne Co.	723-2863	12	salted groundfish
67.	Clifford Hopkins Fisheries, Ltd.	Bear Point Shelburne County	723-2995	12	salted groundfish
68.	Clarence Sears Fisheries, Ltd.	Bear Point Shelburne Co.	723-2804	12	salted groundfish
69.	M. A. N. Fisheries, Ltd.	Doctors Cove Shelburne Co.	--	12	salted groundfish
70.	Cove Lobster Co. Ltd.	Doctors Cove Shelburne Co.	637-2072	Nov-Jul	lobsters (pound)
71.	C. S. I. Fishermen's Co-op, Ltd.	Clarks Harbour Shelburne Co.	745-3099	12	fresh groundfish, lobsters
72.	Charles & Robert Blades, Ltd.	Clarks Harbour Shelburne Co.	745-2323	12	fresh groundfish, lobsters
73.	Cape Lobster, Ltd.	Clarks Harbour Shelburne Co.	745-2897	Nov-May	lobsters
74.	F. E. Cunningham & Sons, Ltd.	Clarks Harbour Shelburne Co.	745-2800	Nov-Jul	lobsters (pound)
75.	Claredon S. Nickerson, Ltd.	Clarks Harbour Shelburne Co.	745-2640	12	salted groundfish
76.	J. & J. Fisheries, Ltd.	Clarks Harbour Shelburne Co.	745-2345	May-Oct	salted groundfish
77.	Joe E. Nickerson	Clarks Harbour Shelburne Co.	745-2473	Nov-May	lobsters
78.	Etheron Nickerson & Son, Ltd.	Clarks Harbour Shelburne Co.	745-2573	12	salted groundfish
79.	E. C. Nickerson & Son, Ltd.	Clarks Harbour Shelburne Co.	745-2970	Nov-Jul	halibut, lobsters
80.	Cleve A. Nickerson Fisheries, Ltd.	Clarks Harbour Shelburne Co.	745-2844	12	salted groundfish, lobsters (pound)
81.	Sable Fish Packers, Ltd.	Clarks Harbour Shelburne Co.	745-2500	12	fresh, frozen and salted groundfish; mackerel, lobsters
82.	Stoddard Fisheries, Ltd.	Clarks Harbour Shelburne Co.	745-2250	12	salted groundfish
83.	W. C. Nickerson Fisheries, Ltd.	Crowell's P. O. Shelburne Co.	637-2546	12	salted groundfish, lobsters
84.	Arthur Atkinson Ltd.	Newellton Shelburne Co.	745-2819	12	salted groundfish, lobsters
85.	G. M. Newell, Ltd.	Newellton Shelburne Co.	745-2943	12	salted groundfish, lobsters

86.	B. C. Packers, Ltd.	Clarks Harbour Shelburne Co.	745-2935	12	fresh, frozen, smoked and salted groundfish; herring, mackerel, squid, lobsters
87.	Howard Waybret, Ltd.	Shag Harbour Shelburne Co.	723-2201	Mar-Dec	salted groundfish
88.	Oscar E. Smith, Ltd.	Shag Harbour Shelburne Co.	723-2199	12	salted groundfish
89.	R. I. Smith Co., Ltd.	Shag Harbour Shelburne Co.	723-2380	12	salted groundfish, lobsters (pound)
90.	Shag Harbour Fisheries, Ltd.	Shag Harbour Shelburne Co.	723-2361	12	salted groundfish, lobsters (pound)
91.	W. Sears Sea- foods, Ltd.	Shag Harbour Shelburne Co.	723-2034	12	salted groundfish, lobsters (pound)
92.	Stoney Island Fisheries, Ltd.	Stoney Island Shelburne Co.	745-3043	12	salted groundfish, lobsters
93.	L. L. Quinlan & Sons, Ltd.	Stoney Island Shelburne Co.	745-2841	Mar-Dec	salted groundfish, lobsters
94.	Charles E. LeBlanc	Wedgeport Yarmouth Co.	663-2516	Nov-May	live lobsters
95.	H. B. Nickerson & Sons, Ltd.	Wedgeport Yarmouth Co.	663-2510	12	fresh and frozen herring
96.	United Maritime Fishermen	Lower Wedgeport Yarmouth Co.	663-2793	Nov-May	live lobsters
97.	Cape Lobster Co., Ltd.	Wedgeport Yarmouth Co.	663-2323	Nov-May	live lobsters
98.	St. Michael's Co-op Ltd.	Wedgeport Yarmouth Co.	663-2561	Nov-May	live lobsters
99.	Conley's Lobster Co. (Div. of National Sea Products, Ltd.)	Wedgeport Yarmouth Co.	663-2702	Nov-May	live lobsters
100.	United Maritime Fishermen	Lower Argyle Yarmouth Co.	Argyle 505	Nov-May	live lobsters
101.	Argyle Fish Products	Lower Argyle Yarmouth Co.	Argyle 505	12	salted groundfish
102.	d'Entremont Fisheries, Ltd.	Lr. West Pubnico Yarmouth Co.	762-2324	12	salted groundfish, live lobsters, frozen bait
103.	De LaTour Co-op Society, Ltd.	Lr. West Pubnico Yarmouth Co.	762-2315	Nov-May	live lobsters
104.	Inshore Fish- eries, Ltd.	Middle West Pubnico Yarmouth Co.	762-2522	12	fresh, frozen and salted groundfish; mackerel
105.	Mitchell Atkinson, Ltd.	Middle West Pubnico Yarmouth Co.	762-2041	Nov-May	live lobsters, frozen bait
106.	Genu Products, Ltd.	Pubnico Yarmouth Co.	762-2425	Jun-Sept	Irish moss
107.	Walter D. Surette	Lr. West Pubnico Yarmouth Co.	762-2314	12	salted groundfish, live lobsters
108.	Pubnico Co-op Association, Ltd.	Middle East Pubnico Yarmouth Co.	762-2424	12	salted groundfish
109.	Sealife Fisheries, Ltd.	Middle East Pubnico Yarmouth Co.	762-2511	12	marinated herring, herring meal and oil

