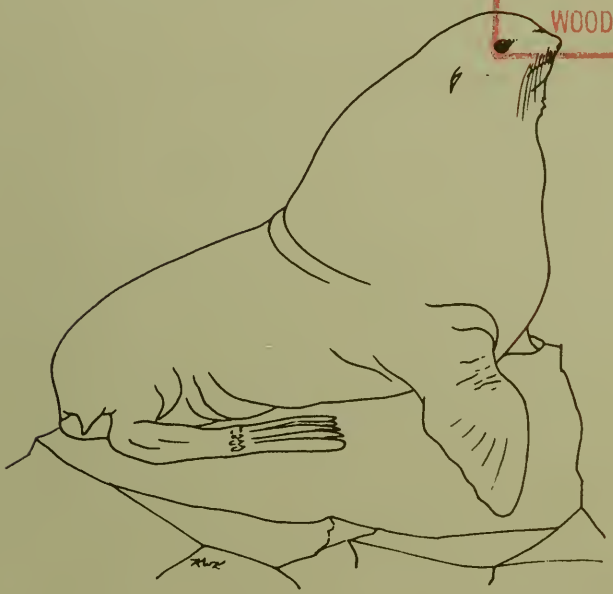
THE SEALS, SEA-LIONS, AND SEA OTTER OF THE PACIFIC COAST



UNITED STATES DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
CIRCULAR 32

THE SEALS, SEA-LIONS, AND SEA OTTER OF THE PACIFIC COAST

Descriptions, Life History Notes,

Photographs and Drawings

by

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Circular 32

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PREFACE

The purpose of this circular is to present brief descriptions, drawings, and photographs to assist in identifying the seals, sea-lions, walrus, and sea otter of the Pacific from Mexico to Point Barrow and the Hawaiian Islands. For each of twelve species the physical characteristics, range, and habits are summarized to provide a convenient source of life-history information. Some sources of information are given on page 30 for those who are interested in learning about these mammals in greater detail. The diagnostic features are summarized in key form on pages 31-33. Where the length of an animal is given, reference is made to a straight line from the tip of the nose to the tip of the tail flesh, not to the tip of the hindflippers.

Many details of anatomy, feeding habits, migration, and reproduction are still unknown. They offer an interesting field of research to those who have an opportunity to observe or collect marine mammals.

Published information has been drawn on freely. In addition, information and cooperation have been generously extended by: Frank G. Ashbrook, Dr. I. McT. Cowan, Philip A. DuMont, Francis H. Fay, Dr. Raymond Gilmore, Dr. Carl L. Hubbs, Johnson A. Neff, Ford Wilke, and the San Diego Zoological Society.

Most of the information in this circular was included in Wildlife Leaflet 344, issued in February 1953. The supply of that leaflet was soon exhausted; because of many requests for the information, it is reissued as a circular to provide wider distribution. This revision includes corrections and six additional pinnipeds found in the North Pacific area. Although the title implies that these animals are to be found along the Pacific Coast, one species, the monk seal, occurs only in Hawaiian Territorial waters.

SCIENTIFIC CLASSIFICATION OF THE SPECIES

Phylum: Vertebrata (animals with a backbone)

Class: Mammalia (warm blooded, milk-giving animals)

Order: Carnivora (flesh eaters)

Suborder: Fissipedia (animals with feet)

Family: Mustelidae (weasel group)

Enhydra lutris (SEA OTTER)

Suborder: Pinnipedia (animals with flippers)

Family: Otariidae (eared seals)

Callorhinus ursinus (NORTHERN FUR SEAL)

Arctocephalus townsendi (GUADALUPE FUR SEAL)

Eumetopias jubata (STELLER SEA-LION)

Zalophus californianus (CALIFORNIA SEA-LION)

Family: Odobenidae

Odobenus rosmarus divergens (PACIFIC WALRUS)

Family: Phocidae (earless seals)

Phoca vitulina (HARBOR SEAL)

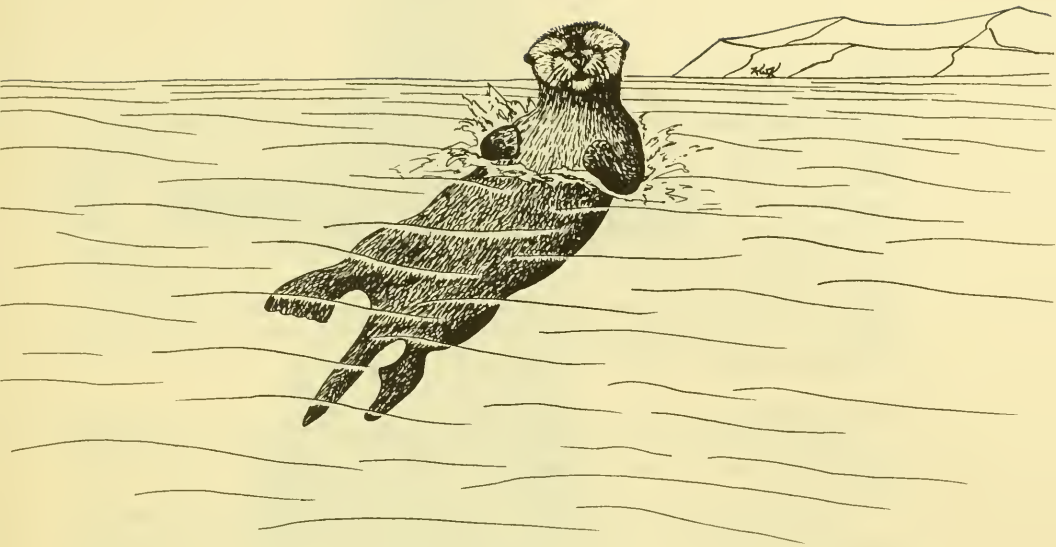
Phoca fasciata (RIBBON SEAL)

Phoca hispida (RINGED SEAL)

Erignathus barbatus (BEARDED SEAL)

Monachus schauinslandi (HAWAIIAN MONK SEAL)

Mirounga angustirostris (NORTHERN ELEPHANT SEAL)



SEA OTTER

The sea otter was once numerous along the Pacific Coast. By 1900, American, English, and Russian fur hunters had nearly exterminated it. Now in remote areas of the Aleutian Islands and along the Alaska Peninsula it has increased under strict protection. Its soft fur is of fine quality and the few pelts confiscated by the Government brought from $20 up to $465 apiece. Sea-otter skins have reputedly sold as high as $2,500. It is a violation of the Federal Law to possess a sea-otter pelt without a permit.

Description

The adult male is about 4-1/2 feet in length and weighs up to 85 pounds; the female 4 feet and 55 pounds; the newborn young 16 to 22 inches and 3 to 5 pounds.

The dark brown fur of the sea otter is 1 to 1-1/2 inches long with scattered guard hairs. In the adult these hairs are often black or silver. The face is light in color, and is flatter than that of any seal.

Sea otters are gregarious, and a group of a hundred or more may remain together for a long time, resting or playing near some favorite kelp bed. When the weather is mild the animals spend most of their time in the water but during storms they take refuge among the rocks along the beach. The sea otter walks clumsily on land and early fur hunters took advantage of this fact to hunt them with clubs at favorite hauling-out places in stormy weather.

The large, flat molar teeth of the sea otter are distinctive, differing greatly from the sharply pointed molars of seals and sea-lions.

Many sea otters are exceptionally tractable and will take food from the hand within a few minutes after capture. Such animals seem almost oblivious to human presence.

Vocal sounds vary from the harsh kitten-like mewing of the pup to the grunts, growls, and high pitched shrieks of the adults.

Range

The former range of the sea otter in America was along the entire Pacific Coast from central Lower California to the tip of the Aleutian chain. After 40 years of complete protection there are now thousands of sea otters scattered among the Aleutian Islands and islands off the Alaska Peninsula. No complete population estimate has ever been made. Otters are spreading slowly under strict protection to new areas in Alaska from the several well established colonies. Along the Washington and Oregon coasts they are completely gone. Up to 1935 they were believed to be extinct in California, when a group of 94 animals was discovered near Monterey. The California population has been reported as high as 500 but many observers believe this figure too high.

Breeding habits

Mating is said to take place in the sea and, according to conflicting reports, the single young is born on the floating kelp beds and on rocks near the sea.

