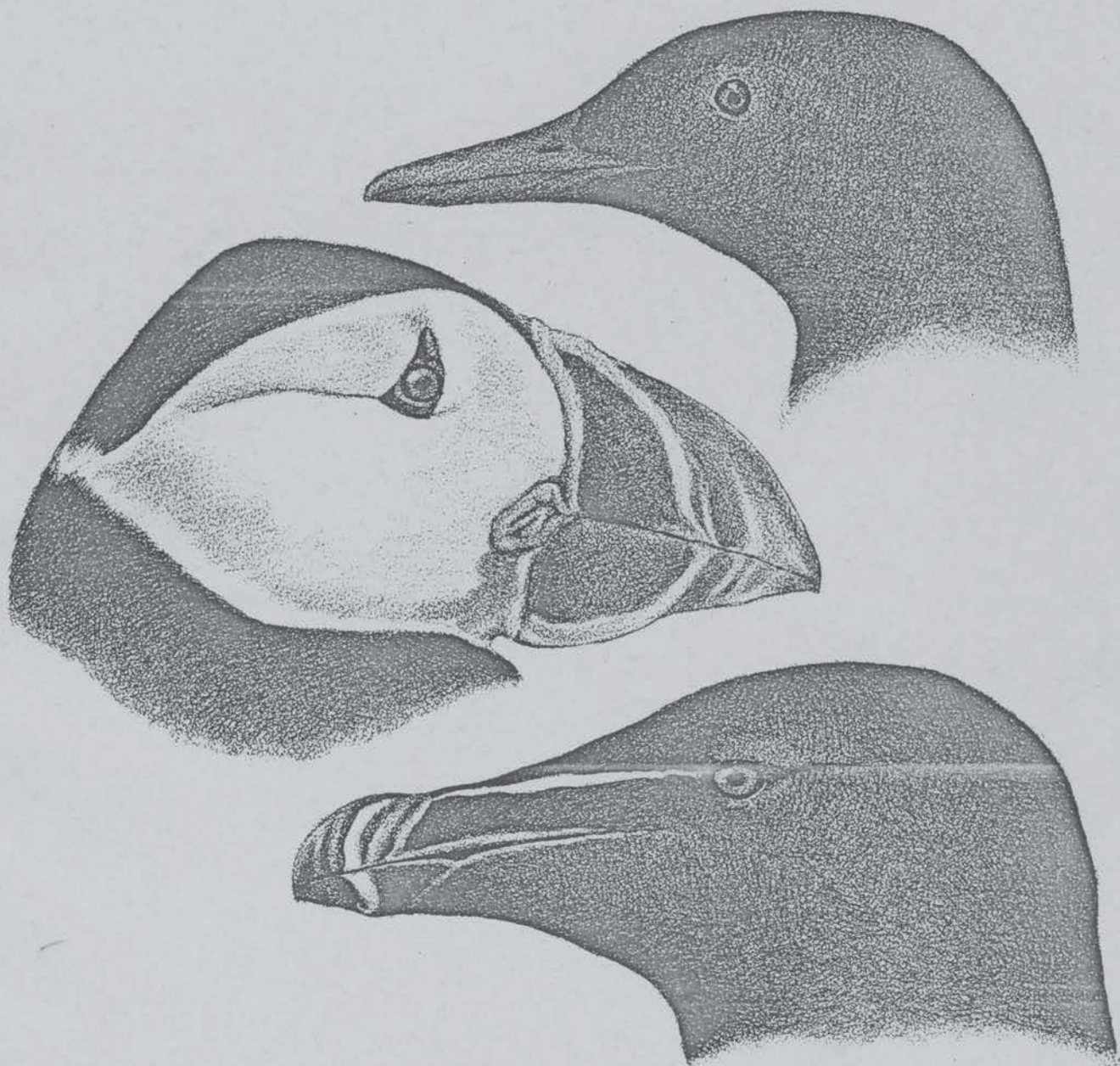


# Alcid Nesting Habitat on the Maine Coast

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ALCID NESTING HABITAT ON THE MAINE COAST  
and  
Its Relevance to the Critical Areas Program

By

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## FOREWORD

The following report on alcids is one of a series of reports being prepared for Maine's Critical Areas Program. This program was established by an act of Legislature in 1974, which directed the State Planning Office to develop an official Register of Critical Areas and to encourage and coordinate the conservation of such areas as part of its overall responsibility for comprehensive statewide planning and coordination of planning activities. The act identifies Critical Areas as natural features of statewide importance because of their unusual natural, scenic, scientific, or historical significance.

The Act also created the Critical Areas Advisory Board to advise and assist the State Planning Office in the establishment of the Register and the conservation of critical areas. The program established by the Act is not regulatory, with the minor exception that notification of proposed alterations of critical areas is required of the landowners thereof. The program is primarily one of identifying critical areas and providing advice to and coordinating the voluntary activities of landowners, state and local government organizations, conservation groups and others to the end of encouraging the conservation of critical areas. The Critical Areas Program further provides a specific focus for the evaluation and coordination of programs relating to critical areas in Maine. The program also serves as a source of information on critical areas and their management.

The purpose of these reports is to present results of thorough investigations of subject areas chosen for consideration in the Critical Areas Program. The reports are an intermediate phase in a systematic registration process which starts with the identification of subjects for consideration and concludes with the analysis of each potential critical area individually and, if appropriate, inclusion of areas on the Register.

In addition to the specific task they are intended to fulfill in the registration process, it is my hope that these reports will be useful in a more general sense as a source of information on the various topics they cover. For more information on alcids or other aspects of the Critical Areas Program, feel free to contact me or other members of the staff at the State Planning Office.

