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PAST AND PRESENT STATUS OF GREY SEALS IN NEW ENGLAND

by

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ABSTRACT

The grey seal *(Halichoerus grypus)* was once sufficiently abundant along the coast of New England to be utilized consistently by Indians. Presently most of the grey seals observed in U.S. waters are of Canadian origin. At the only breeding assembly on Muskeget Island, pup production has been intermittent in recent years.

RÉSUMÉ

Le phoque gris *(Halichoerus grypus)* était au-trefois suffisamment abondant le long de la côte de la Nouvelle-Angleterre pour êstre utilisé régulièrement par les Indiens. A l'haure actuelle la plupart des phoques gris observés dans less eaux des Etats-Unis sont de provenance canadienne. Ces dernières années, sur l'Ile Muskeget, le seul endroit où ils se rassemblent et se reproduisent, la reproduction des jeunes phoques a été intermittente.

INTRODUCTION

Since Andrews and Mott (1967) first called attention to a small breeding colony of grey seals *(Halichoerus grypus)* on Muskeget Island near Nantucket, Massachusetts, there has been concern about the status of the species in U.S. waters. As a segment of a project funded by the Marine Mammal Commission, I developed the following information on the past and present abundance of grey seals in New England.

METHODS

Past abundance and distribution was determined by review of the literature, interviews with knowledgeable individuals, and compilations of unpublished data. Present abundance and distribution was derived from the above information sources plus a series of aerial and ground surveys in the area of Muskeget Island.

PREVIOUS STATUS

The historic presence of grey seals is best documented by examining their presence in excavations of shell heaps of early Indians. The first mention of grey seals in the archeological artifacts of New England was by Eaton (1898) in describing a series of sites on Block Island, Rhode Island. Examination of the data of Loomis and Young (1912) for Damariscotta, Maine, indicated 19 harbor seal *(Phoca vitulina)*, 7 grey seal, 1 harp seal *(Phoca groenlandica)* and 1 walrus *(Odobenus rosmarus)* bones. Waters (1967) reported grey seal bones found in four locations in Massachusetts and Connecticut. Ritchie (1969) described grey seal bones in several sites in Martha's Vineyard. Glover Allen's notes at the Museum of Comparative Zoology, Harvard University, document grey seal remains from several additional sites in Massachusetts and Maine. In addition, the Maine State Museum and the Anthropology Department, University of Maine at Orono, have unpublished information on several additional sites in Maine.

A summary of pinniped bones found in these various sites in New England is presented in Table 1. Grey seals were present from about 4300 B.P. in both Maine and Southern New England. The latest archeological record in Maine is between 1000 and 2500 B.P. (Bourque, 1973). The most recent archeological record of grey seals in Southern New England is 586 ± 80 B.P. Ray, et al. (1968)

report fossil evidence indicating grey seals were reasonably well established as far south as Norfolk, Virginia, in the late Pleistocene.

That grey seals were taken fairly continuously throughout this period in Maine would indicate a reasonably established population which could withstand harvest. If Indians were taking seal species in proportion to their abundance, and if the harbor seal population was fairly similar to that presently found, then grey seals formerly numbered several thousands along the New England Coast. Except for Oak Point and Deer Isle sites in Maine, there is considerable evidence that grey seals were more important to the Indians than harbor seals.

Many of the European explorers wrote extensive accounts of Indians, but few were interested in the natural history of the area. One journal which went into considerable detail was by Biard (1616), a Jesuit missionary. Biard traveled primarily in the area between the Kennebec and St. John Rivers. In describing the activities of the Indians he states:

> Now, for example, in January they have seal hunting: for this animal, although it is aquatic, nevertheless spawns upon certain Islands about this time. Its flesh is as good as veal; and furthermore they make of its fat an oil, which serves them as sauce throughout the year....

Clearly, Biard is referring to grey seals and not harbor seals which would not pup until late May or early June.

In the notes of Glover Allen at the Museum of Comparative Zoology are included letters identifying two grey seals from Northeast Shoal near Grand Manan Island and a probable grey seal at Plum Island, Massachusetts.

