

THE DUKES COUNTY INTELLIGENCER

Published by
DUKES COUNTY HISTORICAL SOCIETY, INC.
EDGARTOWN, MASSACHUSETTS



The Mammals of Martha's Vineyard

by

ALLEN R. KEITH

Illustrations

by

CHARLES E. ROTH

DUKES COUNTY HISTORICAL SOCIETY

OFFICERS OF THE SOCIETY

ALFRED HALL *President*
 GALE HUNTINGTON *Vice President*
 JOHN OSBORN *Treasurer*
 ADELINE H. RAPPAPORT *Secretary*

Council

DORRIS S. HOUGH *Term expires 1972*
 NELSON COON *Term expires 1972*
 DR. SIDNEY N. RIGGS *Term expires 1971*
 LYDIA HOWES DREW *Term expires 1970*
 DOROTHY COTTLE POOLE *Term expires 1970*

DOROTHY R. SCOVILLE *Curator*
 GEORGE H. CHASE *General Counsel*
 LYDIA HOWES DREW *Genealogist*
 HENRY BEETLE HOUGH *Historian*
 DR. SIDNEY N. RIGGS *Cover Artist*
 GALE HUNTINGTON *Acting Editor, Intelligencer*

DUES

Active membership	\$5.00 annual dues
Active husband and wife membership	\$8.00 annual dues
Sustaining membership	\$10.00 annual dues
Life membership	\$100.00

PLEASE - give us your change of address promptly to save postage and insure arrival of every issue of the Intelligencer.

This Society is supported entirely by membership dues, gifts, and bequests.

Your gift or bequest will be deeply appreciated and should be made payable to the "Dukes County Historical Society, Inc." All such contributions are deductible under Federal Income Tax Law.

Copyright 1969
 by the
 Dukes County Historical Society, Inc.
 Edgartown, Massachusetts

The Mammals of Martha's Vineyard

by
 ALLEN R. KEITH

The island of Martha's Vineyard lies about five miles off the southwestern "heel" of Cape Cod in southeastern Massachusetts. Including adjacent Chappaquiddick at its east end and Noman's Land off its southwestern corner, it comprises all of Dukes County with the exception of the Elizabeth Islands to the north which are not included in this study. Martha's Vineyard, the "Island" or the "Vineyard," was first described by John Brereton, a member of the expedition led by Bartholemew Gosnold who is generally credited with discovering it, in 1602. The first European settlement was established by Thomas Mayhew at Edgartown in 1642. The history of the early years of the settlement of the Island has been fully chronicled by Hine (1908) and by Banks (1911), and additional brief historical descriptions have been made by Latimer (1925), by Griscom in Griscom and Emerson (1959).

The history of the Island for our purposes should begin well before its recorded human history, for the last 367 years since the first Europeans set foot on it are but a small part of the story. As told so beautifully in the recent book by Barbara Chamberlain (1964), Martha's Vineyard, as well as Cape Cod, Nantucket and Block Island, owe their origin to the action of three lobes of the vast continental ice sheet that covered what is now the north-eastern United States during the Wisconsin Stage of the last Ice Age about thirteen thousand years ago. To compress the geological story of this region since the waning of the glaciers and the start of their northward retreat, we can turn to a few lines from Chamberlain (pp. 156-157):

"The post-glacial seasons passed and the climate continued to warm. Tundra animals and plants pressed northward. But other, smaller animals and reptiles which had also helped to populate the glacial plains

remained. . . As the ice melted and retreated. . . , the sea, as a result, rose continuously. It filled in the lowland of Vineyard and Nantucket Sounds and connected the large Bays to the sea. In time it made islands of Nantucket and Martha's Vineyard and an almost-island of Cape Cod. . . Almost as effectively as an unscalable wall, it imprisoned the small animals which had established themselves on the higher lands and left them to fend for themselves. . ."

This was the origin of the Island, and the survey of its mammals presented here begins at the time when the morainal hills and the outwash plain south of them first became surrounded with water. Estimates vary as to when the Vineyard first became permanently separated from the mainland and from Nantucket. But it is not within the province of this paper to enlarge on this subject. For those interested, the works by Starrett (1958) and Ogden (1958) should be consulted. However it seems safe to assume that, with the exception of slight differences in the contour of its shoreline, Martha's Vineyard has existed in very close to its current form for the last five thousand years.

As an habitat for mammals, it has undergone several major changes in this period which can only be sketched quickly here. Considering the climate and vegetation, as the ice retreated the temperature gradually rose. But it was many centuries before it was warm enough to allow the invasion of warmer-climate broad-leaved trees from the south. Work by Ogden (1958, 1959, 1961, 1963) and by Kaye (1962) shows that about twelve thousand years ago the vegetation on what is now the Vineyard was largely spruce, hemlock, balsam fir, white and red pine, black birch and willow. Kaye (1962) also suggests that the climate was possibly drier than it is today as well as cooler. This predominantly conifer forest persisted until the Island was cut off from the mainland. As more time passed, the rising temperature and increasing humidity allowed trees such as oaks and beeches to gain a foothold. The Vineyard must have been partly covered with the same virgin hardwood

forest that once covered nearly all of southern New England for the last centuries before the arrival of the first European colonists. On nearby Naushon Island only five miles away is a remnant of that hardwood forest made up of "red maples, black and yellow birches, hickories, beeches, white, scarlet and red oaks, and pitch and white pines" (Chamberlain, p. 165.). This pattern of vegetation was present when Gosnold arrived, at which time the record shows that the majority of the Island's surface was covered with a heavy forest of conifers and deciduous trees. Parts of this forest may have been cleared by the Indians or burned off by natural or man-made fires, but most of the Vineyard was wooded.

Shortly after the first European settlements were established, these forests were cut, and by the mid 1700's they were almost gone. One reason for the cutting was to clear land on which to raise sheep. Sheep-raising became a major industry by the Revolutionary War period and continued until the late 1800's when it began to decline due to competition from large ranches in the western United States. Shaler (1888) reports that plowing and forest fires had rendered 33,000 acres in the central and eastern parts of the Island untillable by 1888. This acreage represents over half the land area of the Vineyard which was once covered with forest. From 1750 to 1900 there was very little habitat capable of supporting any numbers of the larger land mammals, including deer, which were also not protected by any effective hunting regulation or enforcement. Also, foxes, skunks and raccoons were systematically trapped and poisoned by the Island sheepmen. Thus it seems likely that nearly all the natural mammal carnivores were removed, and the small rodents and insectivores must have thrived in unprecedented numbers.

Beginning about 1900, with the decline of sheep raising, second growth forest began to encroach on the sheep pastures. This forest was primarily of dense scrub oak, and by 1925 (see Latimer) it had covered most of the great plains area in the central and southern part of the Island. Also, by this time some larger forest had appeared on the morainal hills along the north shore of the Island.

The return of the scrub oak was slower on Chappaquiddick and Noman's Land because they are exposed to more severe winter winds, salt spray, etc. The period since 1925 has witnessed increasing spread of the scrub oak forest, reduction of open grassland habitat, and the improvement of habitat for mammal species that require wooded hills and streamsides. The spread of the scrub oak has been set back occasionally by fires that have burned over large areas. One fire in 1916 blackened more than 11,000 acres in the central part of the Island. Also, more recently the managers of the Martha's Vineyard State Forest have planted several hundred acres of small conifers which, over the course of twenty years, grow up through the scrub oak and replace it. In time, this may provide at least a small piece of habitat similar to that which existed on the Island five hundred to a thousand years ago.

Today's climate on Martha's Vineyard is intermediate between that of Nantucket and the neighboring mainland. It can be generally described as humid, with cold winters during which there is often a fair amount of snow and short summers which are often cool and dry. Temperatures are more equitable than those on the nearby mainland, averaging a few degrees warmer in winter and cooler in summer. Average annual rainfall is about 40 inches which is less than on the adjacent mainland and is usually well distributed through the year. The average frost-free season extends from late April to the end of October. However, due to the moderating influence of the surrounding ocean, spring foliage is not fully out until at least two weeks later than on the mainland and the "Indian summer" weather in fall is correspondingly prolonged. The Island is also windier than the mainland at all seasons, the prevailing direction being northwest in the colder months and southwest during the balance of the year.

The Mammals

The true beginnings of mammal life on what we now know as Martha's Vineyard go back twenty million years to the Miocene period. At that time a rhinoceros (*Diceratherium sp.*) and a species of elephant lived here, and an extinct species of sea cow

(Sirenian) lived in what were probably brackish coastal marshes. At other times in the Miocene, the sea spread over this area and a variety of whales and porpoises were found here: *Graphiodon vinearius*, possibly a toothed whale; *Dinoziphius carolinensis*, an extinct toothed whale; *Balaenoptera sursiplana*, an extinct species of rorqual; *Ontocetus sp.*, a member of an extinct genus of baleen whales; *Squalodon atlanticus*, an extinct carnivorous whale; and a porpoise (Delphinid). More recently, only about one million years ago in the Pleistocene period, a vast plain covered most of what is now the eastern coast and continental shelf of North America. Horses (*Equus sp.*) and at least one kind of camel roamed these plains where the Island now lies. We know of the presence of all these species only from fossils found in the clay deposits at Gay Head. Much is still to be learned about this fauna and more species will probably come to light in the future. While the mention of these animals is technically outside the time span covered by this paper, we can look forward to a discussion of this interesting phase of the Island's mammal life by Frank C. Whitmore, Jr. of the U. S. Department of the Interior, Geological Survey, who is working on it and who kindly provided the author with the list of species given above.

At this point let us return to the last 5,000 years. The following list of forty-eight species is known from the Island in this period although twelve of them probably do not exist here today. Sources of published information used to collect this list are given in the bibliography, and a brief glance will show that they include a wide variety of historical, geological, archaeological and zoological writings. One of the most important types of work done on the Island has been the study of Indian kitchen middens and camp sites. These early inhabitants were efficient collectors of the wildlife that shared their environment. From the remains they left, a fairly good idea can be formed of the mammals that lived on the Vineyard from around 4,000 to 500 years ago. But the Indians concentrated principally on the larger, edible species and those which were relatively abundant. Even today there are several groups of species that have been little studied and are

poorly known on the Island while others have been examined very closely.

To take the two extreme cases, two species of mouse and one shrew have been carefully examined, but extremely little is known about the bat species that occur on the Island. The mice and the shrew have received attention because, due to their long isolation from the mainland, two races have developed which are unique to Martha's Vineyard. While little seems to have been written about our Short-tailed Shrew recently, it is recognized as a distinguishable race and described in such works as Hamilton (1963). The Island Forms of two species of mice have been studied closely within the last decade, the Meadow Vole by Starrett (1958) and the White-footed Mouse (race *fusus*) by Bowditch (1965), the latter also being restricted to the Vineyard. By way of contrast, the author is unaware of anything at all published about the bats that frequent the Island. In fact, few people who have ever visited here have ever done more than be casually aware of their presence. Of the nine species that could possibly occur here, the following list includes only three and specimens are only known for two of these. To be sure, the other six are probably not common if they occur at all and would only be found as stragglers or spring and fall migrants. But even so, the very small amount of information available attests to the neglect this group has suffered.