R. Alec Giffen  
Resource Planner

## ABSTRACT

Three species of alcids - the razorbill Alca torda, the common puffin Fratercula arctica, and the black guillemot Cepphus grylle - reach the southern limit of their western Atlantic breeding range on the Maine coast. The presence of these species lends variety and excitement to the birdlife along the Maine coast. The common murre, Uria aalge, may possibly nest as far south as Maine.

The history and current status of alcids nesting in Maine is reviewed. Razorbills and puffins are found on only two islands - Matinicus Rock and Machias Seal Island, the latter claimed by both the United States and Canada. Guillemots nest in substantial numbers along the coast.

The important nesting locations of razorbills, puffins, and guillemots are proposed for inclusion on the Critical Areas Register, and management guidelines are proposed.

## INTRODUCTION

Maine supports an extensive seabird population because of the abundance of relatively inaccessible rocky coastal islands which are ideal nesting grounds for many seabird species. No other area in the eastern United States has a comparable number of seabird nesting colonies. Most of the offshore nesting islands are low-lying granite outcrops or drowned mountaintops. Gulls, cormorants, and eiders nest in substantial numbers offshore, while others such as terns, razorbills, puffins, and petrels are less common and more sensitive to environmental changes. Tyler (1975) reviewed the status of the tern populations along the coast. The present paper reviews the status of the razorbills, puffins, and guillemots in Maine.

### General Information on Alcids

Razorbills, puffins, and guillemots are members of the family Alcidae, which also includes auklets, dovekies, murre, and murrelets. Alcids are offshore birds which breed only in the arctic and north temperate oceans, and are considered to be the ecological "equivalents" of the penguins of the south temperate and antarctic oceans. Alcids are characterized by their black and white plumage, short tails and wings, rapid wingbeats, and use of wings as primary swimming organs. They feed almost entirely on fish and marine invertebrates, particularly crustaceans. (Thompson, 1964).

There are 21 species of alcids, only five of which breed in the North Atlantic below the Arctic Ocean. These five are the thick-billed murre Uria lomvia, the common murre Uria aalge, the black guillemot Cepphus grylle, the razorbill Alca torda, and the common puffin Fratercula arctica. The murre of the west Atlantic nest as far south as the Maritime Provinces of Canada, while the razorbill, puffin, and guillemot reach the southern limit of their west Atlantic breeding range in Maine. The guillemot nests in both the Atlantic and Pacific north temperate seas as well as the Arctic, whereas the razorbill and puffin are two species out of a small total of 12 seabird species which breed only in the North Atlantic and adjacent Arctic regions (Fisher and Lockley, 1954).

The presence of alcids in Maine is due to the cold waters of the Labrador Current and the effects of the huge tides in the Bay of Fundy region, which result in upwelling of colder, nutrient laden water, creating an abnormally cool climate for the latitude (Day, 1950). The Gulf of Maine is presumably a major factor as a food source, due to its high productivity (Drury, pers. comm.).

#### The Razorbill, *Alca torda*

##### Description, Life History, and Distribution

The razorbill (Fig. 1) is a large alcid, with a length of about 35cm (14 in.). It can be identified from other alcids by its thick bill, uptilted tail when swimming, and arched back when flying. The breeding range of the razorbill extends from the northern arctic areas of Scandinavia through the British Isles, on the isles of the mid-North Atlantic, including Iceland, and from Greenland south to Labrador, Newfoundland, the Maritime Provinces of Canada, and Maine. Bedard (1969) estimated the total west Atlantic population of razorbills to be approximately 47,000 birds. Townsend (pers. comm.) reports that about 5,000 razorbills winter adjacent to Grand Manan Island in New Brunswick.

Most razorbills spend the winter in the open sea, as do other auks. Razorbills arrive at their southernmost breeding grounds near the end of February, and pairing may take place at the beginning of April, or a month later in northern areas (Fisher and Lockley, 1954). Nests are located in protected shadows and under boulders, or sometimes on ledges directly exposed to the elements. Egg-laying takes place in May, and incubation of the single egg requires about 34 days. Fledging requires an additional 15 days.

##### Razorbills in Maine

The Maine razorbill population is restricted to Matinicus Rock, 15 km southeast of Rockland, which is the southernmost breeding location of the species. A few pair have been seen on the Rock since 1952, and Buchheister (1968) found the first active nest in July, 1967. Buchheister (pers. comm.) states that 10 pair of razorbills nested on the Rock in 1974 (Table I). Razorbills have been seen in previous years on several other Maine islands - Western Egg Rock in Muscongus Bay, Metinic Green and Little Green Islands (Norton, 1923), and Old Man Island in Machias Bay (Drury, 1973), but no permanent populations have been established. Machias Seal Island, claimed by both the United States and Canada, has a sizeable breeding population. 50 pair were observed on Machias Seal in 1971 by Russell and Thompson (Drury, 1973), although they were apparently not breeding (Townsend, pers. comm.).

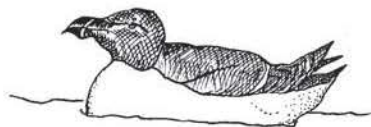


Fig. 1. The razorbill, *Alca torda*

#### Neighboring Populations

Drury (1973) quotes reports by Townsend and Gross that 300-400 razorbills were nesting on the Murre Ledges south of Grand Manan Island in Canada during the 1920's and '30's and reports that Lock (1971) found 50 pair on Hartford and Ciboux Islands off Cape Breton Island, Nova Scotia. Linton (pers. comm.) reported one successful nest on Pearl Island in 1975. Drury considers the razorbill colonies on the northern shore of the Gulf of Maine to be a major part of the southern razorbill population. Razorbills nesting at Matinicus Rock and others prospecting along the Maine coast might well have come from parent stock on Machias Seal, the Murre Ledges, and possibly the Cape Breton Island colonies.