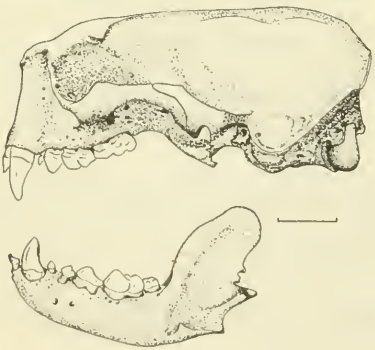
The pupping season is problematical. Newly born young have been observed in early March in the Aleutian Islands, Alaska. In late May a female in advanced pregnancy was found in California. In late August very young pups have been observed in California and in the Shumagin Islands of Alaska. Mating activities were observed continuously from mid-April to early September off California. A 19th century sea-otter hunter states that there is no particular breeding season and that young of all ages are met with the year around.

The pup is carried on the mother's chest as she swims backward. When the mother dives for food the pup is left floating on the surface. The mother floats high on her back while the pup nurses from her abdominal nipples.

Feeding habits

The sea otter feeds in water from 20 to 150 feet in depth where it dives for abalones, chitons, sea urchins, clams, crabs, and other shellfish. Fish are also eaten. It is said that a sea otter will bring a rock to the surface which it uses as an anvil on which to break the hard shells of mollusks.

Sea otters require a large amount of food and digestion is very rapid.

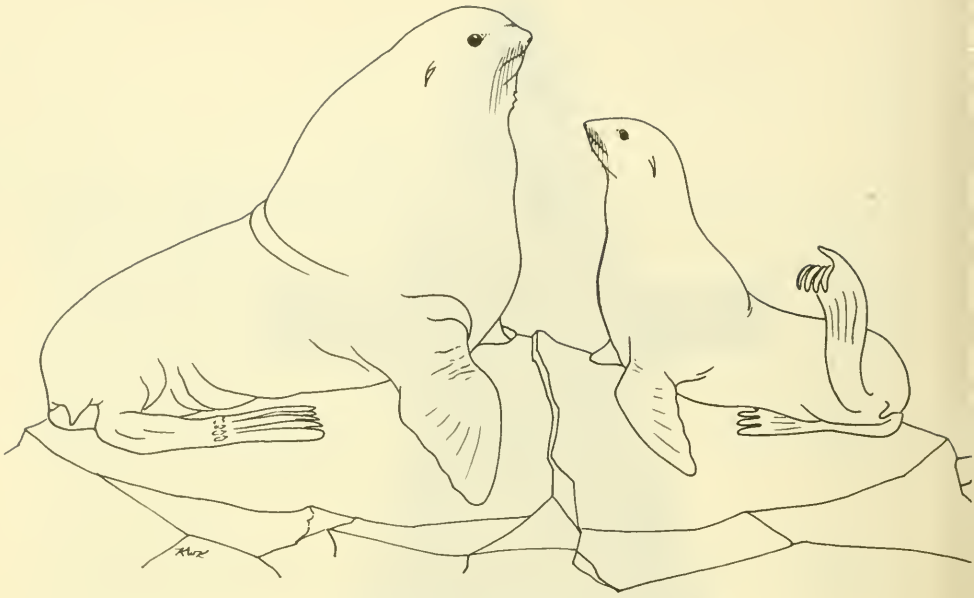


Sea otter, adult male.
Scale line: one inch.

SEA OTTER

(young male)

Distinguished from the seals and sea-lions by long tail; paws rather than flippers on front feet, heavy underfur and sparse guard hair.



NORTHERN FUR SEAL

The fur seal of the North Pacific is commercially the most valuable seal in the world. Every year during June and July, under the supervision of the Fish and Wildlife Service, 60,000 to 70,000 young males are killed for their furs. The annual harvest on the Pribilof Islands, Alaska, has a gross value of about $5,000,000. The governments of the United States, Canada, and Japan prohibit their nationals from killing seals at sea.

Intensive sealing activities have twice brought the seal herd to the verge of extinction. Since 1911, however, careful conservation has allowed the herd to reach its present size of a million and a half animals.

Natural mortality among fur seals in their early years is high. In 1954 over 100,000 dead pups were counted on the Pribilof Islands. Most of these died as a result of hookworm infestation. Many more succumb to the rigors of their first year at sea. Of the total pups born each year it is estimated that more than 70 percent die before reaching their third birthday.

Description

The adult male ranges in length from 7 to 8 feet and weighs up to 600 pounds; the adult female, 5 to 5-1/2 feet and up to 130 pounds; the pup at birth about 25 inches and 12 pounds.

At sea, the dark brown color of the adult male contrasts with the silvery gray of the young male and the female. On land the gray coat of the female soon turns to a dirty brown. As a fur seal rises partly out of the water to watch a passing ship, a light patch across its chest is a good identifying mark.

At birth the pup is shiny black. During the late summer, at an age of six to eight weeks, the first coat is shed and is replaced by a gray pelage similar to that of the older animals, though brighter.

The voice of the fur seal female and young is a sheep-like bleat; of the adult male a sustained, deep-throated bellow.

The maximum length of life is not known but marked animals aged 18 and 21 years have been observed on the Pribilof Islands.

Range

Fur seals of the genus Callorhinus are restricted to the North Pacific Ocean, Bering, Okhotsk, and Japan Seas. They breed in the Bering Sea on St. George, St. Paul, Copper, and Bering Islands, and on Robben Island in the Okhotsk Sea. The seals on the first two are under American jurisdiction while the others are controlled by Soviet Russia. Over 100,000 fur seals have been marked with metal flipper-tags on the Pribilof Islands since 1940. Recovery of these tags at sea and along the coast shows that the main body of the Pribilof herd migrates in winter to the waters off the North American continent, a few individuals swimming as far as 2,000 miles south to the Mexican border. A number migrate to Asian waters, mostly off the northern islands of Japan. Most adult males and some stragglers of other age and sex classes remain in Alaska waters. The majority of the tagged Pribilof seals are captured on the island of their birth. Although immature seals may come ashore at some distance from their rookery of birth, tag returns indicate that as they approach breeding age they tend to return in increasing proportions to the exact place of their birth.

From studies of tag recoveries, commercial kill statistics, aerial photographs, and sample counts, the total summer population of Pribilof fur seals is placed at about 600,000 newborn and 1,300,000 older animals. Census studies are still in progress and population figures are subject to some revision.

Breeding habits

The breeding seals gather on well-worn "rookeries," where each male recruits a harem of 10 to 100 females; average about 40. The cow gives birth to a single pup in late June or July after a gestation period of approximately 1 year. Mating takes place from 5 to 7 days after the pup is born. The female remains on shore until after mating. She then goes to sea to feed for a period of about 5 days before returning to nurse her pup. Thereafter, her feeding trips last about 8 days and 1 to 2 days are spent ashore with her pup. After a 3-month nursing period the mother puts out to sea for the winter migration and the pup is left to fend for itself.

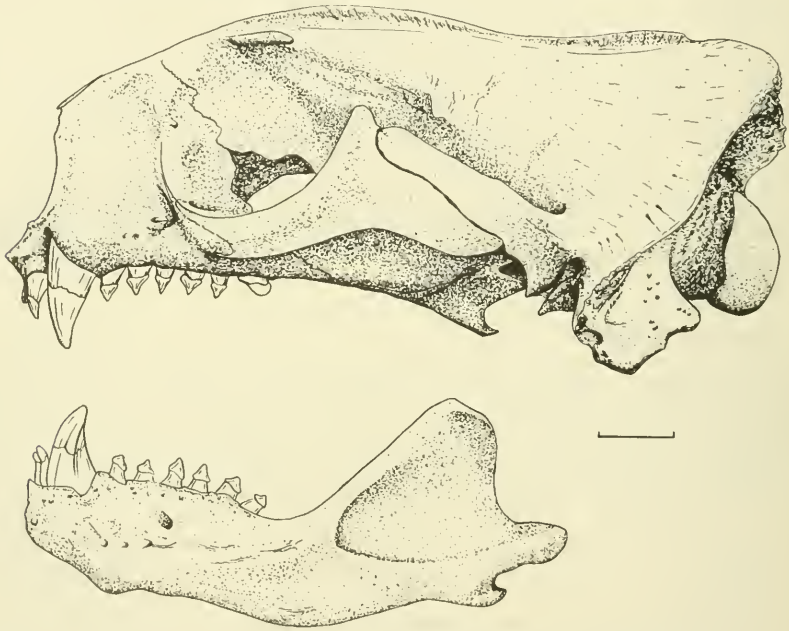
Females reach sexual maturity at the age of 3; males at 4 or 5. Some females bear pups at age 4, but males are seldom large and strong enough to participate in breeding-ground activity until 7 or 8 years of age.