The data available about the cetaceans is intermediate between the two groups mentioned above. While it is hard to be accurate about the status and abundance of these animals because of the difficulty of observing them in their habitat and of being sure of their identity when seen, there are also other reasons why the information about them is fragmentary. One of these is that whales and porpoises are mammals of the open ocean. The Island is a small area located close to a large continent, and perhaps thirty of the nearly one hundred species of cetaceans known in the world's oceans might have occurred within a 500-mile radius of Martha's Vineyard in the last century or might drift here dead. And while it may not be particularly useful in a scientific sense to make a list of the cetaceans that have been found within five

miles of the Island's beaches, Martha's Vineyard is the area being considered here so only species known to have come within that arbitrarily-defined area will be included. In such a survey as this the author feels it would be a greater mistake to ignore these species completely. The author wants to thank here Mr. William E. Schevill without whose help the material appearing below on the cetaceans could not have been included in its present form.

Another reason why the information on the cetaceans is fragmentary is the dramatic decline in their numbers since 1800. While some species may never have been numerous near the Island, the records we do have indicate that a number of the larger species of whales were much more abundant here formerly than they are now. Some were even frequent enough to attract the attention of the Indians who may have hunted them in dugout canoes (Huntington, 1962). But with the arrival of mechanized whaling in the early part of this century, the worldwide decline in whale numbers accelerated and has continued to do so until the present day. To many conservation-minded people, the history of commercial whaling in the last thirty years is as shameful an episode as there is in the annals of exploitation of a wildlife natural resource. Several species have been reduced to a point where, if they do not become extinct, centuries will be required for their populations to return to numbers that existed even in 1930. This is especially true of one species, the Blue Whale, the largest mammal that ever lived on earth, whose world population has recently been estimated at only 600 individuals and which is known from the Vineyard's waters by only one record which must be considered hypothetical.

There are two other groups of Vineyard mammals which deserve comment at this point, the introduced species and a few that are conspicuous by their absence. Considering the introduced species first, of which there are eleven, four of them can be considered "exotics." These are the Brown Hare, the Snowshoe Hare, the Blacktailed Jackrabbit, and the Fallow Deer. The first three of these were imported from distant areas and habitats very different from those found on the Island. They were not suited to

the conditions on the Island and after a short residence they died out. The Fallow Deer have survived but the population is small and shows no signs of impeding the growth of the native White-tail Deer population. Of the other seven species, the Opossum and the Chipmunk appear to be very recent arrivals and as yet are not important in the overall faunal picture, though their progress will be very interesting to watch. The House Mouse, Norway Rat and Black Rat are the seemingly inevitable companions of man, as is the Cat which man brings with him to prey on the latter three. All four have reached the Island in numbers, though it will be seen from the comments on the Cat below that a few have filled the niche in modern times that the Bobcat occupied in the prehistoric past. The final introduced species is the Eastern Cottontail. In many ways this is the saddest case of all for it has apparently meant the extinction on the Vineyard of the relict, isolated population of New England Cottontails left behind when the Island was separated from the mainland by the sea thousands of years ago. This is an almost classic example of the folly of most introductions since it not only caused the extermination of one species on the Island but also destroyed one of the truly unique characteristics of the Vineyard's mammal fauna.

While the eleven preceding species were never a part of the Island's natural fauna until they were introduced, an additional four species which once lived here and then were exterminated have now been re-introduced. Three of these, the Raccoon, the Mink and the Skunk, are present today. These re-introductions have been successful after an absence from the Vineyard as a wild species of at least 50 years for the Raccoon, 80 years for the Mink, and 50 years for the Skunk. As will be seen from the discussion of the latter species below, the animals re-introduced may not be of the same race as those originally present. The fourth case is that of the Red Fox which, as will also be seen below, was originally exterminated on the Island, then was present for about 30 years after some were liberated, and then was exterminated again.

It would make no sense to list here all the species of mammals known from New England, or even Massachusetts, that have not

occurred on Martha's Vineyard. But there are a few which might reasonably be expected to have occurred here once or occur here now which will not be found in the following list. To the extent that these absences are a product of nature, they are of interest because of the way the species that are here have reacted to these absences or filled these ecological niches. In this category can be included species which once may have been present but are no longer because of natural changes in climate or habitat. To the extent that these absences are a product of man, they are of interest because they may indicate the results that man's alteration of, or presence in, the habitat has had on the mammal populations. Or these absences may reflect man's failure to explore his environment fully enough to discover all the species that are present. It is clear that more careful work needs to be done on the mammals of the Island, and perhaps some species in this second category will be discovered in the future.

The first of these two groups of missing species includes the Woodchuck (*Marmota monax*) which may have invaded New England from the south after the Vineyard had been cut off from the mainland by the sea. To date no remains have been found in Indian kitchen middens and none is known here now. Another rodent, the Southern Flying Squirrel (*Glaucomys volans*) is common on the mainland in southeastern Massachusetts but has never been recorded on the Vineyard. The reasons for its absence are probably the same as those for the Woodchuck. However, the Northern Flying Squirrel (*G. sabrinus*) may well have been present on the Island earlier in the post-glacial period when its range extended farther to the south than it does now. Some may have been left behind when the Island was cut off from the mainland by the sea in a situation analagous to that of the New England Cottontail. But if that occurred it cannot be proved now, and any population that existed was probably wiped out in the deforestation that took place in the 1700's and 1800's. A fourth rodent, the North American Porcupine (*Erethizon dorsatum*) almost surely must have lived in the area that is now the Vineyard when it was covered by spruce and pine forests and may have

persisted until after the Island was surrounded by the sea. But no remains have yet been found in Indian kitchen middens and none are here now. The last two species in this category are the Short-tailed Weasel (*Mustela erminea*) and the Longtailed Weasel (*M. frenata*). Both of these species are common in southeastern Massachusetts and both were probably residents of the coastal plain that existed about 5,000-6,000 years ago before what is now Martha's Vineyard became an island. Why both should be absent from the Vineyard is a mystery, especially as either of them could have survived in the habitat that has existed on the Island during its short geological history. But no remains have ever been found in Indian kitchen middens, and none has been recorded on the Island in the historical period.

Species that can possibly be included in the second category of missing mammals are two insectivores, three rodents and one carnivore in addition to the bats which have already been discussed above. The insectivores are the Smoky Shrew (*Sorex fumeus*) and the Star-nosed Mole (*Condylura cristata*). The Rodents are the Red-backed Vole (*Clethrionomys gapperi*), Bog Lemming (*Synaptomys cooperi*), and Pine Vole (*Pitymys pinetorum*). Ideal habitat conditions for these five species have not existed on the Island for at least two hundred years. All five require dense, moist woods and streambanks which are not common in the Island's sandy soil. Such conditions have existed on the Vineyard within the last 5,000 years and did before then in the area which is now the Island. At those times these five species may well have been present as all are residents today on the southeastern Massachusetts mainland, though some of them are scarce there. Thus it seems reasonable to suppose that some of the five may have lived on Martha's Vineyard after it became an island. And like the New England Cottontail and possibly the Northern Flying Squirrel, they were left behind as the climate warmed. If they were isolated here, the natural alteration of the habitat may have caused their extermination. But if this process did not, then the removal of the dense, moist forest that existed at the beginning of the historical period probably eradicated them by 1750. However, it is possible that a few have persisted in

some favored locations and will be discovered by some careful worker in the future.

The sixth missing species in the second category, a carnivore, is the Sea Mink (*Mustela macrodon*). If it was a valid species, it was a large mink about three feet long that lived in salt water along the coast of New England and possibly ventured inland a few miles. It was used by the Indians for food and may have survived until the 1700's since one mounted specimen is known as recorded by Waters and Rivard (1962). Ulmer (1930) records remains known from the Maine coast, but the southern limit of the species' range appears to have been southeastern Massachusetts. The population was probably never large, and this mammal now appears to be extinct. The cause of this is surely the result of excessive human trapping, whether by the Indians or Europeans. While no remains have yet been found from Martha's Vineyard, it appears likely that this animal did occur in the waters adjacent to the Island. It is to be hoped that further archaeological studies will disclose its former presence here.

In conclusion, a word about the taxonomy and nomenclature used in the following list and hypothetical list. The overall arrangement of species and the English vernacular names are those of Morris (1965) with a few exceptions noted either here or in the text. In the case of two large orders, the bats (*Chiroptera*) and the rodents (*Rodentia*), Morris does not provide classification or specific names below the generic level except in a very few instances. In the cases where it is required in these orders, the treatment of Hamilton (1963) is followed unless a further note is given in the text. The only other major departure from Morris' classification is in the treatment of the cetaceans. Here the taxonomic sequence is that of Morris but the scientific names and the English vernacular names have been suggested by W. E. Schevill. Trinomial names are only used where specimens have been carefully identified to race by competent authorities.

The author wishes to thank Mr. Charles E. Roth of the Massachusetts Audubon Society for providing the excellent line draw-

ings which he has done especially for this publication. No other illustrations are given here because there are many other readily-available publications with good illustrations. One of the best which shows all the listed species but the Fallow Deer is Burt and Grossenheider (1956). A good photograph of the Fallow Deer appears in Morris (1965).

Acknowledgements

The author would like to take this opportunity to express his gratitude to all the people who made this paper possible by cheerfully responding to his requests for information. In particular, there are a few who went out of their way to provide help or who deserve special thanks: Mr. E. Gale Huntington of the Dukes County Historical Society; Mr. Clifford A. Kaye of the U. S. Geological Survey; Miss Barbara Lawrence and Mr. Charles Mack of the Museum of Comparative Zoology, Cambridge; Mr. James J. McDonough of the Massachusetts Division of Fisheries and Game; Mr. Stanley Poole of Chilmark; Mr. William A. Schevill of the Woods Hole Oceanographic Institution; Dr. Joseph H. Waters, Villanova University; Mr. Ralph M. Wetzel, University of Connecticut; and Mr. Frank C. Whitmore, Jr., U. S. Geological Survey, Washington, D. C. I am also deeply indebted to Mr. Hobart M. Van Deusen for reading and making suggestions on the manuscript.

Allan R. Keith

Blue Mill Road
New Vernon, N. J.
March, 1969

CHECKLIST OF MARTHA'S VINEYARD MAMMALS

Present on or around the Island today: (36)

Common Opossum, *Didelphis marsupialis*
Masked Shrew, *Sorex cinereus*
Martha's Vineyard Short-tailed Shrew, *Blarina brevicauda aloga*
Eastern American Mole, *Scalopus aquaticus*
Little Brown Bat, *Myotis lucifugus*
Red Bat, *Lasiurus borealis*
Eastern Cottontail, *Sylvilagus floridanus*
Eastern Gray Squirrel, *Sciurus carolinensis*
Eastern Chipmunk, *Tamias striatus*
Martha's Vineyard White-footed Mouse, *Peromyscus leucopus fusus*
Muskrat, *Ondatra zibethica*
Meadow Vole, *Microtus pennsylvanicus*
Black Rat, *Rattus rattus*
Norway Rat, *Rattus norvegicus*
House Mouse, *Mus musculus*
Meadow Jumping Mouse, *Zapus hudsonius*
Woodland Jumping Mouse, *Napaeozapus insignis*
Cuvier's Beaked Whale, *Ziphius cavirostris*
Sperm Whale, *Physeter catodon*
Common Dolphin, *Delphinus delphis*
Bottle-nosed Dolphin, *Tursiops truncatus*
White-sided Dolphin, *Lagenorhynchus acutus*
Pilot Whale, *Globicephala melaena*
Harbor Porpoise, *Phocoena phocoena*
Common Rorqual, *Balaenoptera physalus*
Humpback Whale, *Megaptera novaeangliae*
Right Whale, *Eubalaena glacialis*
North American Raccoon, *Procyon lotor*
American Mink, *Mustela vison*
Striped Skunk, *Mephitis mephitis*
North American Otter, *Lutra canadensis*
Cat, *Felis catus*
Common Seal, *Phoca vitulina*
Gray Seal, *Halichoerus grypus*

LIST OF KNOWN MAMMALS

COMMON OPOSSUM

Didelphis marsupialis Linnaeus

One adult male of this species was found dead in Vineyard Haven in the spring of 1965 after having been hit by a car. Another individual was seen alive in early 1966 by Bruce Blackwell as mentioned in the *Vineyard Gazette* for July 19, 1966. These are the only recorded occurrences of the species on the Island, and these animals were almost certainly released here or were brought here as pets and escaped.