#### The Common Puffin, *Fratercula arctica*

##### Description, Life History, and Distribution

Puffins (Fig. 2) are smaller (27cm or 11 in.) than razorbills and are "pigeon-like" in appearance. Adults can be readily identified by their large brightly colored bills. There are three subspecies of common puffins - the large *Fratercula arctica naumanni*, found in northern Greenland, Spitsbergen, Novaya Zemlya, and Jan Mayen; the intermediate form, *F. a. arctica* of southern Greenland, Iceland, Bear Island, Norway, eastern Canada, and Maine; and the small southern *F. a. grabae* of the Faroe Islands, the British and Channel Islands, France and southern islands of Scandinavia (Lockley, 1962).

Other puffin species are the horned puffin *Fratercula corniculata*, found in the Bering Sea Region, and the tufted puffin *Lunda cirrhata*, with a distribution from northern Alaska and Siberia south to California and Japan (Lockley, 1962).

Lockley (1962) estimates the total world population of common puffins to be a minimum of 15,000,000. Most of the population is centered in Iceland, the Faroe Islands, and the British Isles. The estimated population of *Fratercula arctica arctica* in North America is only 100,000.

From their wintering areas in the open sea, puffins return to their breeding grounds in March. The puffin is the only Atlantic auk which mates on the water - all others mate on land. It is also the only Atlantic auk which actively prepares a home, burrowing a tunnel perhaps a meter deep, using its bill and feet as digging tools. In a dense colony, the burrows may connect and form an extensive catacomb, yet each nesting pair will use only one entrance. Little nesting material is used, the one egg often lying directly on the bottom of the burrow. Egg-laying commences by the end of April, some four weeks before razorbills and guillemots begin laying. Incubation and fledging require about 90 days, an exceptionally long period, due to the fact that the egg and nestling are relatively protected from predators in the burrow, and the parent can therefore leave the nest for long periods during development.



Fig. 2. The common puffin, *Fratercula arctica*

### Puffins in Maine

Norton (1923) states that puffins were abundant on Big Green Island (Matinicus group) and the Egg Rocks (Muscongus Bay) before 1860. A large breeding colony on Matinicus Seal Island persisted until 1897, when the birds were exterminated, probably the result of a visit by a milliner's agent (Norton, 1923). Allen and Norton (1931) found feathers at the entrance of a burrow on Seal Island in 1931.

The only breeding location of common puffins in Maine at present is on Matinicus Rock, which supported over a hundred birds through the 1950's and '60's. A gull control program on the Rock in 1971 resulted in an increase in the number of puffins, but with the control program discontinued because of pesticide restrictions in 1972, the puffin colony suffered, according to Drury (1973). Buchheister (pers. comm.), however, found that about 125 pairs of puffins nested on the Rock in 1975, the largest number that he has seen in several years of observation (Table I).

In July, 1974, 68 puffin chicks were transplanted from Newfoundland to Eastern Egg Rock in Muscongus Bay, a former puffin colony, with the intent of re-establishing a population (Kress, 1974). 93 additional chicks were transplanted in 1975, and 100 in 1976. The ultimate success of the project will not be known for several years, as young puffins do not normally return to nest until their third year.

#### Neighboring Populations

Machias Seal Island supported a sizeable puffin colony (about 1500 birds) in 1971 (Russell and Thompson, 1971, from Drury, 1973). No later population estimates are available. Drury (1973) notes that Lock (1971) found 50-70 pairs of puffins nesting on Hartford and Ciboux Islands in Nova Scotia. Twenty-four puffins and three nests were found by Eric Cooke on Pearl Island in Nova Scotia in 1975 (Nova Scotia Bird Society).

### The Black Guillemot, *Cephus grylle*

#### Description, Life History, and Distribution

The black guillemot (Fig. 3) is about the same size as the puffin, but can be distinguished from other auks by the large white wing-patch. The species has been divided into as many as 13 races, which together have a wide breeding range throughout the arctic, extending down to Japan and Korea in the western Pacific, to California in the eastern Pacific, to the British Isles and Denmark in Europe, and to Maine in the western Atlantic.

Guillemots are less gregarious during the breeding season than other auks (Thompson, 1964). They lay two eggs, unlike razorbills and puffins, which lay only a single egg. However, only one of the guillemot chicks is normally reared (Armstrong, 1940, from Fisher and Lockley, 1954). Nesting takes place under rocks or boulders, or in crevices on cliffs, where the young are semi-protected. Incubation and fledging requires a total of about 70 days (Fisher and Lockley, 1954).

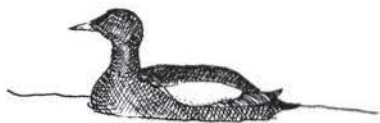


Fig. 3. The black guillemot, *Cephus grylle*

### Guillemots in Maine

The guillemot is not a rare bird on the Maine coast, as the population has increased dramatically during recent decades. Allen and Norton (1931) reported that in 1903 guillemots were found breeding on 14 islands, and totalled about 150 birds. Their survey of 1931 recorded 24 nesting islands with a total population of about 600 birds.

At present, at least 24 islands off the Maine coast have colonies exceeding 50 pairs of guillemots apiece (Drury, 1974). Table II lists the islands which have colonies of at least 100 pairs. The locations of these major islands, along with Matinicus Rock and Machias Seal Island, are shown in Fig. 4.

The southernmost breeding island of the species in the western Atlantic is Smuttynose Island, in the Isles of Shoals group on the New Hampshire border, where one or two pairs nested in 1969 and 1970 (Drury, 1973).

#### The Common Murre, *Uria aalge*

The following information on common murre was contributed by Huntington (pers. comm.):

"Each year since 1965 Common murre have been seen in summer on Yellow Murre Ledge, south of Grand Manan (in New Brunswick, adjacent to the Maine border). There are probably 10 pairs or more; the island is so hard to land on that nesting has not been verified. Murre have recently been seen on Machias Seal Island. The species is thus so close to Maine that it should be looked for on rocky outer islands."