Feeding habits

Fur seals feed principally in offshore areas. They are known to descend to a depth of 240 feet. Only rarely and at certain places do they approach land during their long winter migration. Stomach analyses indicate that, while at sea, they feed principally on squid and small schooling fishes. At certain places along the coasts of southeastern Alaska and British Columbia, fur seals enter straits and bays in the winter and early spring to gorge on herring and capelin.

Some fishermen maintain that fur seals destroy large numbers of salmon, so biologists have made efforts to evaluate the depredation. To date, 4,935 fur-seal stomachs have been collected and examined, many of them where salmon were available at the time. Salmon flesh was found in 72, or 1.5 percent of the stomachs. Many of the stomachs were taken by Indians along the coast where salmon are commonly found. Since the majority of seals feed far at sea, the importance of salmon in their year-round diet is probably less than 1 percent. During the salmon runs, practically all fur seals are on or near their breeding islands in the Bering Sea, where their food was found to consist largely of small fishes of the cod and pollack family, sandfish, and sea poachers.

Stomachs taken from adult female fur seals seldom contain as much as 7 to 8 pounds of food. Seals in captivity may consume up to 14 percent of their body weight in food per day.

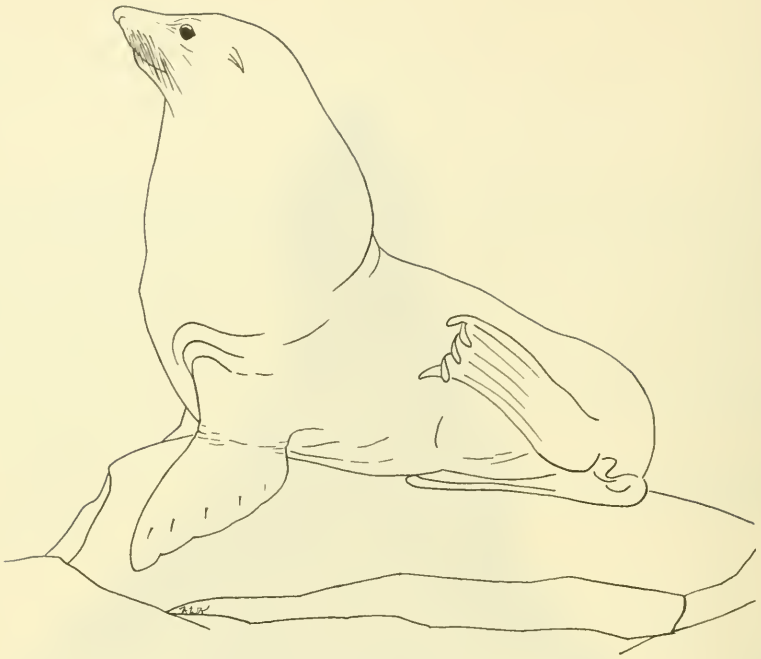


Fur seal, adult male.
Scale line: one inch.

NORTHERN FUR SEAL

(branded 10-year old female; the young male is similar)

Resembles the sea-lions; distinguished by: hindflippers relatively long, the five hindtoes nearly equal in size; distinct layer of velvety underfur.



GUADALUPE FUR SEAL

Tens of thousands of this seal were slaughtered for their furs on the islands off southern and lower California during the past century. By 1900 they were nearly extinct. In 1928, two from a reported herd of 60 on Guadalupe Island, Mexico, were brought alive to the San Diego Zoo. A period of 20 years with doubtful or no observation of the Guadalupe fur seal followed and it was thought to be extinct. Then in 1949 and again in 1951 a lone male was seen and photographed by Dr. G. A. Bartholomew on San Nicolas Island off southern California. In November of 1954, Dr. Carl L. Hubbs rediscovered a small breeding colony of 14 animals on Guadalupe Island off Lower California, Mexico. With careful protection and freedom from human distrubance it is still possible that the species will survive.

Description

A Guadalupe fur seal bull which died in poor condition in the San Diego Zoo in 1929 weighed 221 pounds and was nearly 6 feet long. The body was dusky black with grayish on the head and shoulders. The nose of this seal is longer and more pointed and the forehead profile flatter than that of the northern fur seal. Although northern fur seals migrate to waters off southern California, the bull is not known to reach this far south. Thus, any bull fur seal seen in these waters is quite certain to be a Guadalupe fur seal.

Range

The Guadalupe fur seal should be looked for on the small islands off the southern California and northern Lower California coasts. (See introductory paragraphs.)

Feeding habits

Unknown. Undoubtedly, as other members of this genus do, they feed on a variety of fish, mollusks, and crustaceans.

STELLER SEA-LION

The Steller sea-lion, also known as the northern sea-lion, is the largest of all eared seals. Because of its massive size and "belligerent" nature, it is seldom seen in zoos and is never trained. It is well known to fishermen through its habit of robbing fish from nets, traps, and lines, and because it gathers near estuaries to feed during salmon and herring runs. It is named for Georg Wilhelm Steller, the naturalist who accompanied the discovery expedition to Alaska in 1741. In years past their hides were used by Aleuts for boat coverings and blubber oil and leather were commercially utilized. No present day use is made of this sea-lion.

Description

An adult male weighed 2,069 pounds and measured 10 feet 4 inches long; an adult female 605 pounds and 7 feet 7 inches. At birth the pup weighs from 35 to 52 pounds, measures from 37 to 43 inches and is a rich chocolate brown. Within a few months it takes on the buff or yellowish tan coat of the adult. The large size, light color, and heavy muzzle and head are the best diagnostic features of the adult. The young of less than a year might be confused with the fur seal and California sea-lion.

The adult voice is a prolonged, deep-throated, bellowing roar; the male's somewhat lower than the female's. Both make, in addition, coughing and grunting sounds. The pup utters a feeble, prolonged grunt.

Range

The Steller sea-lion ranges from the islands of southern California northward along the coast into the Bering Sea. It is usually found along the open sea coast, rarely in bays. The population is roughly estimated at: California 3,000; Oregon 1,000; Washington 500; British Columbia 10,000; Alaska 40,000; total about 60,000.

Breeding habits

The Steller sea-lion breeds throughout most of its range. During

June and early July both sexes resort to favorite wave-beaten rocks and islets. Here the male holds a harem of 10 to 20 females. The cow bears a single pup and is bred before returning to the sea to feed. The pup lives on mother's milk for at least 3 months and even at the age of 1 year some young may be seen with their mothers. The pup does not take to the water for several weeks after birth, although, like the fur seal pup, it is able to swim weakly from the moment it is born. If frightened from their rookery, frantic mothers may carry their newly born pups into the water with them. Here the pup may drown if the water is rough and it is unable to reach shore within a few minutes.

Feeding habits

Few Steller sea-lion stomachs have been analyzed. Many more are needed for evidence of the year-round diet. During salmon and herring runs, sea-lions gather in straits, estuaries, and at river mouths apparently to feed on these fishes. Casual observations, however, may be misleading. The stomach of a sea-lion killed near the mouth of the Klamath River during a salmon run contained no salmon, but was packed with lampreys, parasitic fish which prey extensively on salmon. Other sea-lions, killed in and near fish traps, contained salmon. Yet, during much of the year, sea-lions feed where there are no concentrations of commercially valuable fish. The contents of approximately 50 stomachs containing food revealed a diet of squid, sand lances, pollack, flounders, sculpin, cod, herring, small sharks, skates, perch, and various other scrap fishes; with small amounts of salmon, halibut, and sablefish.