Common Opossum

MASKED SHREW

Sorex cinereus Kerr

The exact status of this woodland species on the Island is poorly known, but it is probably not uncommon. One specimen taken here is at the U. S. National Museum in Washington, D. C.; and several specimens taken by Dr. Jay S. Haft in the late 1950's are now in his personal collection but are promised to the Museum of Comparative Zoology in Cambridge.

Fallow Deer, *Platyceros dama*
White-tailed Deer, *Odocoileus virginianus*

Formerly present but probably not present today: (12)

Brown Hare, *Lepus capensis*
Snowshoe Hare, *Lepus americanus*
Black-tailed Jackrabbit, *Lepus californicus*
New England Cottontail, *Sylvilagus transitionalis*
Red Squirrel, *Tamiasciurus hudsonicus*
Beaver, *Castor fiber*
Indian Dog, *Canis familiaris*
Red Fox, *Vulpes vulpes*
Gray Fox, *Urocyon cinereoargenteus*
American Black Bear, *Ursus americanus*
Bobcat, *Felis rufa*
Walrus, *Odobenus rosmarus*

To be looked for on or around the Island today: (16)

Smoky Shrew, *Sorex fumeus*
Star-nosed Mole, *Condylura cristata*
Silver-haired Bat, *Lasionycteris noctivagans*
Big Brown Bat, *Eptesicus fuscus*, specimen needed
Hoary Bat, *Lasiurus cinereus*
Southern Flying Squirrel, *Glaucomys volans*
Bog Lemming, *Synaptomys cooperi*
Red-backed Vole, *Clethrionomys gapperi*
Pine Vole, *Pitymys pinetorum*
North American Porcupine, *Erethizon dorsatum*, prehistoric remains only
Gray Grampus, *Grampus griseus*
Killer Whale, *Orcinus orca*
Lesser Rorqual, *Balaenoptera acutorostrata*
Short-tailed Weasel, *Mustela erminea*
Long-tailed Weasel, *Mustela frenata*
Sea Mink, *Mustela macrodon*, prehistoric remains only

MARTHA'S VINEYARD SHORT-TAILED SHREW

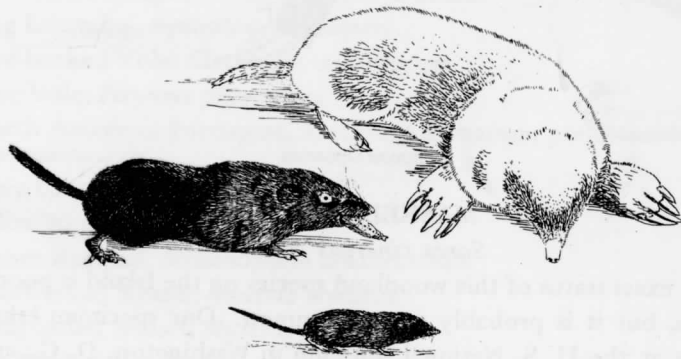
Blarina brevicauda aloga Bangs

A very common insectivore of the entire Island with the exception of Noman's Land where its status is unknown. The race given above is known only from Martha's Vineyard, and no other race of this species occurs here. The insular population is smaller and more brownish than the mainland subspecies and very similar to another distinct race that inhabits Nantucket, both of which were first described by O. Bangs (1902). Specimens can be found in the collections of the University of Michigan (13), the U. S. National Museum in Washington, D. C. (7), the University of Connecticut (61), and the Museum of Comparative Zoology in Cambridge (21), the latter collection including the type specimen for the race taken by Bangs in West Tisbury on June 25, 1899 (number B9727).

EASTERN AMERICAN MOLE

Scalopus aquaticus (Linnaeus)

Relatively abundant resident of both woodlands and open country. Specimens taken on the Island are held in the U. S. National Museum in Washington, D. C. (1), the Museum of Comparative Zoology in Cambridge (4), and at the University of Michigan (3).

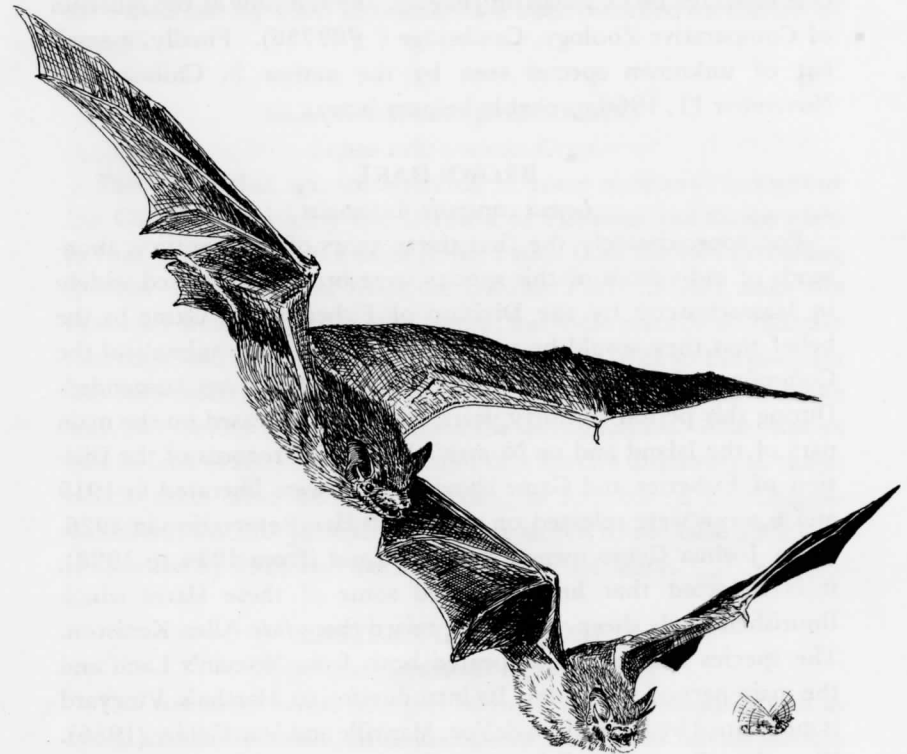


Top: Eastern American Mole
Middle: Short-Tail Shrew
Bottom: Masked Shrew

LITTLE BROWN BAT

Myotis lucifugus (LeConte)

This small bat is a common summer resident and breeding species of the entire Island, often seen at dusk in the summer months catching insects over open fields and ponds. As yet, it is not known whether the Island population winters here or migrates a short distance south to locations on the mainland to hibernate. It has been shown to be present on the Island by mid-April, and if it leaves for the winter probably does so in the late fall. There are two specimens from the Island at the University of Michigan collected by A. Starrett, one taken April 19, 1954 (#101835), and the other taken in June, 1954 (#102165 and #102174).



Top: Big Brown Bat
Bottom: Little Brown Bat

RED BAT

Lasiurus borealis (Müller)

This handsome bat is a common summer resident and breeding species which migrates to the southern United States for the winter months. While it is yet to be proved, members of the populations that summer farther north probably migrate over the Island in spring and fall. Four specimens are known from Martha's Vineyard. Two, collected by A. Starrett, are in the collection of the University of Michigan, one taken July 31, 1953 (#100845) and one taken in August, 1954 (#102164). One collected in Chilmark about the end of October, 1966, by A. O. Fischer, Jr., is now at the American Museum of Natural History in New York (#212447). One collected by O. Bangs on June 25, 1899, is now at the Museum of Comparative Zoology, Cambridge (#B9736). Finally, a small bat of unknown species seen by the author in Chilmark on November 11, 1960, probably belongs here.

BROWN HARE

Lepus capensis Linnaeus

For approximately the first thirty years of this century, thousands of individuals of this species were bred and released widely in Massachusetts by the Division of Fisheries and Game in the belief that they would be an addition to the game animals of the Commonwealth. Since then the practice has been suspended. During this period of thirty years, some were released on the main part of the Island and on Noman's Land. The records of the Division of Fisheries and Game show that 56 were liberated in 1919 and 6 more were released on the Heath Hen Reservation in 1926. When Joshua Crane owned Noman's Land (from 1914 to 1928), it is reported that he introduced some of these Hares which flourished while sheep were being raised there *fide* Allan Keniston. The species has since disappeared both from Noman's Land and the main part of the Island. Its introduction to Martha's Vineyard is mentioned by Manville in deVos, Manville and Van Gelder (1956). The scientific and English vernacular names of Corbet (1966) are followed here in preference to the treatment of Morris (1965).

SNOWSHOE HARE

Lepus americanus Erxleben

This is another species liberated in all parts of the Commonwealth by the thousands in the early part of this century by the Division of Fisheries and Game. The animals released were purchased from dealers in Maine. But as both the race *virginianus* and the race *struthopus* occur in that State and since the exact source of the animals released is not known, those freed on the Island cannot be assigned to race. These Hares were released on Martha's Vineyard beginning about 1910 and 54 were liberated in 1921, but there had been no evidence of breeding by 1921 so the program was stopped. The introductions are mentioned by Manville in deVos, Manville and Van Gelder (1956). However, the species appears to have died out by 1925 and none have been recorded on the Island since.

BLACK-TAILED JACKRABBIT

Lepus californicus Gray

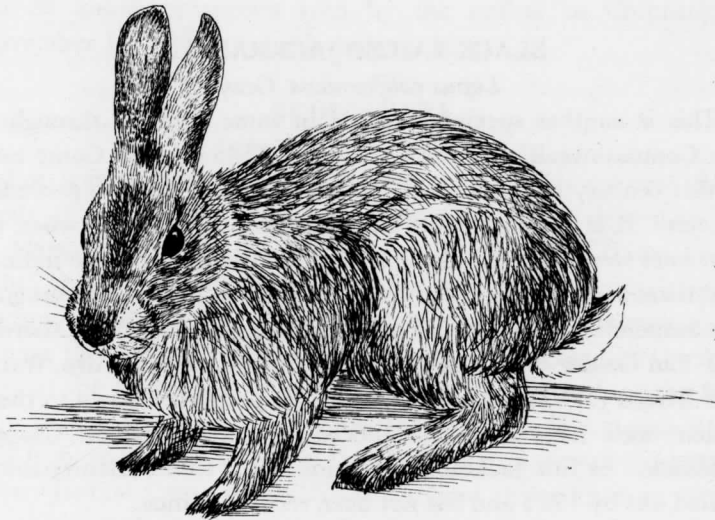
This is another species liberated in some numbers throughout the Commonwealth by the Division of Fisheries and Game early in this century but on a more limited scale than the two preceding species. It is not clear from the Division's records just when the first ones were released on the Island, but these records do indicate that there had been no evidence of breeding by 1921 so the program was suspended on Martha's Vineyard. Manville, in deVos, Manville and Van Gelder (1956), mentions the introductions. Also, Waters and Rivard (1962) list a Jackrabbit of a species unknown to them, which must have been this species, as introduced on Chappaquiddick. As this Jackrabbit was not suited to the Island habitat, it died out by 1925 and has not been recorded since.