#### Factors Adversely Affecting Alcid Populations

The most important predators of seabirds are other seabirds. Although skuas, ravens, glaucous gulls, eagles, owls, and gyrfalcons are all important predators in their respective habitats, the herring gull *Larus argentatus* is undoubtedly the worst seabird enemy along the New England coast because of its numbers. It is a proficient egg-robber and consumes a considerable number of auk nestlings. Townsend (pers. comm.) has found evidence of predation on adult guillemots in nesting colonies. More importantly, the aggressive herring gulls deplete seabird breeding colonies by establishing and expanding their own colonies. The effect of expanding herring gull populations on tern colonies is well-documented (Gross, 1935; Tyler, 1975). Gulls on Matinicus Rock have had a serious effect on the populations of other seabirds there, including terns, auks, and petrels. The less abundant greater black-backed gull, *Larus marinus*, is also a serious predator of eggs and young aluids.

Man has either directly or indirectly had a great influence on a number of seabirds. The defenseless great auk, *Pinguinis impennis*, was driven to extinction by the

wholesale slaughter to feed coastal and island dwellers, sailors, and explorers. Gannets, razorbills, guillemots, and puffins have long been an important source of food for such people as Eskimos and other North Atlantic islanders. The population of several species of terns was almost irreversibly depleted by plume hunters last century. An important puffin colony on Matinicus Seal Island was destroyed by plume hunters late last century (Norton, 1931). Seabird colonies on the Maine coast were in serious danger at the turn of the century because of unrestricted hunting and egg-gathering (Allen and Norton, 1931). Legislation in 1901 protecting non-game birds, and protection of several nesting islands immediately had an effect and many species experienced considerable increases in numbers.

Indirect effects of man's presence have been considerable. Rats, introduced inadvertently by man on many breeding islands have seriously depleted many seabird colonies, particularly those of burrowing species such as puffins and petrels. Norway rats are now present on a number of Maine offshore islands and have prevented successful nesting by terns and laughing gulls, as well as eliminating petrels (Buchheister, pers. comm.).

Although terns in particular have suffered the loss of many breeding areas on coastal beaches and marshes due to alterations by man, alcids are relatively unaffected by development pressures, as their nesting grounds are usually relatively inaccessible granitic offshore islands and ledges which are low, rocky and treeless, with only patches of vegetation.

One of the biggest dangers currently facing seabirds is oil pollution at sea. Waste oil emptied into the sea or accidental oil spills result in sticky slicks which severely affect swimming or diving birds. Insulating value of the plumage is reduced due to the loss of air spaces in the feathers, and the birds usually die. Oil slicks particularly affect the surface-swimming guillemots and razorbills (Fisher and Lockley, 1954; Mostert, 1974). Oiled birds collected on the British coast after the Torrey Canyon spill in 1967 included 6,355 common murrelets, 1,384 razorbills, 42 puffins, 41 great cormorants, 3 gannets, 18 great northern divers, 3 herring gulls, a skua, a black-necked grebe, and a black-backed gull (Fisher and Charlton, 1967). These authors point out that detergents used to clean up the spill were at least as destructive as the oil, reducing the bird's natural oils, and producing caustic burns on the bird's bodies.

