

A black and white photograph of a Razorbill bird perched on a rock. The bird is shown in profile, facing right, with its head tilted upwards and its long, dark beak open. The bird's plumage is primarily black, with a prominent white patch on its throat and a white band across its wings. The background is a soft, out-of-focus green, suggesting a natural, outdoor setting. The lighting is bright, highlighting the textures of the bird's feathers and the rock it sits on.

**The Razorbill  
in the Gulf  
of Maine**

*Richard H. Podolsky*

**T**HE RAZORBILL (*ALCA TORDA*) HAS the distinction of being perhaps the rarest breeding seabird in the continental United States, with under 200 breeding pairs. The Razorbill is presently restricted to only four colonies in the Gulf of Maine, including Machias Seal Island, Matinicus Rock, Old Man Island, and Freeman Rock. During the course of this study the author visited and conducted surveys at each of the active colonies and completed the first study of nest site location and reproductive status of Razorbills on Old Man Island.

Razorbills breed from Maine north to the Canadian Maritimes, Greenland, Iceland, Northwest Russia, Scandinavia, and the British Islands south to northwest France (Nettleship and Birkhead 1985). Locke (1971) reported only 51 pairs of Razorbills nesting in eastern Nova Scotia. Thus, the Gulf of Maine colonies make up a major portion of the Razorbills at the southern edge of their range in the Western Atlantic. It is important that these census data be collected and reported to establish a baseline for future monitoring of these peripheral Razorbill colonies.

#### Methods—The Study Sites

Old Man Island is located two miles east of Cross Island in Machias Bay, Maine. Old Man Island is part of the eastern Maine coastal volcanic belt and is composed of a dark gray igneous formation. The island is eight acres in area and is quite rugged with

several 20-meter vertical cliff faces. These cliffs are the result of enormous faults that have "cleaved" the island into three sea stacks. The stacks are in a line south and west from the island itself. At high tide they are isolated, but at low tide one can walk between them. Cliff faces and rock crevices are the nesting habitat for the Razorbills on Old Man Island.

The vegetation on Old Man Island has been heavily impacted by the droppings from a Double-crested Cormorant colony. The bleached stumps of dead spruce trees cover the entire island and currently no live trees remain. Presumably, the trees died from the impact of the bird guano on the soil. The present ground cover is dominated by ragweed, skull-cap, curly dock, raspberry, yarrow and several grass species. The soil is highly organic and exceedingly dry and fragile. Erosion and disturbance of the soil by people walking represents a major concern for this island.

Nine trips to Old Man Island were made between June 24 and July 10, 1986. An observation blind was established on the island and used as a base for doing counts, observing feeding behavior and monitoring the impact of gulls. A minimum of six hours of observation from the blind was made each day and an additional two hours were spent searching for active and inactive Razorbill nests. The reproductive status of each nest was noted upon discovery.

Data for the other three Gulf of Maine colonies were gathered by visiting each colony, conducting counts, nest surveys, and interviewing resident biologists.

#### Results—Breeding Behavior at Old Man Island

Old Man Island had 26 active and six inactive Razorbill nests in 1986. This compares with a past high count of ten active nests reported by Korschen (1979) and D. C. Folger (*pers comm.*). Both of these past estimates were the result of surveys conducted from a boat. Eleven of the 26 active nests were located on Old Man Island itself, the other 15 nests were located on the three sea stacks.

Five of the 26 active nests on Old Man Island were located under large boulders, the remaining 21 nests were found on narrow ledges. This is interesting because ledge nesting is the exception rather than the rule for Razorbills in the Gulf of Maine. Fourteen chicks and 13 eggs, of which one was cracked, were found during the study.

In addition to the 26 breeding pairs on Old Man Island, Machias Seal Island, Matinicus Rock, and Freeman Rock had 100, 40 and two (unconfirmed) breeding pairs respectively in 1986. The four Gulf of Maine colonies taken together supported about 166 pairs of breeding Razorbills in 1986. This represents an increase of about 71 pairs since 1976 (Table 1).