EASTERN COTTONTAIL

Sylvilagus floridanus (J. A. Allen)

The common rabbit of open country and farmland as well as beach and dune areas. Absence of any remains in Indian kitchen middens indicates that it is a newcomer to the Island's fauna. Like

the three preceding species, it was released by the tens of thousands by the Division of Fisheries and Game in the early decades of this century. As many of these rabbits were imported from the mid-western United States, those now on the Island are not assignable to race. Though the Division of Fisheries and Game's records are not exhaustively complete, it appears that this species was first liberated on the Island in the first ten years of this century. There was an epidemic among the population in the spring of 1920, so 40 were trapped on Nantucket where they had previously been released and were liberated on Martha's Vineyard in the fall of that year. In 1926 another 63 imported from the midwest were released on the Island. Since that time the species has flourished. Two specimens taken on the Island are at the University of Michigan, and one skull is in the University of Florida collection.



Eastern Cottontail

NEW ENGLAND COTTONTAIL

Sylvilagus transitionalis (Bangs)

If it still survives on the Island, this species is much less common than the foregoing but should be looked for in the denser forest and woodlands, particularly on the north side of the Island. Before

the Vineyard was cut off from the rest of the mainland and for some time afterward, it was the common species here. This is shown by the presence of remains in Indian kitchen middens as reported by Byers and Johnson (1940), Huntington (1962), and J. H. Waters (pers. comm.). The "conies" referred to by Brereton (1602) surely belong here, bringing its presence up to the beginning of the historical period. It persisted until the end of the nineteenth century as proved by the fact that O. Bangs collected five specimens in West Tisbury in the 1893-1897 period which are now at the Museum of Comparative Zoology, Cambridge (#s B1, B14, B22, B26, and B27). Its population was probably decimated by the rabbit epidemic in the spring of 1920 mentioned above. The disease was almost certainly introduced by the imported Eastern Cottontails, and no New England Cottontails have been reliably reported since that year. If the disease did not destroy them, they have probably been outcompeted since by the slightly smaller Eastern Cottontails which are better adapted for today's warmer climate on the Island. McDonough (1960) reported that it is no longer present here.

EASTERN GRAY SQUIRREL

Sciurus carolinensis Gmelin

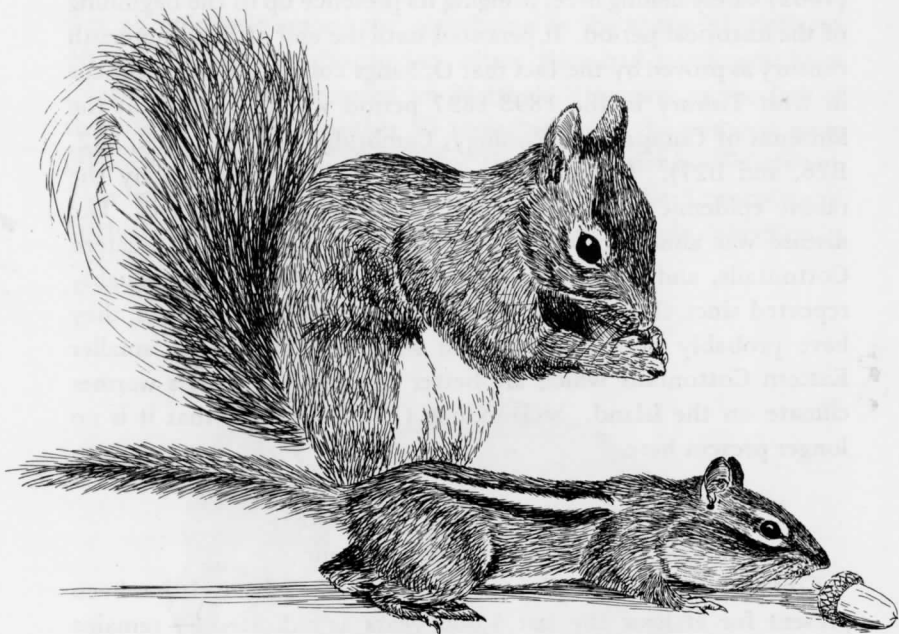
Common resident in all wooded parts of the Island. It has been present for at least the last 1,000 years as indicated by remains found in Indian kitchen middens as reported by J. H. Waters (pers. comm.). Specimens taken on the Vineyard are in the collections of the Museum of Comparative Zoology, Cambridge (2), and at the University of Michigan (4).

RED SQUIRREL

Tamiasciurus hudsonicus (Erxleben)

This species is only known from the Island by remains found in Indian kitchen middens as reported to the author by Dr. J. H. Waters (pers. comm.). It must have been common during the period when the Vineyard was largely covered with coniferous forest and must have been exterminated when these forests were

cut, possibly as recently as 1700. There are two races, either of which could have been the resident population, *T. h. gymnicus* Bangs or *T. h. loquax* Bangs; but so far it has not been determined which of the two lived on the Island. It is not known to be present here today.



Top: Northern Gray Squirrel
Bottom: Eastern Chipmunk

EASTERN CHIPMUNK

Tamias striatus (Linnaeus)

A small, locally-distributed population now exists on the Island. Huntington (1962) said that there were none present then, and the author has never seen one in twenty years of visiting the Vineyard. But Dr. J. H. Waters reports to the author (pers. comm.) that he has observed this species in the summers of 1963, 1965 and 1966. Also, Dr. A. Starrett reported the presence of Chip-

munks on the Island to Bowditch (1965) who did not observe any herself. As extensive good habitat for this species exists on the Vineyard, it is surprising that it is so uncommon unless it has been very recently introduced. Since this seems the most likely explanation for its presence, since the source of any introduced animals is unknown, and since no specimens appear to have been taken yet, it is not possible to assign the Island population to race.

BEAVER

Castor fiber Linnaeus

This species apparently entered the region which now constitutes the Island, Nantucket, Cape Cod and parts of southeastern Massachusetts about 12,000 years ago as shown by Kaye (1962), very soon after the retreat of the glaciers. It was probably common in this period and remained after the Vineyard was separated from the rest of the nearby mainland as shown by the presence of remains in Indian kitchen middens. Such remains are reported by Byers and Johnson (1940) who found a tooth, by Huntington (1962), and by Waters (1962). They were still present at the start of the historical period as mentioned by Brereton (1602) and apparently persisted until about 1750 as indicated by Shaw (1948). About this time the last of the Island population was destroyed, and none are present today.

MARTHA'S VINEYARD WHITE-FOOTED MOUSE

Peromyscus leucopus fusus Bangs

Common resident of all wooded areas on the Island. The insular population is a distinct race known only from Martha's Vineyard and originally described by Bangs (1905). It is significantly larger than mainland forms but has the same coloration. As mentioned above, it has been the subject of a careful study by Bowditch (1965). No other race of this species occurs on the Island. The type specimen and 27 other specimens of this race are at the Museum of Comparative Zoology, Cambridge. Other specimens are at the University of Connecticut (23 skins and 174 skulls taken from Barn Owl pellets), the University of Florida (5), the

University of Illinois (10), and the University of Michigan (81). Waters (1969) has recently suggested that the Martha's Vineyard and Nantucket populations may belong to the same race *Fusus* on the basis of analysis of skeletal measurements, pelage reflectance, and plasma proteins.



Whitefooted Mouse

MUSKRAT

Ondatra zibethica (Linnaeus)

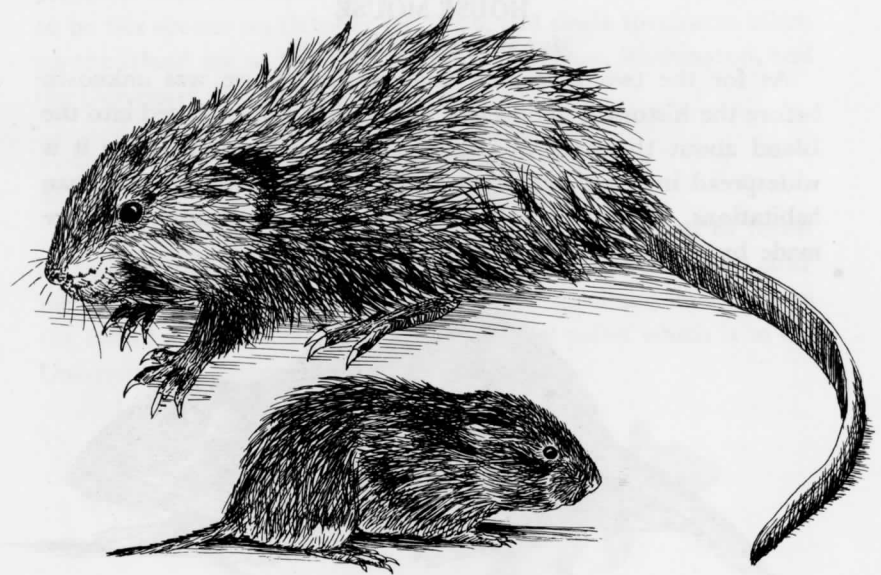
Common in all the fresh-water ponds and marshes on the Island today as it apparently has been for about the last 2,000 years. Remains have been found in Indian kitchen middens as reported by Byers and Johnson (1940), Huntington (1962), and Dr. J. H. Waters (pers. comm.). A specimen taken on the Island by Bangs in 1893 is in the collection of the Museum of Comparative Zoology, Cambridge (#B927).

MEADOW VOLE

Microtus pennsylvanicus (Ord)

Very common resident of open country and woods edges today as it apparently has been for the last 2,000 years at least. Remains have been found in Indian kitchen middens as reported to the author by Dr. J. H. Waters (pers. comm.). The Martha's Vineyard population has been the subject of a study by Starrett (1958) as mentioned above. Specimens taken on the Island are in the following collections: University of Michigan (26), Museum of Comparative Zoology, Cambridge (36), U. S. National Museum, Washington (4), the University of Florida (9), and the University

of Connecticut (14 skins and 1,179 skulls taken from Barn Owl pellets). Studies have shown that this little mouse alone provides over 80% of the food supply for the Barn Owl on the Island, and the same relationship probably holds for several other own species found here.



Top: Muskrat. Bottom: Meadow Vole

BLACK RAT

Rattus rattus (Linnaeus)

Common resident throughout the Island, probably declining somewhat due to competition from the following species. The Black Rat was not present before the historical period and was probably introduced into the Vineyard about the time of the American Revolution (1775-1783) or slightly before. One skull collected on the Island from a Barn Owl pellet is in the University of Connecticut collection.

NORWAY RAT

Rattus norvegicus (Berkenhout)

Common resident in farming country and in all the towns and villages. As for the Black Rat, it was probably introduced into the Island about the time of the American Revolution which was when it was first discovered in the United States.

HOUSE MOUSE

Mus musculus Linnaeus

As for the two preceding species, this mouse was unknown before the historical period and was probably introduced into the Island about the time of the American Revolution. Now it is widespread in populated areas and even well away from human habitations. Bowditch (1965) found tracks she suspected were made by this species in sand dune habitat.