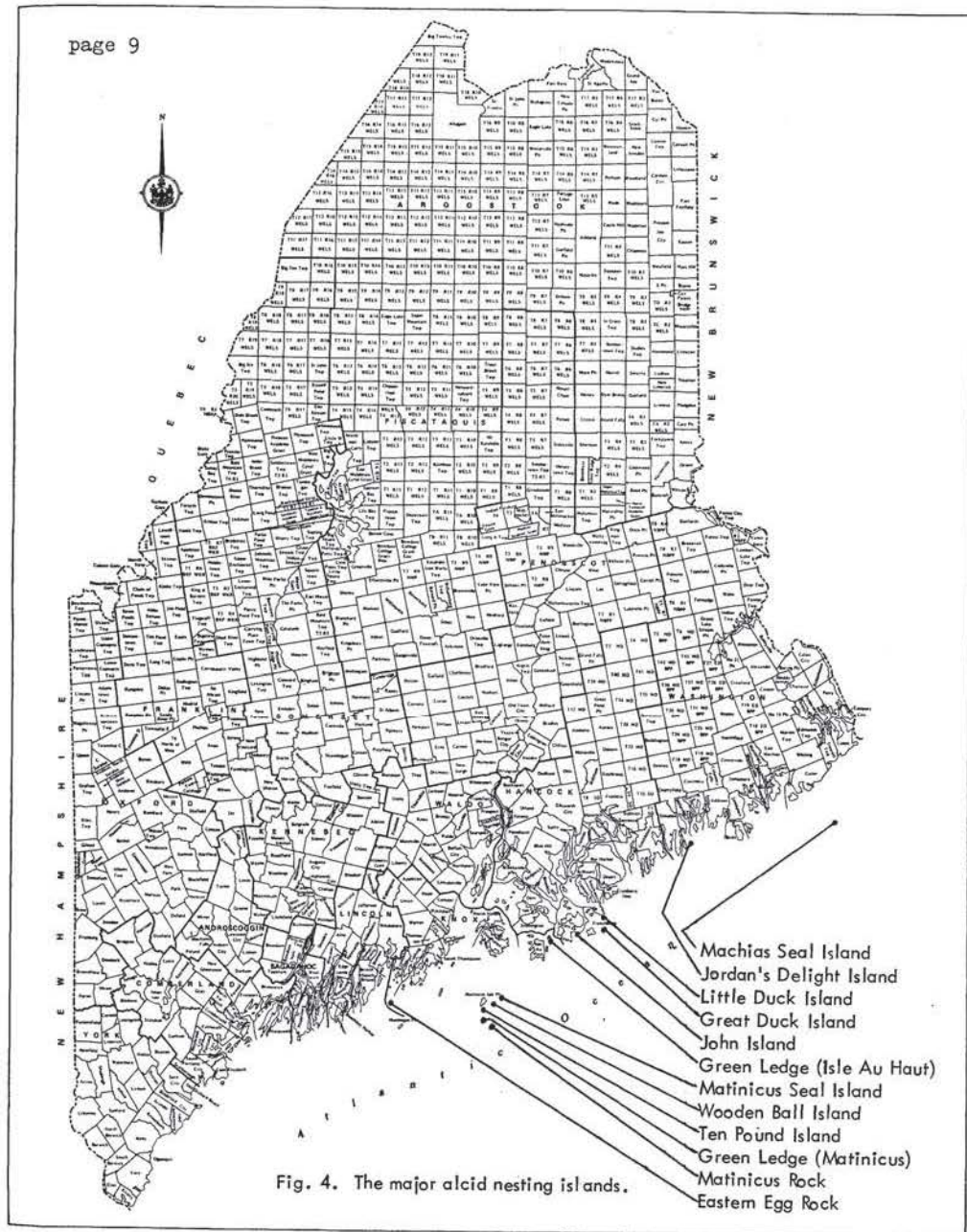


Fig. 4. The major alcid nesting islands.



TABLE I

## Maine Islands with Breeding Populations of Common Puffins and Razorbills

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Island Name	Coastal Island Registry Number	County	Township or Plantation	Coordinates	Size (hectares)	Species	Numbers (pairs)	Date	Source
Matinicus Rock	63-940	Knox	Matinicus	43-47-05	10	Puffins	125	1975	Buchheister (pers. comm.)
				68-51-15		Razorbills	10	1974	
Machias Seal	79-367	Claimed by United States and Canada		44-30-08	10	Puffins	750	1971	Russell and Thompson, 1971 from Drury(1973)
				67-06-04		Razorbills	50	1971	

TABLE II

## Maine Islands with Large Breeding Populations (&gt; 100 pair) of Black Guillemots

page 11

Island Name	Coastal Island Registry Number	County	Township or Plantation	Coordinates	Size (hectares)	Number (pairs)	Source
Eastern Egg Rock	63-860	Knox	St. George	43-51-40	4	150	Drury (1974)
				69-23-00			Kress (pers. comm.), 1975
Matinicus Rock	63-940	Knox	Matinicus	43-47-05	10	400-500	Buchheister (pers. comm.)
				43-53-12			
Matinicus Seal	63-923	Knox	Matinicus	68-44-24	36	200	Drury (1974)
				43-51-18			
Wooden Ball	63-917	Knox	Matinicus	68-44-24	50	175	Drury (1974)
				43-49-42			
Green Ledge	63-929	Knox	Matinicus	68-52-42	2	150	Drury (1974)
				43-50-48			
Ten Pound	63-920	Knox	Matinicus	68-53-18	12	175	Drury (1974)
				44-05-35			
Green Ledge	63-266	Knox	Isle au Haut	68-34-00	0.5	100	Drury (1974)
				44-06-40			
John Island	59-483	Hancock	Swan's Island	68-24-20	14	100	Drury (1974)
				44-09-30			
Great Duck	59-440	Hancock	Long Island	68-15-00	88	850	Drury (1974)
				44-10-30			
Little Duck	59-439	Hancock	Long Island	68-14-45	35	200	Drury (1974)
				44-26-35			
Jordan's Delight	79-922	Washington	Harrington	67-49-25	8	250	Drury (1974)

Analysis of Alcid Nesting Areas For Inclusion on the

Register of Critical Areas

1. Description of Selected Alcid Nesting Habitat

Razorbills (*Alca torda*), common puffins (*Fratercula arctica*), and black guillemots (*Cepphus grylle*), nest on offshore islands in Maine. Razorbills and guillemots nest under rocks or boulders, while puffins dig nesting burrows up to a meter in length. Alcids arrive at nesting grounds as early as late February and may nest in April or May. Egg incubation and fledging of young alcids varies from 50 days to 90 days, depending on the species.

2. Considerations in registration

A. Values and qualities represented by the area (specifically including any unique or exemplary qualities of the site).

The presence of razorbills, puffins, and guillemots lends variety and excitement to the Maine Coast. A considerable number of people, both residents and summer visitors, take special trips to see the birds on their breeding grounds. The alcid colonies on the Maine coast are the most southerly colonies on the east coast of North America.

B. Probable effects of uncontrolled use (specifically in relation to its intrinsic fragility).

Alcids, like many other seabirds, are sensitive to environmental changes. Particularly since the colonies of razorbills and puffins are tenuous "footholds," uncontrolled use of their breeding grounds would probably destroy the colonies quickly. Human visitation, particularly during the breeding season, with the danger of serious predators, would have an adverse effect on the populations.

C. Present and probable future use (specifically present and future threats of destruction).

Nesting islands of alcids are usually unsuitable for development, as they are low treeless islands well offshore and relatively inaccessible. It is conceivable that in the future, oil exploration and/or storage facilities may be proposed for an island with breeding populations of alcids.

The most immediate threat to the colonies is visitation and exploration by boating parties. Homesteading is another serious threat.

D. Level of significance

Nesting islands of alcids are of regional significance, as they are on the southern fringe of the species' summer range.

E. Probable effects of registration - positive and negative (specifically including the economic implications of inclusion of the area on the register).

Registration of valuable alcid nesting islands will give official recognition to their importance. This will encourage the monitoring of the populations and preservation of the nesting habitat.