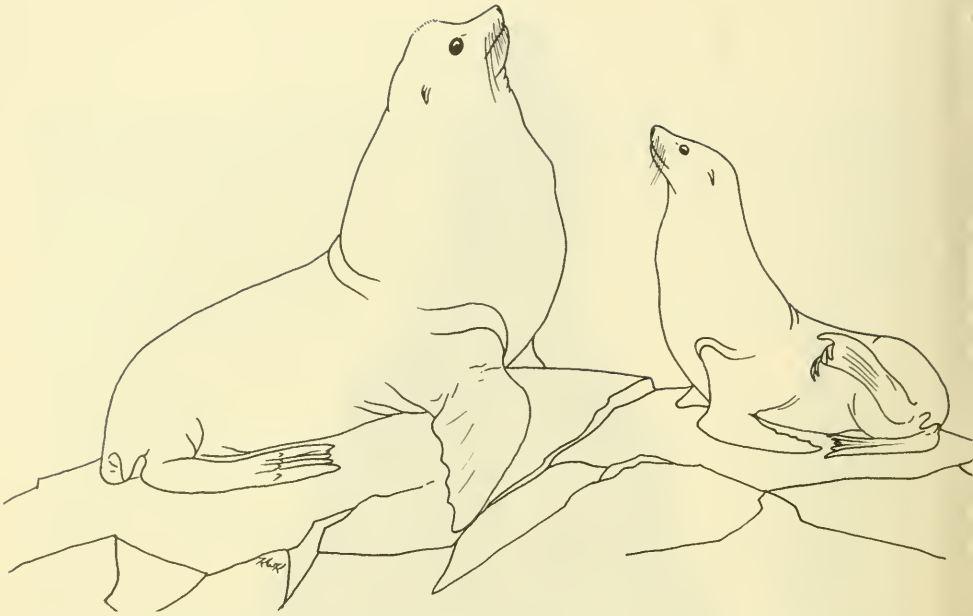
Vigorous statements of the damage inflicted by sea-lions to fishing are often expressed. No doubt exists that in certain areas sea-lions interfere materially with fishing activities. However, before any publicly financed control measures are justified, accurate, specific knowledge of the feeding habits of this sea-lion and the amount of damage done by it should be available. Evidence in the form of stomachs, records of damage to gear and fish, the exact location, date, and number of sea-lions involved in the damage should be presented to local fishery agencies. In order to be effective, a control program must be carried on persistently over a period of years and be concentrated where damage to fishing occurs.

Evidence presented by fishermen indicates that sea-lions often descend to depths of 60 to 80 fathoms and may rarely reach a depth of 100 fathoms (600 feet) in search of food.

STELLER SEA-LION

(young male; the female is similar)

Distinguished by: muzzle (snout) heavier than that of California sea-lion and fur seal; body larger and lighter in color. Outer toes of hindflipper considerably heavier than inner three.



CALIFORNIA SEA-LION

The California sea-lion is the well-known "trained seal" of the circus and vaudeville. With rare exceptions, it is the only seal or sea-lion which has been trained to perform. Fishermen along the Pacific Coasts of Mexico and California are familiar with it because it sometimes tears their nets. It frequents fishing areas where it may frighten the fish that gather around a live-bait boat.

Description

An adult male measured 7 feet long and weighed 524 pounds. Published estimates of weights of 800 to 1,000 pounds are probably excessive. A maximum weight of 600 pounds is perhaps more realistic. An adult female weighed 183 pounds and measured about 5 feet 8 inches long. The probable maximum size is 200 pounds and 6 feet long. Additional weights and measurements of adults and newly born young are needed.

The adult male is easily recognized by the conspicuous knob or crest on the top of the head which lightens in color with age. The adult female might be confused with the northern fur seal. However, the sea-lion has a broader, heavier muzzle. Whereas the sea-lion is usually seen within 2 to 10 miles of shore, the fur seal is most often seen 10 miles or more from land during the winter months when its range overlaps that of the California sea-lion.

The California sea-lion appears almost black when wet. When dry, its color ranges through shades of brown from light buff to deep sepia. The newly born pup is said to be golden brown varying slightly in shade.

Its voice consists of a short honking bark "ar-ar-ar-ar."

Range

The California sea-lion is most numerous along the coasts of southern California, Lower California, and in the Gulf of Lower California, Mexico. During the winter months it is regularly found northward to central Oregon

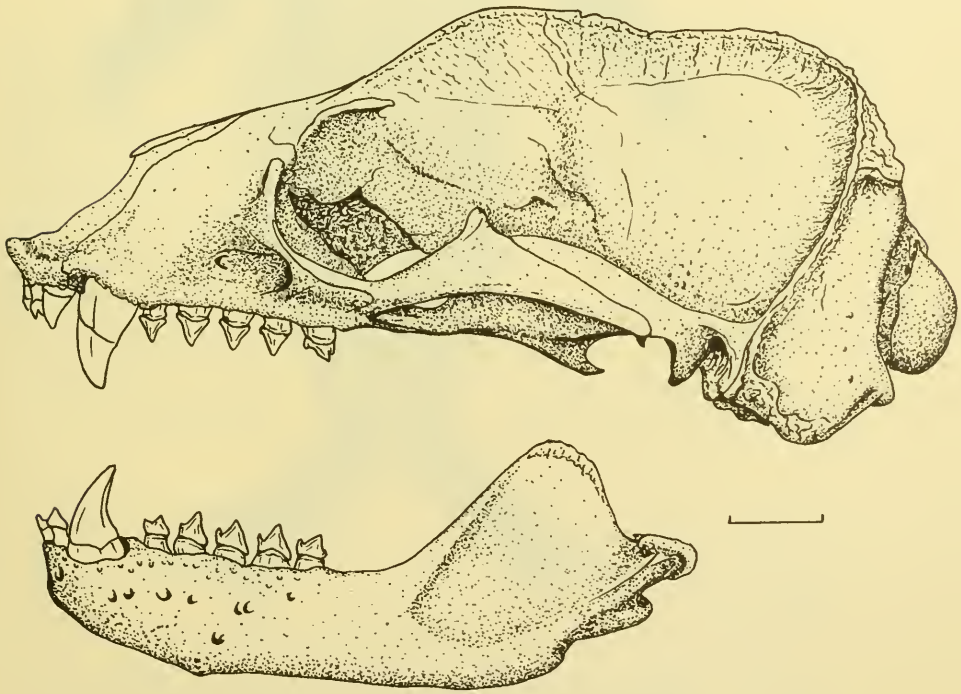
and perhaps to the mouth of the Columbia River. A few are recorded farther north. Two adult males were seen on Jagged Island, off the northern Washington coast on 11 May 1954. The skeletal remains of others have been collected from the west coast of Vancouver Island, British Columbia. Its short, seasonal travels cannot be compared with the 2, 000-mile winter migration of the northern fur seal.

Breeding habits

It breeds on small offshore islands from Santa Barbara southward into Mexico in May and June. So far as is known, the harem structure is similar to that of the Steller sea-lion. As in all eared seals, there is a single young. In captivity the gestation period is 342 to 365 days.

Feeding habits

Stomach analyses have shown that the California sea-lion feeds largely on squid, octopus, herring, rockfish, hake, and rat fish. Some fishermen are prone to minimize these findings and to emphasize the destruction of gear by sea-lions, and the frightening and scattering of fish from fishing areas.



California sea-lion, adult male.
Scale line: one inch.

CALIFORNIA SEA-LION

(adult female; the young male is similar; specimen by courtesy of California Division of Fish and Game)

Distinguished from fur seal by: hindflippers stubbier; outer toes distinctly larger than inner three.

PACIFIC WALRUS

The walrus lives among ice floes north of Bristol Bay, Alaska. It travels through international waters and is remote from the sight of man most of the year. The Walrus Act of 1941 prohibits the killing of walrus by persons other than aborigines and prohibits the exportation of raw walrus-tusk ivory from Alaska. Eskimos kill annually about 1,300 walruses, of which they and their sled dogs use part of the flesh, fat, skin, and viscera. They carve the ivory into objects of art having an annual retail value of more than $150,000. While the present rate of hunting does not seem to be endangering the breeding stock, the isolated locations of walrus hunting make it very difficult to enforce sound management and conservation policies. In addition to man, the only important enemies of the walrus are the killer whale and perhaps the polar bear. Several hundred walruses were smothered to death on St. Lawrence Island when they rushed ashore, frightened by a pack of killer whales.

The Pacific walrus differs slightly in appearance from the Atlantic walrus. It is regarded by some zoologists as a separate species.

Description

Adult males attain a weight of 3,000 pounds and a length of 12 feet; females 1,800 pounds and 10 feet. Newborn calves weigh 100 to 150 pounds and measure 45 to 50 inches in length. (The baby walrus is called a "calf" while the young of other seals are called "pups".) The bull may be full grown at age 7 years; the cow at age 6. The pelt of the newborn calf is slate gray in color, molting in the first summer to a dark rusty brown and changing in older animals to a light tan. In mature animals, especially in the bulls, nearly all of the hair falls out, leaving the rough, warty hide exposed.

The walrus is the only representative of its family and it shares with both the otarid seals and the phocid seals certain features of anatomy. The adult is obese and deeply wrinkled. The prominent white tusks found in both

sexes are thicker and heavier in the male than in the female, no external ears are evident, and the hair-covered flippers are capable of being rotated forward like those of a sea-lion. The largest individual tusks measured 39-1/2 inches in length (length along curve). A weight of nearly 12 pounds is recorded. The baculum or penis bone attains a length of 25 inches and a weight of over 2 pounds. The walrus is heavily whiskered with stiff bristles which may attain a length of 10 inches in captivity but normally wear off short in the wild.