Top: Norway Rat
Bottom: House Mouse

MEADOW JUMPING MOUSE

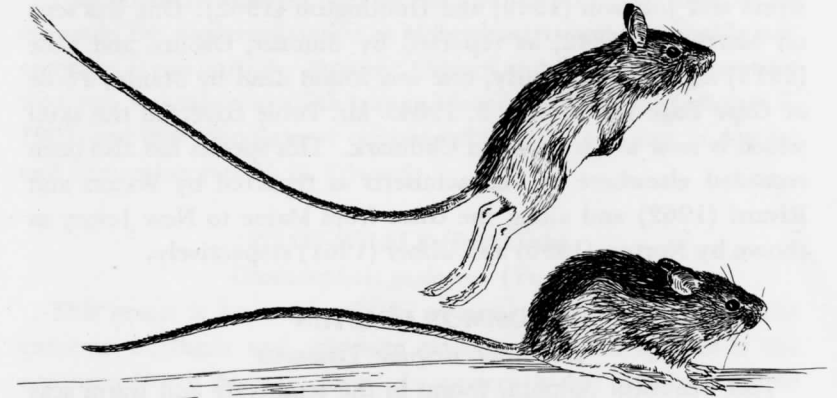
Zapus hudsonius (Zimmerman)

A little-known species of meadows and open country which is probably more common than generally supposed. As mentioned above, when more acres of favorable habitat existed for this species in the late 1800's than do today, it was probably much more common than it is now. The author observed a mouse presumed to be this species on October 18, 1963, and single specimens taken on the Island are at the U. S. National Museum, Washington, and the University of Connecticut.

WOODLAND JUMPING MOUSE

Napaeozapus insignis (Miller)

The counterpart of the preceding species, a resident of forest and woodland. It is almost never seen but is probably more common than generally suspected. The single specimen known from the Island is a skull taken from a Barn Owl pellet which is in the University of Connecticut collection.



Top: Woodland Jumping Mouse
Bottom: Meadow Jumping Mouse

CUVIER'S BEAKED WHALE

Ziphius cavirostris G. Cuvier

This species, widely distributed in the tropical and temperate seas of the world, has occurred in our area on at least two occasions. One came ashore at Squibnocket Beach on July 11, 1963; the skull was

collected four days later by Stanley Poole and now is in the collection of the Museum of Comparative Zoology as specimen number 51459. A male came ashore at Falmouth on the north shore of Vineyard Sound on March 28, 1958 as reported by E. S. Clark (1958); its skull was collected by R. H. Backus and is also in the Museum of Comparative Zoology (specimen number 51381). Just outside our area, one was found stranded at Easton's Beach, Newport, Rhode Island, on March 31, 1961, as reported by Backus and Schevill (1961). Other references to the occurrence of this small whale on the northwestern Atlantic coast include Waters and Rivard (1962) and Ulmer (1961).

SPERM WHALE

Physeter catodon Linnaeus

This species, which ranges in all the seas of the world and primarily in the offshore parts of the ocean, has occasionally been present in the waters off Martha's Vineyard for a long time as indicated by the discovery of teeth in Indian kitchen middens by Byers and Johnson (1940) and Huntington (1962). One was seen on March 29, 1842, as reported by Sumner, Osburn and Cole (1913) and, more recently, one was found dead by Stanley Poole at Cape Poge on October 5, 1964. Mr. Poole collected the skull which is now at his home in Chilmark. This species has also been recorded elsewhere in Massachusetts as reported by Waters and Rivard (1962) and along the coast from Maine to New Jersey as shown by Norton (1930) and Ulmer (1961) respectively.

COMMON DOLPHIN

Delphinus delphis Linnaeus

This beautiful dolphin, found in the temperate and warm seas all over the world but usually out in the open oceans, is occasionally noted near the Island and by fishermen just offshore. Its presence in our area is mentioned by Sumner, Osburn and Cole (1913), and the skull of an individual captured by G. Duys on December 4, 1949 in Oak Bluffs Harbor is in the collection of the Museum of Comparative Zoology which bears the specimen number 44335. Another specimen also collected in our area by W. E. Schevill in

September, 1961, is also at the Museum of Comparative Zoology where it is specimen number 51082. Its appearance elsewhere in Massachusetts is discussed by Waters and Rivard (1962), and it has been found along the coast from Maine to New Jersey as given by Norton (1930) and Ulmer (1961) respectively.

BOTTLE-NOSED DOLPHIN

Tursiops truncatus (Montagu)

This species has almost a world-wide range in warmer waters and is one of the most abundant cetaceans off our part of the continental coast. It is frequently seen by fishermen in the Gulf Stream just south of the Island, and the author saw one in this area on September 7, 1960. It can be expected there and inshore nearer the beaches in summer. Its abundance in Massachusetts generally is discussed by Waters and Rivard (1962).

WHITE-SIDED DOLPHIN

Lagenorhynchus acutus (Gray)

This northern Atlantic species reaches the southern limit of its ranges in the western Atlantic at Massachusetts and is probably not common at our latitude. Sumner, Osburn and Cole (1913) mention that one was taken in a fish trap in Menemsha Bight on October 7, 1901, and that schools were occasionally seen in our area in August and September *vide* V. N. Edwards.

PILOT WHALE (Blackfish)

Globicephala melaena (Traill)

This genus is known in all the oceans of the world except the extreme northern and southern polar seas. This species is the northern North Atlantic form. It apparently has been a visitor to the waters around the Island for centuries as Byers and Johnson (1940) mention tail-bones of a cetacean thought probably to be this species found in Indian kitchen middens about two thousand years old. More recent records include the reference in Sumner, Osburn and Cole (1913) that it was formerly common in schools in Vineyard Sound *vide* V. N. Edwards; one stranded at Gay Head on May 30, 1964; one between Gay Head and Noman's Land on

May 31, 1964; about 75 in a school off West Chop on July 7, 1964; and one stranded at Squibnocket on December 6, 1964. The latter animal proved to be a pregnant female. Its skull and skeleton were collected by Stanley Poole and are now mounted in the entrance hall of the new building of the Woods Hole Oceanographic Institution. Finally, one stranded at Edgartown on July 7, 1967, and its photograph appeared in the *Vineyard Gazette* for July 11, 1967. One also stranded on May 29, 1968, at East Chop; it was helped off the beach and swam away "spiritedly." As can be seen from the above records, this species can be expected at any season of the year but perhaps more often or in larger numbers in the summer months.

HARBOR PORPOISE

Phocoena phocoena (Linnaeus)

The range of this species is principally the North Atlantic and North Pacific Oceans from the region of the Equator northward. Our area is near the southern limit of its abundance in the western Atlantic, where it is only known to have reached as far south as Cape Hatteras, North Carolina, as reported by Caldwell and Golley (1965). Records for the Island include the comment by Sumner, Osburn and Cole (1913) that it was formerly taken in fish traps in Menemsha Bight *vide* V. N. Edwards; a small school of perhaps twenty-five in Vineyard Haven harbor, presumably feeding on herring, on May 24, 1965; and a smaller school in Edgartown Harbor on May 25, 1965. While it might be noted at any time of the year, it is probably more frequent in inshore waters at the time the herring are running.

COMMON RORQUAL (FINBACK)

Balaenoptera physalus (Linnaeus)

This species is of world-wide distribution from equatorial waters to the pack ice in the northern and southern hemispheres and occurs in all oceans. According to Allen (1916), this whale was numerous in southern New England waters until nearly 1900 where it was fished for by a small fleet of ships that concentrated upon

it almost exclusively. With the advent of more efficient whaling techniques in the late 1800's, its numbers in this area began to decline rapidly and they have never fully recovered. Allen also presents a chart showing that this species has occurred in every month of the year but that it is most frequently noted in the period from June through October. However, by far the largest number of sightings is in July, the time when the herring on which it feeds are most numerous in inshore waters. The records for our area include the reference in Sumner, Osburn and Cole (1913) that the species was ". . . formerly seen in Vineyard Sound." Allen (1916) mentions a 62-foot specimen aground on the south side of the Island on March 25, 1858; one presumed to be this species seen just south of Edgartown about July 9, 1885, by Capt. John Winslow; one seen from the Island about August 5, 1889; and a fifty - to sixty-foot animal stranded at Gay Head about August 5, 1905. In addition, Allen mentions large schools of whales, mostly of this species, seen from Noman's Land, Gay Head and Cuttyhunk in the last half of October, 1874. They were apparently attracted by the large shoals of herring spawning in Vineyard Sound at that time. Ten were seen on October 23, 1874. In all, four were harpooned in this period but sank and were not recovered.

HUMPBACK WHALE

Megaptera novaeangliae (Borowski)

This whale is known from all the seas of the world and from equatorial to polar regions in both hemispheres. It apparently was more abundant 100 years ago than it is now but even then was usually found well offshore, only rarely coming within sight of land and even more rarely venturing into inshore waters. According to the chart given by Allen (1916), this species could be expected near our area in the period from April through October and would be much less likely in the other five months of the year. References to this species in or near our area include the mention by Sumner, Osburn and Cole (1913) that this whale was ". . . formerly seen in Vineyard Sound but none for many years. . ." *vide* V. N. Edwards. Also, Allen (1916) gives records for nearby Nantucket

Shoals in 1827, 1852, 1859 and 1863 and one for Newport, Rhode Island, in 1836. These five records involved 18 individual whales in the April to October season.

RIGHT WHALE

Eubalaena glacialis (Borowski)

This large whale is known from the temperate and northern parts of the Atlantic and Pacific Oceans in the northern hemisphere. Another very similar species inhabits the temperate and southern parts of the Atlantic, Pacific and Indian Oceans in the southern hemisphere. The species was formerly much more abundant in the waters near our area in prehistoric times than it is today. Allen (1916) mentions (p. 168) that it was nearly exterminated from the waters adjacent to the Island by 1725 and that it had almost disappeared entirely by 1800. He also suggests that there are two periods of greater abundance off our coast during the year, March through June and September through December, though it might be found offshore in any month of the year. Allen also discusses the history of whaling for this species from Martha's Vineyard and concludes that little whaling of consequence was done here in comparison to other more active nearby places such as Nantucket. Dead Right Whales apparently drifted ashore frequently in the 1700's, causing the inevitable squabbles over their ownership. While the species' numbers were clearly depressed in our area from about 1700 to 1900, the comment by Ulmer (1961) about its status in New Jersey is equally appropriate for Martha's Vineyard: "Today the Right Whale is very rare off our coast, but it is slowly but surely staging a comeback and small groups of these whales are regularly sighted from airplanes along our East Coast all the way from Florida to Nantucket Island." Specific records for our area are given by Sumner, Osburn and Cole (1913); and Allen (1916) mentions three killed or wounded near the Island in February, 1703. More recently, these whales have begun to appear in our area again after a virtual absence for almost 200 years. Mr. W. E. Schevill has told the author that some have been seen in our area each year from 1955 to the present.

Waters and Rivard (1962) mention one of these records by Mr. Schevill in Vineyard Sound in April, 1956; and a tape recording was recently made of one's voice in our area as mentioned by Schevill and Watkins (1962). A fuller documentation of these recent records is under preparation by Mr. Schevill.

INDIAN DOG

Canis familiaris Linnaeus

As pointed out by Norton (1930), the Indians had dogs which were different from those brought with them by the first European settlers of this continent and which some authors have separated into as many as three races. They were partially domesticated by the Indians, may have interbred with wolves or even foxes in the wild occasionally, and were sometimes used by the Indians for food. The latter use and the presence of these animals on the Vineyard is indicated by their remains in Indian kitchen middens about 2,000 years old as reported by Byers and Johnson (1940), Huntington (1962) and Waters (1962). The ". . . dogs like foxes, blacke and sharp nosed. . ." recorded by Brereton (1602) also probably belong here. Any that persisted into the historical period almost certainly interbred with the colonists' dogs, and now any characteristics that made them distinct originally are lost.