The presence of alcids is an economic asset to the state. Mr. Eliot Winslow, captain of the *Argo* at Southport, estimates that he carries well over a thousand people each summer to view the seabirds off the coast, particularly at Matinicus Rock, and he says that interest in the birds is increasing every year (pers. comm.).

The negative effects of registration would be the prevention or restriction of human use or visitation, particularly during the breeding season.

F. Management Suggestions

All nesting islands of razorbills and puffins, and important nesting islands of guillemots should be maintained in their natural state to provide suitable nesting sites. Use of the islands by humans and domestic animals should be minimized, particularly during breeding season.

Colonies of alcids should be monitored to detect changes in abundance. Coastal islands should be examined periodically to check for expansion or constriction of the breeding ranges.

A limited gull control program should be considered to protect the small razorbill and puffin colonies on Matinicus Rock, where gulls endanger the populations.

If the puffin transplantation program at Eastern Egg Rock is successful, other transplants of puffins should be considered.

Introduction of mammals, such as cats, dogs, rats, and sheep should not be allowed.

G. Programs which directly affect or are particularly relevant to the use and management of the area.

The puffin transplant program on Eastern Egg Rock may result in a breeding colony of puffins on that island. If successful, that program may be expanded to include other suitable islands along the coast.

### 3. Conclusions and Recommendations

The Act defines a critical area as meaning: "areas containing or potentially containing plant and animal life or geological features worthy of preservation in their natural condition, or other natural features of significant scenic, scientific or historical value." Nesting islands of alcids on the Maine coast are natural areas which should be preserved for the security of the species. These seabirds are a significant scenic resource and of scientific value in that they are living in Maine at the fringe of their ranges.

B. Conformance with the Guidelines for the Registration of Critical Areas, adopted by the Critical Areas Advisory Board on September 11, 1975.

Section 1. Knowledge of the Area. The preceding report provides an in-depth understanding of alcids in Maine.

Section 2. Representation on the Register. Alcid nesting areas are presently not included on the Register of Critical Areas.

Section 3. Variety of Values. Several islands on which alcids nest are also used as nesting areas by other species of seabirds. These islands are also highly scenic and some contain unusual geologic formations.

Section 4. Scarcity. Razorbills and puffins are rare in Maine, and black guillemots are uncommon.

Section 5. Quality. Matinicus Rock, the only island where razorbills and puffins nest in Maine, is a unique nesting ground important to several species of seabirds.

Only the larger black guillemot colonies will be considered for registration.

Section 6. Persistence. Alcids tend to nest on the same islands every year, unless disturbed.

Section 7. Geographic Distribution. Major alcid nesting islands are distributed along the mid-coast and eastern areas of Maine.

Section 8. Use. Some of the islands, such as Matinicus Rock and Eastern Egg Rock, are used for scientific and educational purposes.

Section 9. Manageability. Alcid colonies are on offshore islands that can be managed by the landowner to perpetuate the petrel colonies.

Section 10. Potential Economic Effects. These are expected to be minimal economic effects of registering the colonies.

Section 11. Potential Effects on the Conservation of the Areas. Registration is expected to have a positive effect on the conservation of the areas.

### C. Recommendations

It is recommended that the following actions be initiated by the Critical Areas Program:

1. The islands with colonies of razorbills and puffins should be registered. These include Matinicus Rock and, if successfully claimed by the United States, Machias Seal Island. The islands with the largest colonies of black guillemots (> 100 pairs) should also be registered.
2. Nesting islands should be visited periodically to maintain records of population changes. Eastern Egg Rock in particular warrants monitoring to determine the success of the puffin transplant program. Monitoring could be carried out by personnel of the Department of Inland Fish and Wildlife, the Department of Marine Resources, and the US Department of the Interior, as well as interested volunteers.
3. Cooperative agreements should be reached with the owners of nesting islands for the purpose of protecting the nesting areas. Owners should also be informed of the danger of introduction of mammals to the islands.
4. The feasibility of a limited gull control program should be investigated on Matinicus Rock, where gulls threaten the security of alcid colonies.
5. Periodic review of results of field investigations by the National Audubon Society or other workers should be undertaken, to keep account of alcid numbers and distributions. In particular, information collected by Mr. Howard Mendall on his seabird inventory (1976-1978) should be reviewed as it becomes available.
6. If new alcid colonies are located, they should be investigated and evaluated for consideration as critical areas.

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## APPENDIX I

## Black Guillemot Nesting Islands

(Compiled by William Drury, 1965-1973, except where noted)

Island Name	Coastal Island Registry Number	County	Township	Coordinates	Number of Guillemots (in pairs)
Smuttynose Island	81-182	York	Kittery	42-58-10 70-36-15	2
Boon Island	81-200	York	Kittery	43-07-14 70-28-39	10
Duck Island	81-196	York	Kittery	43-00-30 70-36-30	1
Ram Island	55-383	Cumberland	Portland	43-38-15 70-11-25	6 (?)
Outer Green Island	55-386	Cumberland	Portland	43-39-00 70-07-30	2
White Bull Island	55-628	Cumberland	Harpwell	43-43-15 69-55-30	3
Heron Islands	73-313 73-315 73-316	Sagadahoc	Phippsburg	43-43-20 69-48-15	2
Seguin Island	73-320	Sagadahoc	Georgetown	43-42-30 69-45-20	6
Damariscove Island	65-280	Lincoln	Boothbay	43-46-00 69-35-30	2
North White Island	65-276	Lincoln	Boothbay	43-47-20 69-34-30	2
Pumpkin Island	65-287	Lincoln	Boothbay	43-45-15 69-35-00	2
Jones Garden Island	65-188	Lincoln	Bristol	43-55-48 69-23-20	3
Western Egg Rock	65-201	Lincoln	Bristol	43-52-45 69-25-00	12
Eastern Duck Rock	65-313	Lincoln	Monhegan	43-46-40 69-18-38	25
Franklin Island	63-707	Knox	Friendship	43-53-20 69-22-32	10
Eastern Egg Rock	63-860	Knox	St. George	43-51-40 69-23-00	150
Old Hump Ledge	63-839	Knox	St. George	43-52-45 69-21-22	9
Mosquito Island (Little Egg)	63-577	Knox	St. George	43-55-16 69-13-13	50
Shark Rock	63-875	Knox	St. George	43-50-45 69-21-20	6
Hay Ledge	63-582	Knox	St. George	43-54-32 69-14-02	20