Range

The winter range of the walrus includes most of the Bering Sea north of the Pribilof Islands. In migrating it rides for the most part on ice floes which drift south to Bristol Bay in winter, north to Point Barrow in summer. The sexes tend to travel apart except at the breeding season. Occasionally the walrus hauls out on land; recently over a thousand bulls were counted on Walrus Island in Bristol Bay. Persistent hunting with firearms has destroyed most of the populations which formerly hauled out on Bering Sea beaches, with the result that the main herd now resorts to the ice fields. From the evidence of skeletal remains and early accounts, the southern limit of the range used to include the Shumagin Islands, in the North Pacific, and the Pribilof Islands. Virtually nothing is known about the intermingling of Siberian and American stocks. Biologists have estimated at 15,000 the greatest number of walruses present at any season in Alaskan waters. While some walruses remain north of Bering Strait in winter, most of them do not pass north through the Strait until June, or after the calving season.

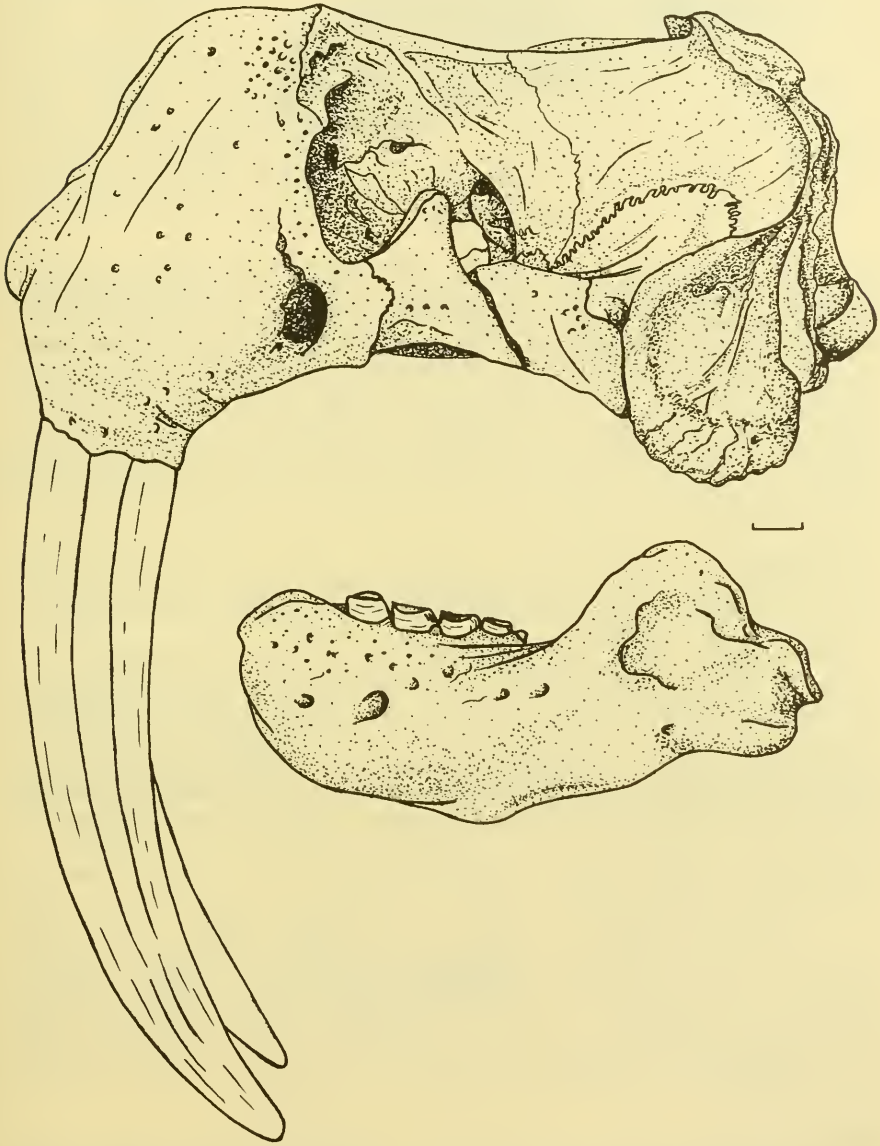
Breeding habits

Mating and calving take place on the ice in April and May. The gestation period is 1 year. Among pinnipeds, the walrus is peculiar in that the female does not mate in the same year that she calves, but rests for a year or two in between. Twins are unknown. The calf remains with its mother for about 2 years, gradually becoming independent. Like the sea-lion, the female walrus has 4 nipples. The male walrus is thought to be promiscuous; he does not attract a definite harem as does the bull fur seal.

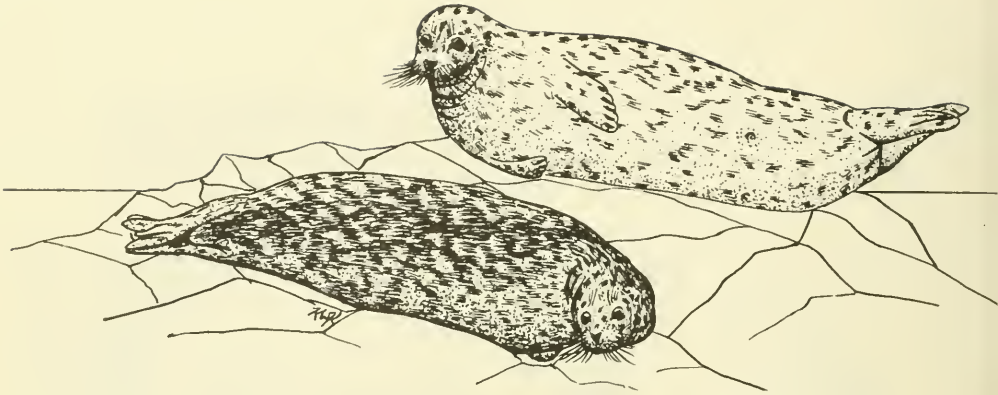
Feeding habits

The walrus feeds mainly on clams obtained from the floor of the Bering Sea and Chukchi Sea at depths down to 200 feet or more. Feeding of the walrus has never been observed. It is believed that by means of its tusks and stiff moustaches, the walrus stirs up clams, snails, echinoderms, and worms. The contents of one bull walrus stomach included 85 pounds of clam "necks" and feet. The walrus manages to avoid swallowing the shells of mollusks. Under certain circumstances a solitary or "rogue" walrus may attack and eat chunks of the flesh of other pinnipeds such as the bearded and ringed seals.

Fish and carrion, such as whale meat, are unimportant items in the diet. Although the data is not yet conclusive some evidence indicates that for about a month in the summer the bull walrus, like the bull fur seal and sea-lion, may fast completely.



Walrus, adult male.
Scale line: one inch.



HARBOR SEAL

The harbor seal is also known as the hair seal and leopard seal. It lives in protected bays, at the mouths of rivers, and even in large lakes. It also frequents the small, offshore islands where sea-lions haul out. It is an "earless" seal, having only a small, round, bare spot on each side of the head where fur seals and sea-lions have pointed ears; nevertheless, it has internal ears and good hearing. It differs also in having its flippers covered with hair, and in being unable to move its hind legs forward for walking. On land it worms its way along awkwardly. In swimming the hind-flippers are the principal source of propulsion, whereas the forelimbs are in the "eared seals."

Description

A large male weighed 256 pounds and measured 5 feet 7 inches in length; a pregnant female 243 pounds and 4 feet 3 inches. Newly born young weigh 25 to 30 pounds, length about 36 inches.

The harbor seal is the only spotted seal found along the Pacific Coast and in the Bering Sea south of the ice pack. Among the ice floes it is easily confused with the ringed seal. The harbor seal is easily differentiated from the fur seals and sea-lions by its maggot-like body form, bead-like nodules on its whiskers, and coat of variable pattern. Its color varies from almost white to almost black but is characteristically spotted and blotched irregularly. In the fetal stage the pup is covered with a white woolly coat, the lanugo. In southern areas this pelage is shed at or soon after birth. In the northern Bering Sea it is not shed until several days or weeks after birth.

The harbor seal is often seen sprawled on a sandbar or log in a harbor or on outlying rocks. It may come up quietly near a boat, the round, smooth head and dog-like face barely above the surface. If it is suddenly alarmed, it sinks quietly backward out of sight, seldom plunging ahead like a fur seal or sea-lion.