RED FOX

Vulpes vulpes Linnaeus

It is not known for certain just when this species reached the Island, but Waters (1962, 1964, 1967a) has shown that it was present at least 4,000 years ago as proven by remains in Indian kitchen middens. Also, the same author suggests that it appears to have been present from then almost continuously until about 1825 with the possible exception of two brief intermissions about 2,500 and 580 years ago respectively. The resident population was gone by about 1825 *vide* Allan Keniston, having been exterminated by the Island sheepmen as suggested by Huntington (1962). In 1877, in the belief that the Red Fox would be an addition to the game animals of the Island, a group of sportsmen imported and released

about a dozen one morning and then held a day-long hunt which failed to recapture a single one. This introduction is mentioned by Manville in deVos, Manville and Van Gelder (1956). Over the next twenty years, the foxes multiplied rapidly and became a serious nuisance. A bounty was then declared on them and the last known one was trapped about 1905 by Harry J. Horton. The Massachusetts Division of Fisheries and Game thought the species exterminated on the Island by 1907. None has been reliably reported since.

GRAY FOX

Urocyon cinereoargenteus (Schreber)

As shown by Waters (1962, 1964, 1967a), this species probably did not occur on the Island until about 1,500 years ago and ". . . probably occurred continuously. . . until after Europeans arrived." The "black foxes" mentioned by Brereton (1602) almost surely belong here. Byers and Johnson (1940) found remains in Indian kitchen middens and, as mentioned by Huntington (1962), this species seems to have been more numerous than the Red Fox on the Island during Indian times. Gray Foxes were probably exterminated by the Island sheepmen, though somewhat earlier than Huntington (op. cit.) suggested. According to Allan Keniston, they were probably gone by 1825 along with the Red Foxes. None has been reliably reported since.

AMERICAN BLACK BEAR

Ursus americanus Pallas

This species, the largest carnivore in the eastern United States, once ranged over all the forested parts of this area but is now becoming regrettably scarce. Its presence on Martha's Vineyard is known from a jaw bone found in an Indian kitchen midden as reported by Huntington (1962) and Waters (1962). It appears to have persisted until the first arrival of Europeans as "bears" are mentioned by Brereton (1602). But it was certainly exterminated very shortly after the first Europeans settled on the Island in 1642.



North American Raccoon

NORTH AMERICAN RACCOON

Procyon lotor (Linnaeus)

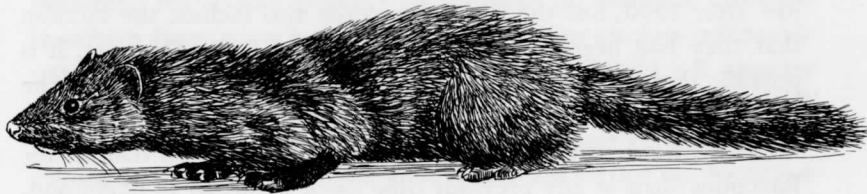
This species is known from remains in Indian kitchen middens as mentioned by Byers and Johnson (1940), Huntington (1962), and Dr. J. H. Waters (pers. comm.). Thus there must have been a resident population prior to the beginning of European settlement. This population was apparently exterminated by 1825, however, due to deforestation of its habitat and the poisoning campaign of the Island sheepmen. The records of the Massachusetts Division of Fisheries and Game show that some were reintroduced into the Island in 1877, and a few seem to have been present until just after 1900, but the Division records also include the opinion that they had been exterminated again by 1907. However, it is possible that a few were able to survive until the present day, the population hardly increasing at all until the last few decades due to the lack of extensive forest. Now there is more good habitat for Raccoons than at any previous time since 1900. In all likelihood,

animals brought to the Island as pets have escaped, and it is rumored that in the early 1960's a small number were surreptitiously introduced by Vineyard residents who wanted them present as a game species. The population is growing now as indicated by the fact that a young one was killed by a car in Chilmark in August of 1963. Also, in 1965, 1966 and 1968 several reports of sighting and of mischief attributed to Raccoons appeared in the *Vineyard Gazette*. Until the population reaches equilibrium on the Island, they will probably continue to increase rapidly and have a detrimental effect on chicken farms and ground-nesting waterfowl and other birds.

AMERICAN MINK

Mustela vison Schreber

This species was present on the Island before the period of European settlement as shown by remains in Indian kitchen middens as reported by Huntington (1962) and Waters (1962). It certainly was exterminated by 1825 due to the destruction of its habitat and trapping for its pelts. There is no record of its presence on the Island from 1825 until the middle 1930's at which time Dr. Hillman and Atherton C. Smith both began raising some as a commercial venture. Together they had a total of about 300 breeders. Their project failed because the winter weather on the Island is not cold enough to produce prime pelts. As was nearly inevitable despite the most careful precautions, a few of these animals escaped, and now there is a small feral population living along a few Vineyard streams. They have persisted until nearly the present day as indicated by the sighting of one in Lambert's Cove on July 12, 1960, by the author and others.



American Mink



Striped Skunk

STRIPED SKUNK

Mephitis mephitis (Schreber)

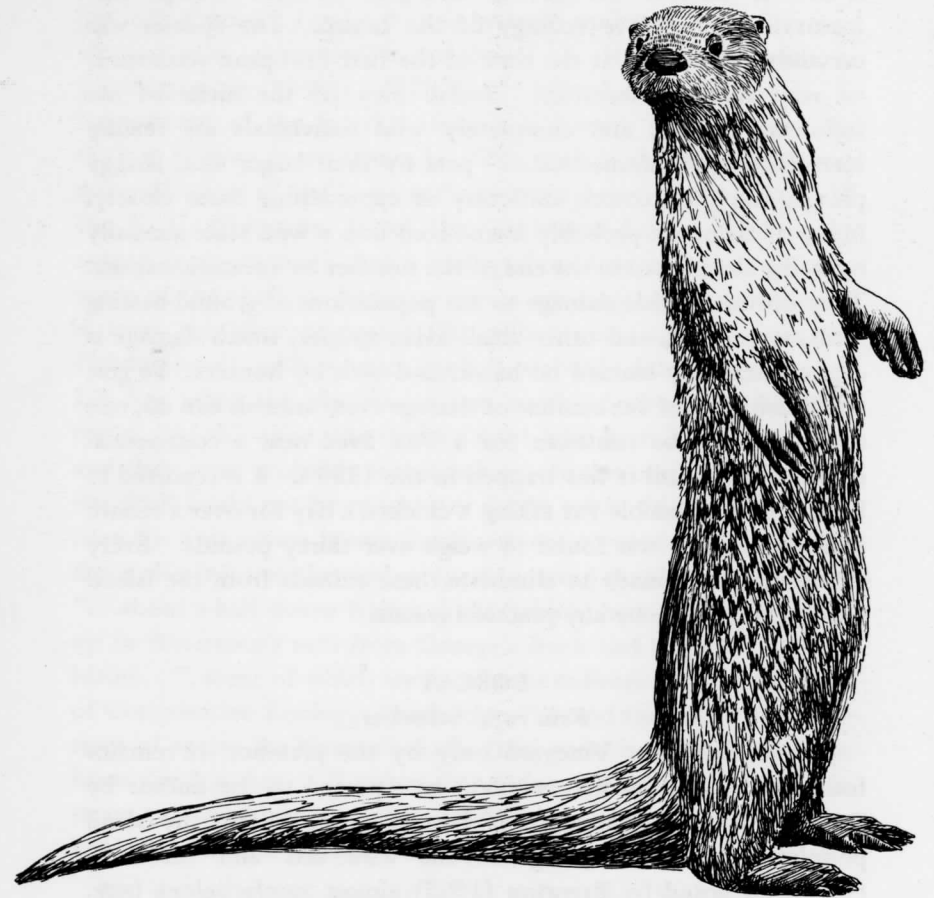
Present on the Island before its settlement by Europeans as shown by remains in Indian kitchen middens as recorded by Byers and Johnson (1940), Huntington (1962), and Dr. J. H. Waters (pers. comm.). As in the cases of the Raccoons and both species of Foxes, it appears that the Skunks were exterminated by the Vineyard sheepmen as suggested by Huntington (*op. cit.*) and due in part for their unusual pelts for which they were trapped. Allan Keniston has told the author that a few persisted until the 1900-1910 period. The resident Island population was apparently somewhat different from the Skunks on the nearby mainland and may have been a distinct race. Unfortunately it is impossible to prove this now. As mentioned by Huntington (*op. cit.*), they seem to

have been larger than those on the nearby mainland and their pelage was what is often called a "Star Skunk," having either no white stripe on their sides or a very slight one and only a small white spot on the forehead and the tip of the tail. Due to their size and coloration, their pelts were more valuable than those of mainland Skunks and the small population succumbed quickly to heavy trapping pressure. Since the 1900-1910 period, no Skunks were reliably reported on the Island until the early 1960's. These reports presumably refer to the race *M. m. nigra* (Peale and Beauvois) and represent animals brought to the Island as pets which escaped or, as in the case of the Raccoons, which were surreptitiously introduced from the mainland about this time. The increase in reports in the 1965-1968 period indicates that there probably is now a small resident breeding population.

NORTH AMERICAN OTTER

Lutra canadensis (Schreber)

This is the Island's commonest large carnivore today. It appears to have been present here for at least several centuries. This is indicated by the presence of remains in Indian kitchen middens as reported by Byers and Johnson (1940), Huntington (1962), and Dr. J. H. Waters (pers. comm.). The species persisted until the first arrival of Europeans, as it is mentioned by Brereton (1602) and has continued to the present. Nearly every large freshwater pond has one or more pair as residents, and individuals have been seen along small streams far from large ponds and in salt water just offshore. In winter, tracks may often be found in the snow at considerable distances from open fresh water. Due to the relatively mild winters, Otter pelts from the Island do not reach prime condition, so the population has never had much trapping pressure and should not in the future. These handsome and delightful animals are an important part of the Vineyard's wild-life and should continue to be protected at all costs.



North American Otter

CAT

Felis catus Linnaeus

This species would not have a place in a paper of this kind were it not for the fact that "House" cats gone wild are an important factor in the wildlife ecology of the Island. The species was certainly introduced at the time of the first European settlement or very shortly thereafter. Today they fill the niche of the following species, and completely wild individuals are readily identified from "domesticated" pets by their larger size, shaggy pelage, and the extreme difficulty of approaching them closely. Many of them are probably introduced into a wild state annually by being abandoned at the end of the summer by vacation visitors. They do inestimable damage to the populations of ground-nesting birds, waterfowl, and other small avian species, which damage is often mistakenly blamed on hawks and owls by hunters. To give one illustration of the amount of damage these animals can do, one so large as to be mistaken for a Fox lived near a commercial chicken farm until it was trapped in the 1950's. It is reported to have been responsible for taking a chicken a day for over a month and when killed was found to weigh over thirty pounds. Every effort should be made to eliminate these animals from the Island as soon as possible by any practical means.

BOBCAT

Felis rufa Schreber

Known from the Vineyard only by the presence of remains found in Indian kitchen middens as reported to the author by Dr. J. H. Waters (pers. comm.). It seems unlikely that the Island population was ever very large, but the "wilde cats" and "luzernes" (= lynxes) noted by Brereton (1602) almost surely belong here. The possibility does exist that Brereton's "luzernes" were the Northern Lynx (*Felis lynx*), but this remains to be proved by further archaeological work. It seems certain that the Bobcats were exterminated shortly after the first European settlement in 1642, and none have been recorded since.