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Island Name	Coastal Island Registry Number	County	Township	Coordinates	Number of Guillemots (in pairs)	Island Name	Coastal Island Registry Number	County	Township	Coordinates	Number of Guillemots (in pairs)
Gunning Rocks	63-578	Knox	St. George	43-54-42 69-14-57	8	Metinic Green Island	63-585	Knox	Matinicus	43-51-36 69-08-00	30
East Goose Rock	63-335	Knox	North Haven	44-08-08 68-49-50	4	Little Green Island	63-654	Knox	Matinicus	43-50-55 69-02-00	30
Robinson Rock	63-341	Knox	North Haven	44-09-40 68-55-45	7	Green Ledge	63-135	Knox	Matinicus	43-49-42 68-52-42	150
Mouse Island	63-330	Knox	North Haven	44-11-55 68-56-40	6	Metinic Island	63-584	Knox	Matinicus	43-53-06 69-07-42	50
Spoon Ledge	63-011	Knox	North Haven	44-12-05 68-49-45	12	Hog Island	63-588	Knox	Matinicus	43-52-12 69-07-30	15
Dagger Island	63-014	Knox	North Haven	44-10-48 68-48-30	6	Green Ledge	63-266	Knox	Isle Au Haut	44-05-35 68-34-00	100
Downfall Island	63-016	Knox	North Haven	44-10-43 68-47-36	10	White Ledge	63-267	Knox	Isle Au Haut	44-05-10 68-33-48	10
Tommy Island	63-415	Knox	So. Thomaston	44-01-10 69-06-45	4	Great Spoon Island	63-287	Knox	Isle Au Haut	44-02-37 68-33-30	50
Garden Island	63-420	Knox	So Thomaston	44-00-00 69-06-15	2	Eastern Ear Island	63-295	Knox	Isle Au Haut	44-00-51 68-36-20	20
Oak Island	63-421	Knox	Muscle Ridge	44-00-50 69-04-39	3	York Island	63-280	Knox	Isle Au Haut	44-03-53 68-35-20	6
Marblehead Island	63-403	Knox	Muscle Ridge	44-02-09 69-02-30	2	Little Spoon Island	63-289	Knox	Isle Au Haut	44-02-21 68-34-20	30
Fisherman's Island	63-402	Knox	Muscle Ridge	44-02-30 69-02-20	10	Sparrow Island	63-200	Knox	Isle Au Haut	44-07-00 68-41-43	6
Little Two Bush Island	63-652	Knox	Muscle Ridge	43-57-50 69-04-45	5	Southern Mark Island	63-260	Knox	Isle Au Haut	44-07-15 68-34-25	75
Seal Island	63-923	Knox	Matinicus	43-53-12 68-44-24	200	John Island	59-351	Hancock	Swan's Island	44-06-40 68-24-20	100
No Man's Land	63-900	Knox	Matinicus	43-53-06 68-52-13	80	High Sheriff Island	59-397	Hancock	Swan's Island	44-07-50 68-28-02	4
Large Green Island	63-655	Knox	Matinicus	43-54-24 69-00-30	30	John Island Dry Ledges	59-484	Hancock	Swan's Island	44-06-07 68-24-53	12
Pudding Island	63-924	Knox	Matinicus	43-50-30 68-52-54	50	Black Island	59-352	Hancock	Swan's Island	44-20-00 68-27-40	10
Ten Pound Island	63-598	Knox	Matinicus	43-50-48 68-53-18	175	Crow Island	59-358	Hancock	Swan's Island	44-11-15 68-26-15	25
Matinicus Rock	63-940	Knox	Matinicus	43-47-05 68-51-15	400-500*	Halibut Rocks	59-991	Hancock	Swan's Island	44-08-00 68-31-40	45
Wooden Ball Island	63-917	Knox	Matinicus	43-51-18 68-49-12	175	Three Bush Island	59-980	Hancock	Swan's Island	44-07-20 68-31-10	2
						Saddleback Island	59-999	Hancock	Swan's Island	44-06-45 68-32-20	45

\*Number estimated by Carl Buchheister, 1975

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## Black Guillemot Nesting Islands