Goodwin (1933) reported that a single grey seal was taken in nets on March, 1931, off a pier at Atlantic City, New Jersey.

The grey seals at Muskeget were known to Nantucketers at least during the lifetimes of Andrews and his father (Andrews and Mott, 1967). Approximately 40 grey seals were killed in about five years in the late 1940's and early 1950's in that area.

Both Maine and Massachusetts had bounties on seals, but no distinction was made as to species in recording numbers taken. In Maine, bounties on seals were paid from 1891 through 1905 and again from 1937 to 1947. The bounty in Massachusetts was in effect from 1888 to 1908 and again from 1919 to 1962. In 1965, Massachusetts passed a law protecting the grey seal in the Nantucket area. All seals were protected by the federal government in 1972.

PRESENT STATUS

The only population of grey seals known to breed in U.S. waters is located at Muskeget Island between Martha's Vineyard and Nantucket Island, Massachusetts (Andrews and Mott, 1967). Richardson (1976) reported observations of young grey seals along the coast of Maine, but none were white-coat pups. There is some possibility that other breeding assemblies exist, although lobster fishermen frequenting the Maine Islands during the breeding season have not reported any grey seal pups.

The breeding assembly at Muskeget Island is small. The maximum number of grey seals observed at one time has not exceeded 17 individuals since 1965 (Table 2). In 1977, a maximum of nine individuals were observed during 16 days of observations from land. In ten aerial censuses between January and April, 1977, a maximum of six individuals were observed (Table 3).

Pup production in the muskeget area has been intermittent in recent years. Since 1964, when Clinton Andrews first called scientific attention to grey seals in the area (Hanley, et al., 1964; Drury, 1965; Andrews and Mott, 1967), ten white-coat pups have been observed (Table 4). Of these, three were born in 1964. The last known white-coat pup was observed at Cisco Beach, Nantucket, in March 1973. Nine other molted pups or yearlings have also been observed in the area, but it is not known what fraction of these originated from the Muskeget group. Four of the nine were originally branded at Sable Island, Nova Scotia. Since only a fraction of the pups on Sable Island were branded (Mansfield and Beck, 1977), there is some reason to believe the other of the molted pups and yearlings observed also originated from Sable Island.

Grey seals have been observed in waters of the East coast of the United States from Maine as far south as New Jersey (Mansfield and Beck, 1977). Richardson (1976) has summarized sightings of grey seals for the period from 1965 to 1975. During that period, a maximum total of 80 individuals were observed in Maine waters. Most of the sightings have been in summer months, but this is possibly because field efforts in winter months have been limited by weather. Nearly all sightings in Maine have been north of Muscongus Bay (Richardson, 1976).

Mansfield and Beck (1977) report six recoveries in U.S. waters of grey seals marked at Sable Island. Of these, four were recovered in the Muskeget area, one in New Jersey, and one at Mount Desert Rock in Maine. Since their report, one additional tagged animal was recovered at West Dennis Beach, Cape Cod. Of the Canadian breeding assemblies, those at Sable Island and in Northumberland Strait produce a majority of the pups (Mansfield and Beck, 1977). There were 2,006 pups born on Sable Island in 1976 and 400 on Camp Island in 1970 (Mansfield and Beck, 1977).

It can be presumed that virtually all the grey seals observed in Maine coastal waters were born in Canadian assemblies. Some juveniles may remain in this area during the breeding season, but this has not been documented.

Of more importance is the relationship between Canadian seals and those in the Muskeget breeding assembly. No marked adult seals have been observed in the Muskeget area, but a significant fraction of the juveniles have originated from Sable Island. To what extent this influx of Canadian seals maintains the Muskeget assembly is not known. Shifts in the breeding locality have been observed in the Canadian population (Mansfield and Beck, 1977). It is quite possible that some of the adults in the Muskeget assembly also originated from Sable Island.

REASONS FOR THE DECLINE IN GREY SEAL NUMBERS

Direct killing of grey seals may have reduced numbers significantly all along the coast of New England, although there is no direct evidence that this occurred. In fact, fishermen in New England, those who would have the most opportunity to kill seals, are regarded by many as being tolerant of seals. Reports of damage to gear and deprivations of fish by seals are negligible.