The voice of the adult is a harsh, screeching bark; of the pup a plaintive "kroooh."

Range

The harbor seal is found along the Pacific Coast from Mexico to the Bering Sea. Related species range throughout the temperate and subarctic regions of the entire northern hemisphere. In contrast to the fur seal, which spends many months far at sea, the harbor seal usually remains

near shore. Like the coyote and the rat, the harbor seal has been fairly successful in maintaining its population in the face of persecution by man. Of all seals and sea-lions it is the only one to be found commonly in harbors and bays.

Breeding habits

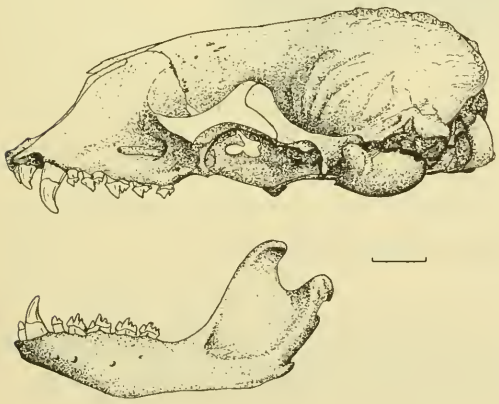
Harbor seals do not breed in organized colonies, and they do not form harems. The single young is born from late May to August, usually on a sandbar or outlying reef. The pup is able to swim at birth. When tired it may crawl on the mother's back. Mating takes place after the pup is weaned, which may be as early as June or July or as late as September. In northern areas where birth and copulation occur on the pack ice breeding is earlier.

Feeding habits

The harbor seal feeds on a variety of fish and shellfish. From Puget Sound and the semi-enclosed coastal waters of Washington, 100 stomachs were analyzed. Of these, 94 contained fish, and 6 contained shellfish. The fishes found in greatest numbers were flounders, herring, tomcod, hake, sculpins, pollack, shiner, cod, and lingcod, in this order. Salmon were found in 2 stomachs. Of 35 stomachs from the Nisqually River flats, 13 (pups) contained milk; the rest contained the fish listed above; 2 contained salmon. Seals from the Copper River flats in Alaska during late May and June had fed almost entirely on eulachon (river smelt). From southeastern Alaska, 99 stomachs examined contained mostly fish of the cod family, followed by herring and flounders and small quantities of other fish including salmon. From British Columbia, of 20 seal stomachs containing food, salmon were found in 5, the usual fish and shellfish in the others.

The food of the harbor seal varies considerably according to the time of year and the presence of nearby fish runs. More stomachs, with the date and place of collection, are needed in order to complete our knowledge of feeding habits.

Harbor seals often raid gillnets, damaging the captured fish and tearing the nets. They are thus considered an expensive nuisance by most fishermen.

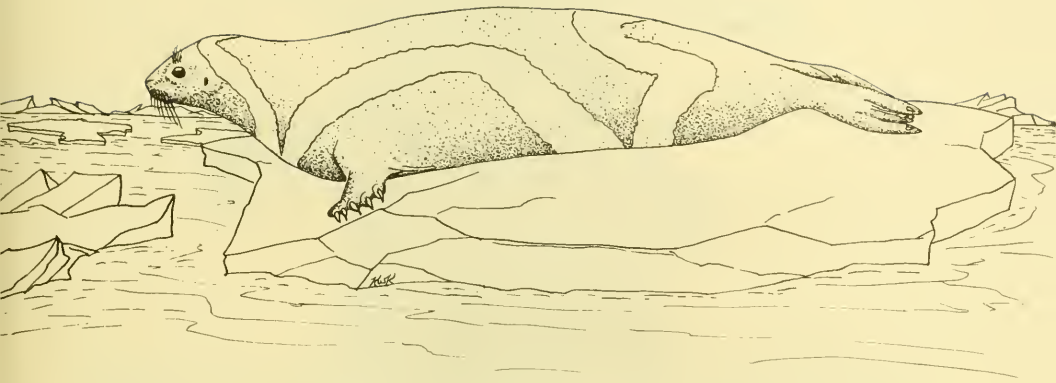


Harbor seal, adult male.
Scale line: one inch.

HARBOR SEAL

(subadult female; male is similar)

The harbor seal differs greatly from the sea-lions and fur seal in structure. Note the difference in the shape of the flippers. In the harbor seal the flippers are covered with hair while in the fur seals and sea-lions they are bare and leathery. Harbor seals swim mainly with the hindflippers, fur seals and sea-lions with the foreflippers.



RIBBON SEAL

The ribbon seal is the only Pacific species having a distinctly banded coat, a distinction shared by only one other seal, the Atlantic harp seal or saddle back. The ribbon seal is taken in some numbers each winter by Japanese sealers for its oil, meat, and leather when the pack ice of the Okhotsk Sea approaches the shores of Hokkaido. Although it is considered a rare seal of solitary occurrence in the Bering Sea, the Eskimos of St. Lawrence Island regularly take a few in the winter and spring.

Description

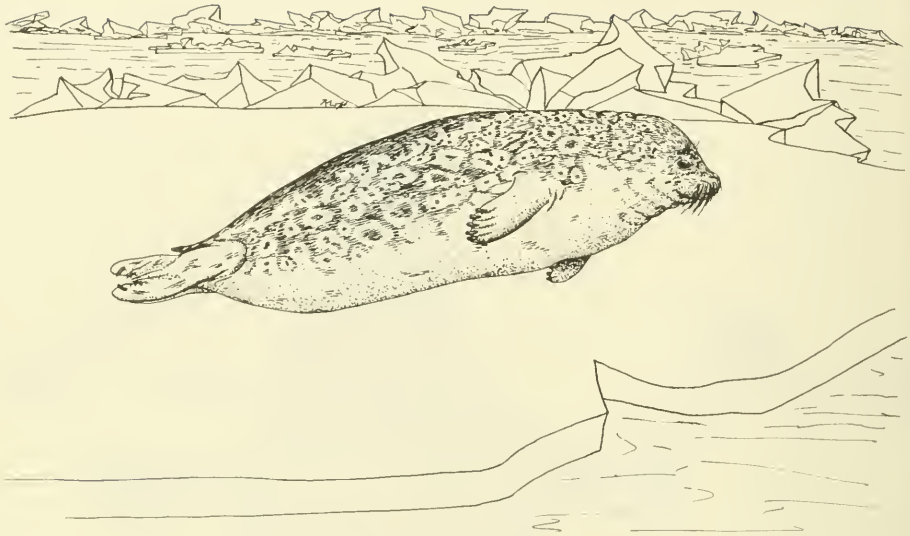
An adult male from the Okhotsk Sea weighed 209 pounds, length 5 feet 3 inches; an adult female 174 pounds and 5 feet 4 inches; a pup in late April, several weeks old, 45 pounds and 3 feet. The adult male is chocolate-brown with a white ribbon-like band around the neck, around the base of each foreflipper, and around the rump. The female and young are pale gray, darker on the back with indistinct traces of the bands. The pup is born with a coat of long white wool which is shed in late April, exposing the faint banded pattern. The cheek teeth of the ribbon seal are double rooted, like those of the harbor and ringed seals, but have simple, one-pointed crowns instead of several cusps.

Range

In American waters, the ribbon seal is seen only among the ice floes of the northern and eastern Bering Sea. It is rarely seen near the Pribilof Islands. It apparently occurs in greatest numbers on the pack ice of the Okhotsk Sea. In late April of 1949 a Japanese catch of 412 phocid seals contained 118 ribbon seals.

Breeding and feeding habits

The young are said to be born on the ice in March. Two seals killed in the Okhotsk Sea in April had been feeding on pollack and squid.



RINGED SEAL

This seal is perhaps the smallest of all pinnipeds. It is the commonest seal among the ice floes of the Bering Sea, where it is of great value to the natives, but of no commercial importance. At St. Lawrence Island the Eskimos associate the appearance of netsik with an early spring and breakup of ice. A few are taken among the ice floes of the Okhotsk Sea by Japanese sealers. It keeps holes open in the ice through which it breathes.

Description

The adult male attains a length of 5 feet 7 inches; the female 4 feet 10 inches; maximum weight of both sexes about 200 pounds. The newborn pup is said to measure up to 35 inches in length and weigh up to 40 pounds. Although the markings of the ringed seal are usually ring shaped and tend to flow together to give a dark area on the back, the color and pattern are variable and may be confused with the harbor seal. The ringed seal differs from the harbor seal in having conspicuously heavier claws on its foreflippers, one less cusp on the cheek teeth of the upper jaw, and a very narrow bridge between the eye sockets. The newborn pup is covered with a white woolly coat.