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Island Name	Coastal Island Registry Number	County	Township	Coordinates	Number of Guillemots (in pairs)
Spirit Ledge	59-001	Hancock	Swan's Island	44-05-22 68-31-25	10
Black Ledge	59-482	Hancock	Swan's Island	44-04-55 68-29-40	4
Mason Ledge	59-481	Hancock	Swan's Island	44-05-53 68-29-15	12
Heron Island	59-480	Hancock	Swan's Island	44-06-00 68-28-20	15
Green Island	59-478	Hancock	Swan's Island	44-06-40 68-27-20	10
Green Ledge (Roberts Harbor)	63-135	Knox	Vinalhaven	44-02-40 68-47-00	15
Sheep Island	63-136	Knox	Vinalhaven	44-02-18 68-47-42	6
Roberts Island	63-174	Knox	Vinalhaven	44-00-43 68-48-19	25
Otter Island	63-183	Knox	Vinalhaven	44-00-28 68-47-54	5
Brimstone Island	63-176	Knox	Vinalhaven	44-02-37 68-46-18	50
Deadman Ledges	63-170	Knox	Vinalhaven	44-01-38 68-52-32	10
Little Hurricane Island	63-518	Knox	Vinalhaven	44-02-02 68-54-10	8
Green Ledge (Lairey's)	63-135	Knox	Vinalhaven	44-04-00 68-55-15	30
Green Island (Lairey's)	63-485	Knox	Vinalhaven	44-04-25 68-54-55	10
Grass Ledge (East)	59-802	Hancock	Deer Isle	44-11-43 68-51-00	6
Grass Ledge (West)	59-789	Hancock	Deer Isle	44-13-08 68-51-00	2
Hard Head Island	59-782	Hancock	Deer Isle	44-13-50 68-45-14	15
Shabby Island	59-996	Hancock	Deer Isle	44-10-00 68-33-36	15
Colt Head Island	59-685	Hancock	Deer Isle	44-14-58 68-50-28	6
Pond Island	59-677	Hancock	Deer Isle	44-17-34 68-48-24	6
Wreck Island	59-898	Hancock	Stonington	44-07-36 68-38-09	present

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Island Name	Coastal Island Registry Number	County	Township	Coordinates	Number of Guillemots (in pairs)
Channel Rock	59-792	Hancock	Stonington	44-10-00 68-38-05	4
Smuttynose Island	59-931	Hancock	Brooklin	44-13-15 68-31-20	10
Ship Island	59-341	Hancock	Tremont	44-14-10 68-26-25	4
West Barge Island	59-343	Hancock	Tremont	44-14-00 68-26-58	3
East Barge Island	59-342	Hancock	Tremont	44-13-55 68-26-26	5
Little Duck Island	59-439	Hancock	Long Island	44-10-30 68-14-45	200
Great Duck Island	59-440	Hancock	Long Island	44-09-00 68-15-00	850
Long Island	59-451	Hancock	Long Island	44-07-00 68-21-30	85
East Green Island	59-445	Hancock	Long Island	44-09-40 68-20-00	20
West Green Island	59-446	Hancock	Long Island	44-09-30 68-20-30	7
Schoodic Island	59-062	Hancock	Winter Harbor	44-20-00 68-02-00	85
Petit Manon Island	79-933	Washington	Steuben	44-22-03 67-52-00	25
Egg Rock	79-935	Washington	Milbridge	44-24-25 67-52-10	4
Jordan's Delight Island	79-922	Washington	Milbridge	44-26-35 67-49-25	250
Ladle Island	79-632	Washington	Addison	44-29-00 67-44-20	1
Big Nash Islands	79-626	Washington	Addison	44-28-00 67-44-15	10
Pulpit Rock	79-576	Washington	Jonesport	44-33-12 67-28-07	3
The Brothers Islands	79-573	Washington	Jonesport	44-33-30 67-26-13	3
Halifax Island	79-570	Washington	Jonesport	44-34-15 67-27-30	8
Anguilla Island	79-578	Washington	Jonesport	44-34-00 67-28-20	10
Head Harbor Island	79-500	Washington	Jonesport	44-30-15 67-32-00	6

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Island Name	County	Island Registry Number	Township	Coordinates	Number of Guillemots (in pairs)
Ballast Island	Washington	79-488	Jonesport	44-33-40 67-33-15	20
Scabby Island Ledge	Washington	79-555	Machiasport	44-34-00 67-24-40	10
Hickey Island	Washington	79-561	Machiasport	44-35-50 67-25-45	3
Foster Island	Washington	79-551	Machiasport	44-34-15 67-23-45	5
Ram Island	Washington	79-552	Machiasport	44-34-30 67-23-40	2
Shag Ledges	Washington	79-556	Machiasport	44-35-15 67-25-00	12
Inner Libby Island	Washington	79-359	Machiasport	44-34-10 67-21-15	5
Outer Libby Island	Washington	79-360	Machiasport	44-34-10 67-21-15	15
Cross Island	Washington	79-347	Cutler	44-36-30 67-17-30	50
Old Man Island	Washington	79-313	Cutler	44-37-08 67-14-12	75
Double Shot Island	Washington	79-352	Cutler	44-36-20 67-16-30	50
Ledges In Bay	Washington		Eastport		50
Machias Seal Island		79-367		44-30-08 67-06-04	

## ADDENDUM

The State Planning Office and Critical Areas Advisory Board, after reviewing and evaluating this report on Alcids, voted to include the following areas on the Register of Critical Areas.

Name	County	Town	Size (hectares)	Date Registered
17. Green Ledge Isle au Haut	Knox	Isle au Haut	0.5	January 22, 1976
18. Green Ledge Matinicus Plantation	Knox	Matinicus Isle	2.0	"
19. Eastern Egg Rock	Knox	St. George	4.0	"
20. Matinicus Rock	Knox	Matinicus Isle	10	"
21. Seal Island	Knox	Matinicus Isle	26	"
22. John Island	Hancock	Swan's Island	14	"
23. Ten Pound Island	Knox	Matinicus Isle	11	March 11, 1976
24. Little Duck Island	Hancock	Long Island Plantation	35	"
30. Jordan's Delight Island	Washington	Harrington	8.0	May 3, 1976
38. Great Duck Island (North)	Hancock	Long Island Plantation	38	February 17, 1977
40. Wooden Ball Island (southwest)	Knox	Matinicus Isle Plantation	14	February 17, 1977
41. Wooden Ball Island (northeast)	Knox	Matinicus Isle Plantation	20	"
262. Brimstone Island Seabird Nesting Area	Knox	Vinalhaven	15	April 20, 1979
381. The Brothers (West)	Washington	Jonesport	22	January, 1982