#### Non-breeders

On July 2, 1986, 140 Razorbills (the highest number counted) were on the water in close proximity to Old Man Island. Subtracting the 52 confirmed breeders associated with the 26 active nests on Old Man Island leaves a possible 88 nonbreeding Razorbills (63 percent of the high count) in attendance at this colony. This high proportion of nonbreeders to breeders is typical of auk colonies (Nettleship and Birkhead 1985).

The total number of Razorbills seen in the Gulf of Maine in the summer of 1986 at the four colonies was approximately 600 (Table 1). The 268 birds over and above the known breeders probably represent nonbreeding adults or subadults. It takes Razorbills about five years to reach reproductive maturity and prior to sexual maturity they can be seen prospecting at active colonies (Nettleship and Birkhead 1985).

**Table 1. Gulf of Maine Razorbill colonies in 1976 and 1986.**

Colony	1976 Nesting pairs	1986 Nesting pairs	1986 Maximum observed	Source
Machias Seal Island	76	100	270	Canadian Wildlife Service
Old Man Island	4	26	140	U.S. Fish and Wildlife Service
Matinicus Rock	15	40	150	National Au- dubon So- ciety
Freeman Rock	?	2 (?)	40	U.S. Fish and Wildlife Service
Totals	95	166	600	

Photograph on preceding page by E. Weinstein



Closeup of Razorbill chick with egg. Photograph/Richard H. Podolsky.

### Discussion

According to estimates compiled by the Canadian Wildlife Service, the total world breeding population of the Razorbill is estimated at 700,000 (0.3–1.2 million; Nettleship and Birkhead 1985). This is the second smallest total world breeding population of any of the Atlantic alcids. The Black Guillemot, although the most abundant alcid in the Gulf of Maine, appears to have the smallest total world population, estimated at 266,000 (0.2–0.35 million; Nettleship and Birkhead 1985). The roughly 330 Razorbills breeding in the Gulf of Maine is thus less than one tenth of one percent of the total world population.

There are over 3000 islands in the Gulf of Maine but only four of them are currently breeding sites for Razorbills. Historically, six Gulf of Maine islands were known to support Razorbills, but almost nothing is known of the size of these former colonies (Drury 1973; Korschgen 1979).

Razorbills, along with most of the seabirds in the Gulf of Maine, were persecuted by eggers and market hunt-

ers from 1700 to the early 1900s. By the 1890s Razorbill numbers were substantially reduced throughout its range and it was considered locally extinct in Maine. In the early 1920s Razorbills began to slowly reappear and now seem to be rebounding slowly and steadily (Drury 1973). Razorbills have recently been seen prospecting for nest sites at several islands in the Gulf of Maine including Jordan's Delight and Petit Manan Islands (W. H. Drury and D. C. Folger, *pers. comm.*). This indicates that range expansion may be occurring.

The major threats to Razorbills are pollution, competition with fisheries, disturbance of their nesting islands, and predation and harassment by Herring and Great Black-backed gulls. During the course of the study at Old Man Island, one Razorbill chick was consumed by an adult Great Black-backed gull. Several instances of harassment were observed in which gulls chased adult Razorbills returning to the colony with fish. Presumably the gulls were attempting to cause the Razorbills to drop their fish, although no successful kleptoparasitism was ob-

served. Observers at Machias Seal Island and Matinicus Rock reported observing gull predation and harassment directed at Razorbills.

Maine's Razorbill population is numerically marginal. However, from a genetic standpoint, such marginal populations may be very significant (Soulé and Wilcox 1980). The reproductive success or failure of these "edge" populations control whether a species is expanding its range or is suffering a range contraction. Peripheral populations, although typically small, are important "indicator" populations and as such should be regularly monitored. Peripheral populations are particularly important genetic resources if one is trying to protect the genetic diversity of a population.

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—The Island Institute,  
60 Ocean Street,  
Rockland, ME 04841