Range

Never far from the pack ice in Bering and Chukchi Seas; to the Pribilof Islands on the south; circumpolar in the Arctic.

Breeding habits

The young are born on the ice in snow or ice caves in April. The pup remains on the ice for 4 to 6 weeks. The mating time of the Bering Sea species is unknown, but in Europe the ringed seal mates about a month after the birth of the pup.

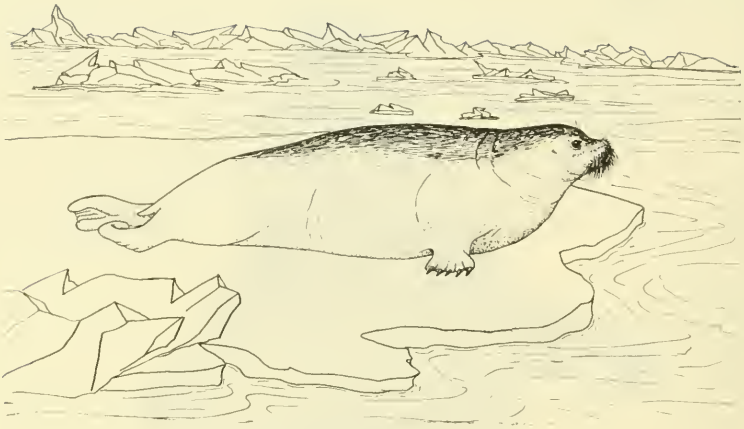
Feeding habits

The ringed seal has a most unusual habit, for a seal, of pursuing and eating small free-swimming crustaceans and mollusks no larger than a pea. It also rounds out its diet with small fishes, especially of the cod family.

RINGED SEAL

(adult male; female is similar. Photograph by courtesy Francis H. Fay)

Resembles the harbor seal; distinguished by: claws of fore-flippers larger and stronger; markings more ring shaped; eyes closer together; snout shorter and appearing more pointed; size smaller.



BEARDED SEAL

This seal is also called squareflipper and ugruk. It is the only member of its genus and the largest of the phocids in northern areas. It is valued highly by the Eskimos for its meat, blubber, and hide. The skins are particularly useful for boot soles, boat coverings, dog traces, harpoon lines, etc. Off Hokkaido the bearded seal is taken along with other phocids for meat, blubber oil, and skins.

Description

Adults of both sexes are similar in size. Two adult males measured 7 feet 4 inches and 7 feet 11 inches in length. Six adult females ranged from 7 feet 5 inches to 8 feet 5 inches. Although an estimated weight of 800 pounds is published, other estimates of adult weights are about 400 and not more than 500 pounds. The newborn pup measures about 5 feet in length. It is the only hair seal in the far north having no striking marks on its coat. The adult is silver-gray or brownish-gray with a yellowish, orange-brown, or almost rufous tinge about the head and neck. A darker area, almost sepia, extends from the top of the head down the middle of the back. The pups are silver-gray, mottled dark especially along the sides and back. The name derives from its dense brush of whiskers which may number 120 pairs.

Range

The bearded seal is circumpolar in distribution, reaching its northern limit at 80° to 85° N. Lat. It is not gregarious or ever very numerous in any locality. Although not considered migratory in the usual sense it moves southward sporadically with the winter ice pack in the Bering Sea. It is rarely seen on the Pribilof Islands but is regularly taken at St. Lawrence Island and near the coast of Hokkaido and Sakahalin.

Breeding habits

The single young is born in April and May after a gestation period of 11 months. Birth takes place on ice floes.

Feeding habits

A bottom feeder, stomach analyses show that it takes shrimps, crabs, sea cucumbers, clams, snails, octopus, and a few such bottom fish as sculpin and flounder. The livers of certain individuals may be poisonous because they contain an excessive amount of stored Vitamin A.

HAWAIIAN MONK SEAL

The monk seals are the only warm-water seals in the world. There are three populations, the Mediterranean, Caribbean, and Hawaiian, all of them representing "relict" species on the border of extinction. In 1951 the total population of Hawaiian monk seals was estimated at less than 500, as contrasted with that of a century earlier when a single vessel brought 1, 500 monk-seal skins into the port of Honolulu. In 1954, P. A. Du Mont and J. A. Neff counted 334 monk seals in the western Hawaiian area. The count was made from the air and on foot and is minimal.

Description

Both sexes attain a length of about 7-1/2 feet, and an estimated weight of 500 pounds. The weight of the newborn pup is unrecorded; the length is about 3 feet. The color of the adult male is dark brown or dark slaty brown above, shading to a white or soiled yellowish white on the belly. The female is paler; the newborn pup has a jet black, soft, woolly coat. The voice of the adult is an abrupt bark.

Range

Breeding on Laysan, Lisianski, Midway, and Ocean Islands, Pearl and Hermes Reef; rarely straggling to as far east as the main island of Hawaii. The largest group seen in 1951 was 180 on Pearl and Hermes Reef. Monk seals haul out on the white coral-sand beaches and can be closely approached at times.

Breeding habits

Scattered accounts indicate that the pup may be born any time from late December to the middle of March. Twenty "glossy black little fellows" were reported on 15 March at a rookery comprising fewer than 60 seals. A nursing pup about 3 feet long which had shed its puppy coat was captured on 14 May. A photograph taken on 28 June of a pup following its mother suggests a long period of attachment to the parent. Quite possibly the breeding season of these tropical seals is prolonged, differing from that of seals of northern waters where summer is brief and clearly defined. (Full-term and newborn Caribbean monk seals have been found as early as the first of December.)

Feeding habits

Unknown.

HAWAIIAN MONK SEAL

(young male; specimen by courtesy of the San Diego Zoo)

This seal is distinguished from all other hair seals by its dark, unmarked coat, also by its very limited range in the Hawaiian islands.

NORTHERN ELEPHANT SEAL

The animal derives its name from its enormous size and fleshy "trunk." In early days it was killed on the breeding grounds for its blubber, and by 1890 was nearly exterminated. Under careful protection by the governments of Mexico and the United States, its numbers have now increased to over 6,000.

Description

The adult male is larger than any other seal or sea-lion, usually measuring from 12 to 16 feet in length. None has been weighed but a bull southern elephant seal measuring 13 feet 4 inches long weighed 4,357 pounds and the weight of the northern species is assumed to be similar. The female averages about 9 feet long. A 9-foot female weighed 680 pounds. Length of the newborn pup 44 to 48 inches; weight about 90 pounds. The snout of the male is prolonged and flexible and can be inflated when the animal is angry. Its color is dirty gray, and the short body hairs are sparsely scattered, especially on the adult male. The newborn young are black and were known commercially as "rock seals." The adult male utters a resounding "snoring" sound, as well as snorts, sneezes, and coughs.

Range

Elephant seals are found mostly along the coast of Mexico and southern California. Solitary specimens have been taken along the Pacific Northwest Coast as far north as southeastern Alaska. It is found regularly in winter off Vancouver Island, British Columbia.

Breeding habits

It is polygamous but its harem structure is quite loose compared to that of sea-lions and fur seals. The breeding-ground ratio of harem bulls to cows is said to be about 1:13. Elephant seals breed from December to March on several small islands off the Mexican and California coasts, principally San Benito and Guadalupe. The gestation period is about 11-1/2 months.

Feeding habits

The elephant seal is probably a deep-water feeder. One taken 40 miles from shore had eaten a number of small sharks, squids, and rays.

NORTHERN ELEPHANT SEAL

(young male; specimen by courtesy of San Diego Zoo)

In general structure the elephant seal resembles the harbor seal, although even a small elephant seal is several times larger. The elongated snout of the male, the large size and plain, light-brown color make it easy to recognize.

USEFUL REFERENCES

BAILEY, A. M. 1952. The Hawaiian monk seal. Mus. Pict. No. 7; Denver Mus. of Nat. Hist., 30 pp.

BARTHOLOMEW, G. A., JR. 1950. A male Guadalupe fur seal on San Nicolas Island, California, Jour. Mamm. 39(2):175-180.

BARTHOLOMEW, G. A., JR. 1951. The sea-lion population of Santa Barbara Island, California, in the 1950 breeding season. Calif. Fish and Game. 37(1):65-68.

BARTHOLOMEW, G. A., JR. 1952. Reproductive and social behavior of the northern elephant seal. Univ. Calif. Pub. in Zool. 47, No. 15:369-472.

BARTHOLOMEW, G. A., JR. 1955. The northern elephant seal. Zoonooz. 28(1):6-9.