WALRUS

Odobenus rosmarus (Linnaeus)

The occurrence of this species on our area is known only from the recovery of a skull by a fishing dragger from the ocean floor just off Noman's Land. It was brought up in a net by Clarence Morgan who presented it to the U. S. National Museum in Washington in 1962 (#22976). Clifford Kaye of the U. S. Department of the Interior Geological Survey has described the skull as follows (pers. comm.): "The skull is old and shows some mineralization of the bone and advanced decay of the tusks. . ." Dr. F. C. Whitmore, Jr. of the Geological Survey informs the author (pers. comm.) that a radiocarbon date test has not been made of the skull, so its approximate age is not known. Unless it is from the Miocene period (20 million years ago) or from the Pleistocene (1 million years ago), it probably dates from the last Ice Age when the glaciers lay just north of where the Island is today. At this time, the climate must have been ideal for Walrus, and they were probably common here. In this case, it is clear that the skull could not be much over 4,000 years old, for before that time the area where it was found was not covered by the sea. Mr. Kaye also informs the author (pers. comm.) that he has examined "...about a half dozen Walrus skulls (which) have also been picked up in fishermen's nets from George's Bank and from the Gulf of Maine. . .", some of which are now in the collection of the Museum of Comparative Zoology, Cambridge, ". . .and they show the same signs of age as the Noman's skull. (His) guess is that these are also from the Ice Age. . ." rather than belonging to some of the rare strays that have ventured as far south as the coast of northern New England and even Cape Cod in the historical period.

Mr. Kaye also pointed out to the author that Sir Charles Lyell was presented with the front part of a Walrus skull during his visit to the Gay Head cliffs in the early 1840's. It was given to him by a fisherman who said it had come out of the cliffs, though this may have been a supposition on the part of the fisherman. This skull, according to Mr. Kaye, is ". . .somewhat like the one found south of Noman's. . ." and is figured in Lyell (1855).

COMMON SEAL (HARBOR SEAL)

Phoca vitulina Linnaeus

This seal is a common resident and migrant in the southern part of its range from the Arctic south along the eastern coast of the United States, occasionally as far south as the Carolinas. It has been present in the waters around the Island for many years as shown by the presence of remains in Indian kitchen middens. Such remains are reported by Byers and Johnson (1940), Huntington (1962), and Waters (1962, 1967b). The latter author points out that the Harbor Seal was apparently absent from the vicinity of the Island until about 1,500 years ago, however, today it is a frequent visitor, more abundant in winter but a few individuals sometimes lingering through the summer months. While they are usually found only in salt water, occasionally they are known to enter some of the freshwater or brackish ponds when these have been opened to the sea, particularly along the south shore of the Island. By November there are fair numbers of them present at favored locations such as Gay Head and Squibnocket Point, and their numbers have usually declined to only a few by the second week of April. Winter numbers are variable and no work has been done on the number that may be offshore, so good population figures are not available. The maximum number seen from land at one time appears to be 15 seen by the author at Squibnocket Point on December 28, 1960. At least one was seen from the Island in June and July of 1966.

GRAY SEAL

Halichoerus grypus (Fabricius)

This species is a common resident and migrant in the southern part of its range along the shores of the northern Atlantic Ocean from Europe around to the New England coast of the United States. As for the preceding species, its presence in the waters around the Island for many centuries is indicated by remains found in Indian kitchen middens. Remains have been reported by Byers and Johnson (1940), Huntington (1962), and Waters (1967b). As shown by the latter author, "...the Gray Seal was taken by the Indians in the vicinity of Martha's Vineyard about



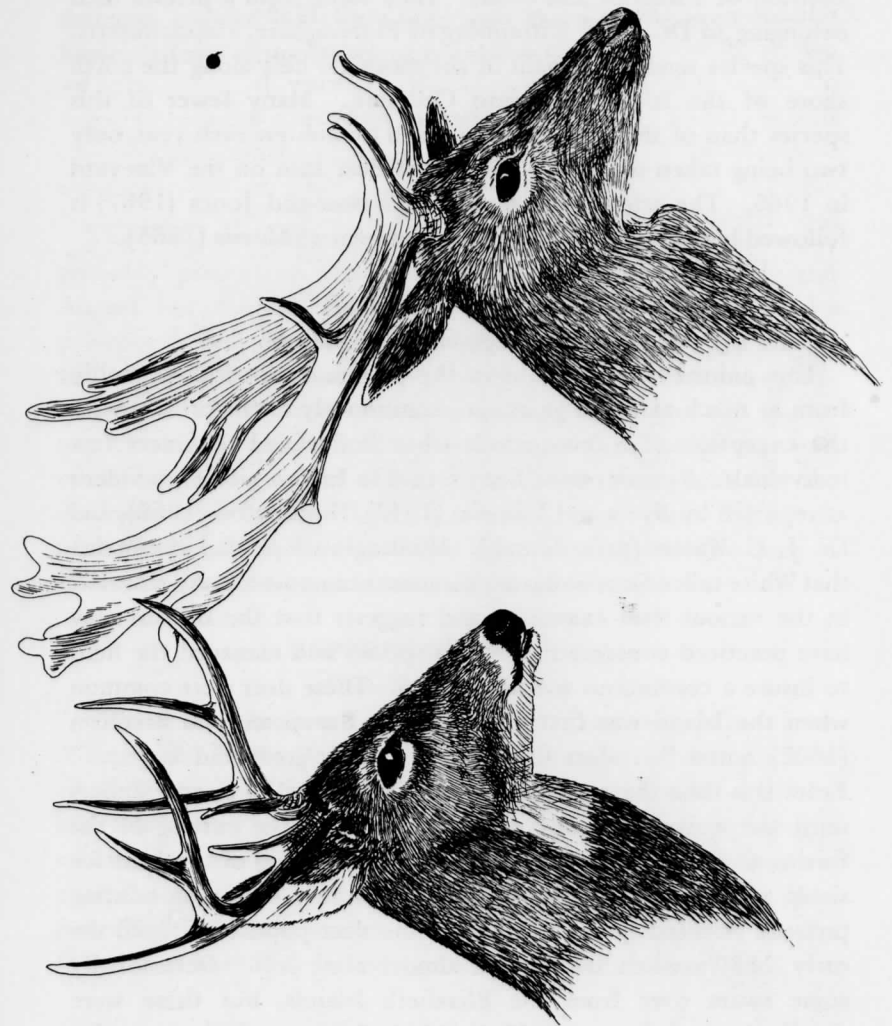
Right: Gray Seal
Left: Common Seal

4,000 years ago, but apparently not again until about 2,500 years later." Since that time, the species seems to have been present for the next thousand years. But after that, there is no reliable record even for nearby areas until 1962 when a breeding colony of about fifteen animals was found on Muskeget Island off the west end of Nantucket by W. H. Drury, Jr., as reported by Baxter (1963). Also, in February of 1964, one was shot between Naushon and Nanomessett in the Elizabeth Islands, and one was observed by the author at Squibnocket Point in company with four Harbor Seals on the 21st of that month. In February of 1965, a pup was found on the beach at Oak Bluffs but, despite every attempt, could not be kept alive in captivity. Pictures of it appeared in the *Vineyard Gazette* for March 5, 1965. It now appears that the "horseheads" referred to by fishermen in Island waters have been this species which would indicate its presence in winter at least since the 1920's. The exact season when it is present near the Vineyard is still to be learned. Fishermen have also suspected that this seal may breed on the east side of Noman's Land; further work also needs to be done to confirm this possibility.

FALLOW DEER

(*Platyceros dama* (Linnaeus))

The introduction of this species into Martha's Vineyard is reported by Manville in deVos, Manville and Van Gelder (1956) and by Waters and Rivard (1962). In the belief that it would be an addition to the game animals of the Island, the Martha's Vineyard Rod & Gun Club arranged through the Massachusetts Department of Conservation, Division of Fisheries and Game, to obtain some animals from the Lake View Park in Worcester, Massachusetts. The records are a bit vague, but it appears that either three or five animals were liberated in 1932 and that ten more does were released in March of 1938, all from the same source. The introduction succeeded, and Waters and Rivard (*op. cit.*) quote Natural Resources Officer James E. Bannister as saying that the herd numbered about 150 animals in 1962. On May 10, 1968 four pregnant does were released in Chilmark under the auspices of the



Right: Fallow Deer
Left: White-tailed Deer

Martha's Vineyard Rod and Gun Club and the Massachusetts Division of Fisheries and Game. They came from a private herd belonging to Dr. N. H. Wittenborg of Framingham, Massachusetts. This species tends to remain in the morainal hills along the north shore of the Island west into Chilmark. Many fewer of this species than of the following are taken by hunters each year, only two being taken out of a total of 161 deer shot on the Vineyard in 1966. The scientific name of Anderson and Jones (1967) is followed here in preference to the treatment of Morris (1965).

WHITE-TAILED DEER

Odocoileus virginianus (Boddaert)

This animal was common in the prehistoric period, probably from as much as 4,000 years ago continuously to the present with the exception of a few periods when it declined to a very few individuals. Remains have been found in Indian kitchen middens as reported by Byers and Johnson (1940), Huntington (1962), and Dr. J. H. Waters (pers. comm.). Huntington (*op. cit.*) comments that White-tailed Deer bones are the most numerous of any mammal in the various sites examined and suggests that the Indians may have practiced conservation of this species and managed the herd to insure a continuous source of food. These deer were common when the Island was first discovered by Europeans and Brereton (1602) noted ". . . deer in great store, very great and large. . ." From this time the resident population survived in good numbers until the arrival of many Europeans. Then the cutting of the forests to build houses and ships and the clearing of the land for sheep raising reduced the available habitat. This plus hunting pressure resulted in the decline of the deer population until the early 1880's when there were almost none left. Occasionally some swam over from the Elizabeth Islands, but these were usually hunted down quickly because there was little cover for them and no seasons during which they could not be hunted. After 1900, as heavier forest began to reappear on the Island, continued immigration of deer from the Elizabeth Islands made it possible for a breeding population to reestablish itself. This

population has continued to grow to the present day and now can be estimated at well over 1,000 animals which live in all parts of the area covered by this paper with the possible exception of Noman's Land where its status is unknown.

HYPOTHETICAL LIST

BIG BROWN BAT

Eptesicus fuscus (Beauvois)

This bat, the largest species in the eastern United States, is probably present on the Island during the months of July and August but nothing else about its status here is known. Its presence is only suspected from sight observations by the author and others. The author is unaware of any specimens taken on the Island. In the mid-summer months, bats presumably of this species are occasionally seen at dusk flying over open fields at the west end of the Island in company with other small bats from which they are distinguishable by their larger size and strong, erratic flight. It probably breeds on the Island, but more work needs to be done to clarify its exact status and abundance at all seasons.

EUPHROSYNE DOLPHIN

Stenella styx (Gray)

This species, known from tropical and temperate parts of the Atlantic and Pacific Oceans, may possibly have occurred in our area once. Waters and Rivard (1962) record its presence at Woods Hole, but this record may be apocryphal as many specimens brought ashore there by ships have got into the literature for that location even though they were actually captured many miles at sea. Mr. Schevill informs the author that this is a pelagic species usually found in at least fifty fathoms of water and not close to shore.