110.	B. C. Packers, Ltd.	Lr. East Pubnico Yarmouth Co.	762-2411	12	marinated and salted herring, herring meal and oil
111.	East Side Fisheries, Ltd.	Lr. East Pubnico Yarmouth Co.	762-2170	12	fresh groundfish, lobsters bait
112.	A. D. Cunningham & Sons, Ltd.	Pubnico Yarmouth Co.	762-2322	Jun-Sept	Irish moss
113.	Roderick Murphy & Sons, Ltd.	Little River Hbr. Yarmouth Co.	663-2318	12	salted groundfish, lobsters
114.	Marine Colloids, Ltd.	Yarmouth Yarmouth Co.	742-3045	Jun-Oct	Irish moss
115.	Kennebec Fisheries, Ltd.	Yarmouth Yarmouth Co.	742-2401	12	fresh and frozen herring
116.	Wedgeport Enterprises, Ltd.	Short Beach Yarmouth Co.	742-8746	12	fish meal and oil
117.	Amos Brannen & Sons, Ltd.	Yarmouth Yarmouth Co.	742-7166	12	fresh and salted groundfish; lobsters, bait
118.	Laurence Sweeney Fisheries, Ltd.	Yarmouth Yarmouth Co.	742-2411	12	fresh, frozen, salted and smoked groundfish; scallops
119.	T.M.O. Foods, Ltd.	Yarmouth Yarmouth Co.	742-3519	12	canned herring
120.	Atwood Bros., Ltd.	Yarmouth Bar Yarmouth Co.	742-5602	Nov-May	lobsters
121.	Cape Forchu Co-op, Ltd.	Yarmouth Bar Yarmouth Co.	742-3801	12	fresh groundfish, live lobsters
122.	Ivan E. Thomas	Port Maitland Yarmouth Co.	649-2265	Jun-Nov	salted groundfish
123.	R. E. Hersey Fisheries, Ltd.	Port Maitland Yarmouth Co.	649-2365	12	salted groundfish, bait
124.	Port Maitland Lobster Co-op, Ltd.	Port Maitland Yarmouth Co.	649-2211	Nov-May	live lobsters
125.	C. & A. Bain Fisheries, Ltd.	Short Beach Yarmouth Co.	742-4901	12	salted groundfish, live lobsters
126.	Joel L. Smith	Sandford Yarmouth Co.	742-5572	12	salted groundfish, live lobsters
127.	L. N. Bain & Co.	Pembroke Yarmouth Co.	742-5737	12	fresh and smoked groundfish, live lobsters
128.	United Maritime Fishermen	Pinkney's Point Yarmouth Co.	742-5829	Nov-May	live lobsters
129.	Chebogue Fisheries, Ltd.	Pinkney's Point Yarmouth Co.	742-5613	12	fresh groundfish, live lobsters
130.	Argosy Seaweeds	Yarmouth Yarmouth Co.	742-5251	Jun-Oct	Irish moss

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