Some grey seals, especially in the Muskeget area, were killed for the bounty. Andrews and Mott (1967) state that bounties were paid on at least 25 grey seals killed in the Muskeget area between 1958 and 1964. They estimate an additional 40 grey seals were killed in about five years in the late 1940's and early 1950's.

Indirect competition between man and grey seals for space is likely a major reason that grey seals are not presently abundant in U.S. waters. Although there are many islands in Maine which are not inhabited in January and February, lobster fishermen regularly set pots just off the shores of all these islands during this period. This regular appearance of man along the shores may be enough to discourage grey seal breeding, as has been noted near Grand Manan (Mansfield and Beck, 1977). The lobster fishermen apparently set pots around all islands, including those far off-shore, such as Mount Desert Rock.

Indirect competition between man and grey seals on Muskeget Island may be of special importance. Waterfowl hunting and associated activity might delay or prevent some female grey seals from pupping.

Habitat change may be an important limiting factor for grey seals in the Muskeget area. In addition to remote beaches, grey seals require reasonably deep water into which they can escape. Shallow water near a beach limits the haul-out areas available (Andrews and Mott, 1967).

The amount of such habitat in the Muskeget and Tuckernuck Islands area has decreased since the beginning of the century. Storms have eroded suitable haut-out areas and created extensive shallow water areas, creating unsuitable inshore habitat.

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Table 1. A summary of the pinniped bones identified from archeological sites in New England. All sites were refuse heaps of early Indians.

Location	Date, B.P. (Before Present)	No. Individual Seals Ident. Grey Seal	Harbor Seal	Other	Source
New Haven, CT	400-2000	present	--	--	Waters (1967)
Marshfield, MA	400-2000	present	--	--	"
Martha's Vineyard, MA	366-466	0	1		"
	586 ± 80	2	1		
	816 ± 80	2	1		
	1046 ± 70	1	1		
	1566 ± 80	2	1		
	2396 ± 80	0	0		
	2486 ± 120	0	0		
	4156 ± 100	5	0		
	4236 ± 160	0	0		
Squibnocket Pond, Martha's Vineyard MA	796 ± 80	2	1		Ritchie (1969)
	2200	1	0		
	?	1	0		
	4100	5	0		
Vineyard Haven, Martha's Vineyard, MA	540	1	1		Ritchie (1969)
	2100	0	0		
	4100	4	1		
	4300	0	0		
	600	0	1		
	800	0	1		
	1500	2	1		
Nantucket Is, MA	?	1	--		Mus. Comp. Zool.
Ipswich, MA	?	1(?)	--		"
Eastham, MA	345-325	1	--		"
Block Is.,R.I.	?	4+	1	2 Harp Seal	Eaton (1898)
Damariscotta, ME	?	7*	19*	1*Harp Seal 1* Walrus	Loomis & Young (1912) corrected by A Speiss
Frenchman's Bay, ME	?	1	--	--	Mus. Comp. Zool.
Blue Hill & Holmes Pt., ME	?	present	--	--	U.Me. Dept. Anthro.

Table 1. Continued.

Location	Date, B.P. (Before Present)	No. Individual Seals Ident. Grey Seal	Harbor Seal	Other	Source
Oak Pt.,ME	787-797	0	1		Borque
	827-1077	0	1		(1971)
	1477?	0	3		
	1477-1977	0	1		
	1617-1817	0	1		
Deer Is.,ME	767-927	0	1		Borque
	787-947	0	1		(1971)
	1477-1977	0	1		
Sargentville, ME	877-1117	0	1		Borque (1971)
Brooklin	2300-3800	36	15		Me. State Mus.
North Haven, ME	3700-4500	4	3		"
	3400-3700	4	5		
	3700-4500	2	0		
	1000-2500	2	1		
	1000-2500	13	9		
	3400-4500	0	1		

*Counts at the Damariscotta Site are of bones, not individual seals.