GRAY GRAMPUS

Grampus griseus (G. Cuvier)

This species, which inhabits most of the oceans of the world, while not rare, has never been recorded within our narrowly-defined area. But it is included here on the strength of its

occurrence in Buzzard's Bay little more than a mile northwest of Naushon Island on July 6, 1960, when a small group was seen by Schevill and Poole. Other Massachusetts records are listed by Waters and Rivard (1962) and three records for New Jersey are given by Ulmer (1961).

LESSER RORQUAL (MINKE WHALE)

Balaenoptera acutorostrata Lacépède

This is a cosmopolitan species in the oceans of the world. In the north Atlantic, it occurs only as far south as Florida on the west and the Mediterranean on the east. While it is probably not particularly rare, it is rarely noticed, in part due to its similar appearance to the Finback. Adults of this species are smaller than those of the Finback and have shorter baleen, but these are not safe characters for field identification to the untrained eye. No certain records exist for our area, but the species is included here because of several records known just outside our boundaries. Sumner, Osburn and Cole (1913) mention one stranded at Monomy Point on July 11, 1883. Allen (1916) mentions three records for Nantucket and four records for nearby Rhode Island which he felt probably were of this species due to the small size of the animals described to him.

BLUE WHALE

Balaenoptera musculus (Linnaeus)

This species, the largest mammal ever to live on the face of the earth, is known from all the oceans of the world but is most numerous north of 35° N. and south of 40° S. latitude in both hemispheres. It has apparently never been too common along the entire coast from Maine to New Jersey in historical times as Norton (1930) and Sumner, Osburn and Cole (1913) had no positive records for their areas and Ulmer (1961) had only one. Allen (1916) gives four possible records for New England which he viewed as "...most slender evidence for admitting the species to the list of New England mammals." One of these four records has subsequently been shown by Norton (1930) to probably have been a Finback.

Another of these records given by Allen is of a whale "...shot and killed with a bomb lance off Canapitset that was said to have been a (Blue Whale), though no details are given. . ." The time of this occurrence was about the middle of October, 1874, in Vineyard Sound when large schools of whales, mostly Finbacks, were present in the area. The only probable record for this species in Massachusetts seems to be the one at Lynn in the 1800's as mentioned by Allen (1916). A note in the *Vineyard Gazette* for June 10, 1966 (p. 5), mentions an "...80-foot whale. . ." aground on the Island which only could have been this species if it had been a whale. However, it proved to be a 27-foot Basking Shark on further investigation *vide* Mrs. Stanley Poole.

HOODED SEAL

Cystophora cristata (Erxleben)

This Arctic species ranges south to Nova Scotia along the western Atlantic Coast and, while no definite record exists for our area, may have reached the waters around the Island once. As reported by Sumner, Osburn and Cole (1913), "To this species perhaps belongs a seal said by Mr. V. N. Edwards to be several times as large as the Harbor Seal and seen by him during more than one season in Lackey's Bar. . ." on the south side of Naushon Island. While Mr. Edwards' observations may have been of a Gray Seal which these authors do not include in their list, some credence may be lent to this identification by the presence of a Hooded Seal at Providence, Rhode Island, as reported by Waters and Rivard (1962).

BIBLIOGRAPHY

- Allen, G. M. 1916. The Whalebone whales of New England. *Memoirs of the Boston Soc: Nat. Hist.*, Vol. 8, No. 2.
- Anderson, S., and J. K. Jones, Jr. 1967. *Recent mammals of the world*. Ronald Press, New York.
- Backus, R. H., and W. E. Schevill. 1961. The stranding of a Cuvier's beaked whale (*Ziphius cavirostris*) in Rhode Island, U. S. A. *Norsk Hvalfangsttidende*, 50 (5):189-193.
- Bangs, O. 1902. Descriptions of two new, insular Blarinas from eastern Massachusetts. *Proc. New England Zool. Club*, 3:75-78.
- Bangs, O. 1905. Notes on deer mice (*Peromyscus*) of some of the islands on the southern New England coast. *Proc. New England Zool. Club*, 4:11-15.
- Banks, C. E. 1911. *The history of Martha's Vineyard, Massachusetts*. Vol. I, General history; Vol. II, Town records. Dean Co., Boston.
- Baxter, J. 1963. The horseheads of Nantucket. *Mass. Audubon*, 47 (4):169-171.
- Bowditch, A. J. 1965. *Terrestrial mammals of Martha's Vineyard, Massachusetts*, with special reference to *Peromyscus*. *Smith College, Edwin H. Land Prize Essays*, Northampton.
- Brereton, J. 1602. *A briefe and true relation of the discoverie of the north part of Virginia*. London. Dodd, Mead and Co. *Reproduction* (1903), New York.
- Burt, W. H., and R. P. Grossenheider. 1956. *A field guide to the mammals*, Houghton Mifflin Company, Boston.
- Byers, D. S., and F. Johnson. 1940. Two sites on Martha's Vineyard. *Papers Robert S. Peabody Found. Archaeol.*, 1:1-103.
- Caldwell, D. K., and F. B. Golley. 1965. Marine mammals from the coast of Georgia to Cape Hatteras. *Jour. Elisha Mitchell Sci. Soc.*, 8 (1):24-32.
- Chamberlain, B. B. 1964. *These fragile outposts*. The Natural History Press, Garden City, New York.
- Clark, E. S., Jr. 1958. Cuvier's beaked whale (*Ziphius cavirostris*) strands on Cape Cod beach, U. S. A. *Norsk Hvalfangsttidende*, 47 (6):291-293.
- Corbet, G. B. 1966. *Terrestrial mammals of western Europe*. Dufour Editions, London.
- De Vos, A., R. H. Manville, and R. G. Van Gelder. 1956. Introduced mammals and their influence on the biota. *Zoologica*, 41:163-194.
- Griscom, L., and G. Emerson. 1959. *Birds of Martha's Vineyard*. Privately printed at the Anthoensen Press, Portland, Maine.
- Hamilton, W. J., Jr. 1963. *The mammals of eastern United States*. Hafner Publishing Co., New York.
- Hine, C. G. 1908. *Story of Martha's Vineyard*. Hine Brothers, New York.
- Huntington, E. G. 1962. The animal food supply of Vineyard Indians. *Dukes County Intelligencer*, 4 (2):35-39.
- Kaye, C. A. 1962. Early postglacial beavers in southeastern New England. *Science*, 138 (3543):906-907, November 23.
- Latimer, W. J. 1925. Soil survey of Dukes and Nantucket Counties, Massachusetts. Report #28, Series 1925. *Bur. Chemistry and Soils, U. S. Dept. of Agriculture*, Washington, D. C.
- Lyell, C. 1855. *Travels in North America, in the years 1841-42*. John Murray, London; Vol. 1, opposite p. 258, Plate V, second edition.
- McDonough, J. J. 1960. The cottontail in Massachusetts. *Mass. Div. Fish and Game*.
- Morris, D. 1965. *The mammals, a guide to the living species*. Harper & Row, Publishers, New York.
- Norton, A. H. 1930. Mammals of Portland, Maine, and vicinity. *Proc. Portland Soc. Nat. Hist.*, Vol. IV, Part 1, pp. 1-151.
- Ogden, J. G. 1958. Wisconsin vegetation and climate of Martha's Vineyard, Massachusetts. Ph. D. Thesis. Yale University.
- Ogden, J. G. 1959. A late-glacial pollen sequence from Martha's Vineyard, Massachusetts. *Am. Jour. Sci.*, 257:366-381.
- Ogden, J. G. 1961. Forest history of Martha's Vineyard, Massachusetts. I. Modern and pre-colonial forests. *Am. Midland Naturalist*, 66:417-430.
- Ogden, J. G. 1963. The Squibnocket cliff peat: radiocarbon dates and pollen stratigraphy. *Am. Jour. Sci.*, 261:344-353.
- Shevill, W. E., and W. A. Watkins. 1962. Whale and porpoise voices. Contribution No. 1320, Woods Hole Oceanographic Institution, Woods Hole, Mass. (pamphlet accompanying a phonograph record.)
- Shaler, N. S. 1888. Report on the geology of Martha's Vineyard. *U. S. Geological Survey Annual Report*, 7:297-363.
- Shaw, S. P. 1948. The beaver in Massachusetts. *Res. Bull. 11, Massachusetts Dept. Conservation*.

- Starrett, A. 1958. Insular variation in mice of the *Microtus pennsylvanicus* group in southeastern Massachusetts. Ph. D. Thesis, Univ. of Michigan.
- Sumner, F. B., R. C. Osburn, and L. J. Cole. 1913. A biological survey of the waters of Woods Hole and vicinity. *Bull. U. S. Bur. Fisheries*, 2 (31):780-782.
- Ulmer, F. A., Jr. 1961. New Jersey's whales and dolphins. *New Jersey Nature News*, 16 (3):80-93.
- Waters, J. H. 1962. Some animals used as food by successive cultural groups in New England. *Bull. Archaeol. Soc. Conn.*, number 31, pp. 32-46.
- Waters, J. H. 1964. Red fox and gray fox from New England archaeological sites. *Jour. Mamm.*, 45 (2):307-308.
- Waters, J. H. 1967a. Foxes on Martha's Vineyard, Massachusetts. *Jour. Mamm.*, 48 (1): 137-138.
- Waters, J. H. 1967b. Gray seal remains from southern New England archaeological sites. *Jour. Mamm.*, 48 (1):139-141.
- Waters, J. H. 1969. The systematic position of white-footed mice, genus *Peromyscus*, of Nantucket, Massachusetts. *Jour. Mamm.*, 50 (1):129-132.
- Waters, J. H., and C. J. J. Rivard. 1962. Terrestrial and marine mammals of Massachusetts and other New England states. Standard-Modern Printing Co., Inc. Brockton, Massachusetts.

Some Publications

OF THE DUKES COUNTY HISTORICAL SOCIETY ON SALE
AT ISLAND BOOK STORES AND IN THE SOCIETY'S LIBRARY.



Whaling Wives by Emma Mayhew Whiting and Henry Beetle Hough. A new edition. 294 p., illustrated. Cloth \$4.50.

Capawack Alias Martha's Vineyard by Warner F. Gookin. 58 p. Cloth \$1.00.

Martha's Vineyard A Short History and Guide. Eleanor Ransom Mayhew, Editor. New edition with added index. Maps and illustrations. 191 p. Paper \$2.50.

Our Enchanted Island by Marshall Shepard. An attempt to prove that Martha's Vineyard is the Island of Shakespeare's *Tempest*. Paper, 50¢.

The Heath Hen's Journey to Extinction by Henry Beetle Hough. 31 p., illustrations. Paper 50¢.

The Fishes of Martha's Vineyard by Joseph B. Elvin. With 36 illustrations of fishes by Will Huntington. Paper, 50¢.

The History of Martha's Vineyard by Charles Edward Banks. A new edition. Indices, illustrations, three volumes. Cloth \$25.00.

Tales and Trails of Martha's Vineyard by Joseph C. Allen. 234 p. Illustrated. Paper \$3.95. When ordering by mail please add 25¢ to cover postage and handling.

"Cap'n George Fred" Himself. The autobiography of Captain George Fred Tilton of Chilmark. A new edition. Cloth. \$6.50

Wild Flowers of Martha's Vineyard by Nelson Coon. Illustrated, paper. \$3.95

An Introduction To Martha's Vineyard by Gale Huntington. Paper. \$3.50