Table 2. Highest annual counts of grey seals in the Muskeget area from 1965 through 1977.*

Date	Location	Number Observed
1965 April	Shoal between Tuckernuck and Muskeget	12-17
1966 April	Shoal between Tuckernuck and Muskeget	12-17
1967 April	NE Shoal, Muskeget	15
1968 March	SW Point, Muskeget	14
1969 April	NE Shoal, Muskeget	9
1970 April	Shoal S of Tuckernuck	11
1971 April	NW Shoal, Muskeget	11
1972 March	Shoal S of Tuckernuck	8-9
1973 March	Shoal S of Tuckernuck	11-13
1974	---- Insufficient Observation ----	
1975 April	NE Shoal, Muskeget	several
1976 February	Bigelow's Point, Tuckernuck	3-4
1977 March	NW Shoal, Muskeget	9

*All observations were made by J. Clinton Andrews or Valerie Schurman.

Table 3. Numbers of harbor and grey seals observed in aerial surveys of islands in the area of Nantucket Island and Martha's Vineyard from 13 January to 30 April 1977.

Location	Date (Month-Day)											
	1-13	1-26	2-10	2-17	2-26	3-3	3-12	3-20	3-26	4-11	4-16	4-30
Elizabeth Is.	0	0	-[a]	0	-	40	31	40	40	27	31	3
Martha's Vineyard	0	0	-	0	0	0	0	0	0	0	0	1
No Mans Land	-	-	-	-	-	0	-	12	0	11	0	
Muskeget Is.	1?[b]	(1)	0	0	0	(4)	(6)	(3)	4?	(2)1?	(1) 2	0
Skiff's Is.	0	0	-	-	0	0	-	-	-	-	(1) 1	(5) 3
Tuckernuck Is.	0	0	0	0	0	0	12	3	0	15	4	11
Esther's Is.	0	0	0	0	0	9	14	0	23	2	0	0
Nantucket Is.	-	-	-	-	-	-	4	0	2?	1	1	-
Monomoy Is.	0	6	0	0	19	28	9	0	44	64	21	31
Billingsgate Is.	-	0	-	-	0	33	30	-	90	20	113	30
Tide	Low	Low	Mid	Mid	Low	Low	High	High	High	Low	High	Low
Wind (mph)	12	15	-	-	20	-	0	0	25	10	-	20

[a] If an area was checked, but no seals were sighted, a zero is entered in the table; a dash indicates an area was not checked on a particular date.

[b] Grey seals observed are included in parentheses. Those observed in which species was not determined are followed by question marks.

Table 4. Whitecoat and molted grey seal pups observed in the Muskeget area from 1964 to 1977.*

Date	Age	Location	Remarks
1964, Jan.	Whitecoat	SW Point, Muskeget	Mentioned by Hanley, et al. (1964)
1964, Jan.	Whitecoat	SW Point, Muskeget	Mentioned by Hanley, et al. (1964)
1964, Jan.	Whitecoat	SW Point, Muskeget	Died in private home
1965, Jan.	Whitecoat	Near West Chop, Martha's Vineyard	Died in private home
1967, Feb.	Whitecoat	NE end, Muskeget	
1968, Jan.	Whitecoat	SW Point, Muskeget	
1969, Feb.	Whitecoat	SW Point, Muskeget	Died, gut full of sand
1970, Jan.	Moulted	Jetties Beach, Nantucket Harbor	
1970, Feb.	Whitecoat	SW Point, Muskeget	
1971, Mar.	Moulted	Sconset Beach, Nantucket	Branded "S1" at Sable Island between 1/28 and 2/5/71
1972, Mar.	Whitecoat	Sconset Beach Nantucket Is.	
1973, Mar.	Whitecoat	Cisco Beach, Nantucket	"about six weeks old"
1975, Apr.	Moulted	Dennisport Beach, Cape Cod	Died
1976, Apr.	Moulted	Low Beach Sconset	
1977, Mar.	Moulted	Muskeget	
1977, Apr.	Moulted	West Dennis Beach, Cape Cod	Tagged "C414" on Sable Island on 1/15/77

*Data from observations of J. Clinton Andrews and Valerie Schurman.