BONNOT, P. 1928. The sea-lions of California. Calif. Fish and Game. 14(1):1-16.

BROOKS, J. W. 1954. A contribution to the life history and ecology of the Pacific walrus. Alaska Coop. Wild. Res. Unit, Spec. Rept. No. 1, 103 pp.

DOUTT, J. K. 1942. A review of the genus Phoca. Ann. Carnegie Mus., 29:61-75.

DUNBAR, M. J. 1949. The pinnipeds of the Arctic and sub-Arctic. Bull. Fish. Res. Bd., Canada, Bull. 85, 22 pp.

FISHER, E. M. 1939. Habits of the southern sea otter. Jour. Mamm. 20(1):21-36.

FISHER, E. M. 1940. Early life of a sea otter pup. Jour. Mamm. 21(2):132-137.

FISHER, H. D. 1953. The status of the harbor seal in British Columbia, with particular reference to the Skeena River. Fish. Res. Bd., Canada, Bull. 93, 57 pp.

IMLER, R. H., AND H. R. SARBER. 1947. Harbor seals and sea-lions in Alaska. U. S. Fish and Wild. Svc., Spec. Sci. Rept. No. 28, 23 pp.

JONES, R. D., JR. 1951. Present status of the sea otter in Alaska. Trans. 16th N. Amer. Wild. Conf.: 376-383.

JORDAN, D. S., AND OTHERS. 1898-99. The fur seals and fur seal islands of the North Pacific Ocean. In 4 pts., U. S. Treas. Dept. Doc. 2017.

KENYON, K. W. 1952. The Steller sea-lion. Pac. Disc. 5(4):4-13.

KENYON, K. W., AND F. WILKE. 1953. Migration of the northern fur seal, Callorhinus ursinus. Jour. Mamm. 34(1):86-98.

KENYON, K. W., V. B. SCHEFFER, AND D. G. CHAPMAN. 1954. A population study of the Alaska fur seal herd. U. S. Fish and Wild. Svc., Spec. Sci. Rept., Wildlife No. 12, 77 pp.

LINDSAY, G. 1951. Elephant seals come back. Pac. Disc. 4(4):18-24.

SCHEFFER, V. B. AND J. W. SLIPP. 1944. The harbor seal in Washington State. Amer. Mid. Nat. 32(2):373-461.

SCHEFFER, V. B. 1950. The food of the Alaska fur seal. Wild. Leaf. 329. U. S. Fish and Wild. Svc., 15 pp.

SCHEFFER, V. B. 1951. Measurements of sea otters from western Alaska. Jour. Mamm. 32(1):10-14.

SCHEFFER, V. B., AND K. W. KENYON. 1952. The fur seal herd comes of age. Nat. Geog. Mag. 101, (4):491-512.

TOWNSEND, C. H. 1931. The fur seal of the California Islands with new descriptive and historical matter. Zool. New York, Zool. Soc. 9(12):443-457.

U. S. BUREAU OF FISHERIES, 1909-1940, AND U. S. FISH AND WILDLIFE SERVICE, 1941-1950. (Reports of the Alaska fur-seal industry.)

WILKE, F., AND K. W. KENYON. 1952. Notes on the food of the fur seal, sea-lion, and harbor porpoise. Jour. Wild. Mgt. 16(3):396-397.

WILKE, F. 1954. Seals of Northern Hokkaido. Jour. Mamm. 35(2):218-224.

KEY TO THE SEALS, SEA-LIONS, AND SEA OTTER OF THE NORTHEAST PACIFIC OCEAN

How to use the key. Compare the unknown animal with the description given in paragraph A. If it fits, the animal is a sea otter. If it does not, then move along the alphabet until the smallest group is found into which the specimen fits in all details.

A. Forefeet somewhat dog-like but with heavy pads, not flipper-like; hindfeet webbed and flattened like flippers; tail nearly as long as hindlimb; fur long, soft, and silky; external ears rolled; fully grown animal normally less than 85 pounds; fresh skeleton may be purplish; cheek teeth large and flat; usually occurs among kelp beds near shore in western Alaska and near Monterey, California. Sea otter, page 3.

AA. Forefeet modified as flippers; tail inconspicuous, much shorter than hindlimb; external ears pointed or absent; fully grown animal more than 85 pounds. Pinnipeds including eared and earless seals and walrus.

B. Hindflippers capable of forward movement, or rotation, so that the animals use them in walking on land; foreflippers paddle, or oar-like, and used as primary source of propulsion in swimming; flippers usually hairless, leathery; digits of foreflippers sometimes without nails; digits of hindflippers always with distinct nails, coat never spotted or striped; whiskers always smooth, not beaded. Walrus and eared seals.

C. Conspicuous white tusks or upper canine teeth in both sexes, prominent area of very heavy, short whiskers on muzzle, exposed length of tusk up to 31 inches in adult male and 24 inches in female; molar teeth greatly flattened, adapted for grinding; external ears absent or mere wrinkles; tail absent; digits of foreflippers with five small but distinct claws; on younger animals hair on upper surfaces of flippers. Pacific walrus, page 17.

CC. Without tusks, all teeth pointed, adapted for grasping and tearing; external ears pointed, cylindrical, and tightly rolled; digits of foreflippers without claws but small pits present; all flippers hairless, smooth, and leathery. Eared seals or otarids (fur seals and sea-lions.)

D. Coat with two distinct layers: dense underfur and coarse guard or overhair; digits of hindflippers approximately equal in length; snout pointed; newborn young glossy black. Fur seals.

E. Occurs in winter in offshore waters from Alaska commonly to central California, occasionally to the Mexican border; on land only in the Pribilof Islands of Alaska, except sick or dead individuals that wash ashore along the coast. Seen at sea females and sub-adult males show light area on chest as they raise their head. Adult male dark, almost black; snout pointed but relatively short. Northern fur seal, page 6.

EE. On land only on offshore islands of southern California and Mexico. Appears similar to northern fur seal but smaller and pointed snout longer. Guadalupe fur seal, page 10.

DD. Coat coarse, no dense underfur; outer toes of hindflipper longer and wider than others; snout heavy and more blunt and body proportions heavier than in fur seals; newborn young dark brown, sea-lions.

F. Voice a deep sustained bellow or growl; gap the width of two teeth between the last two teeth in upper jaw; adult male up to 2,000 pounds, adult female about 600 pounds; color of adult, buff or yellowish tan; found from southern California to Bering Sea. Steller sea-lion, page 11.

FF. Voice a honking bark "ar-ar-ar-ar"; no wide gap between two last teeth of upper jaw; adult male up to about 600 pounds, adult female up to about 200 pounds; male with crest on head, usually light on top; color usually dark brown, appearing almost black when wet, some individuals lighter; virtually all "trained seals" are of this species; occurs from Mexico to Vancouver Island, B. C., but uncommon north of central Oregon. California sea-lion, page 14.

BB. Hindflippers without a heel, incapable of being rotated forward for walking but used as primary source of propulsion in swimming; locomotion on land caterpillar-like, accomplished by hunching movements of the body, aided by the foreflippers; digits of foreflippers always with nails; hindflippers sometimes without nails; coat sometimes spotted or striped; whiskers sometimes beaded; no external ear. The earless seals or phocids.

G. Claws nearly absent from hindflippers, represented by claw pits; upper incisors (front chisel teeth) 4: newborn young black. Elephant seal and monk seal.

H. Snout prolonged into fleshy trunk which in the adult male is capable of considerable inflation; skin of adult sparsely haired, chest of male with thickened warty skin or integumentary shield; length of adult male about 16 feet, of adult female 9 feet; breeds on several islands off southern California and Mexico but occurs regularly as far north as British Columbia. Northern elephant seal, page 29.

HH. Snout broad; skin well haired; length of adult about 7-1/2 feet; occurs only in western Hawaiian Islands. Hawaiian monk seal, page 27.

GG. Claws on hindflippers; upper incisors (chisel teeth) 6; newborn young light colored or spotted. Northern hair seals.

I. Whiskers smooth, long, flattened, and bushy, about 120 pairs; third digit of foreflipper longest; claws heavy and about equal in length (whence the name squareflipper in some areas); coat unspotted but with dark area down middle of back, rufous tinge around neck; space between back teeth almost as wide as tooth. Bearded seal, page 26.

II. Whiskers faintly beaded, 40 to 70 pairs; first digit of foreflipper longest; coat spotted or striped; back teeth close or touching. Ribbon, ringed, and harbor seals.

J. Ground color uniform brown with white stripes (stained yellow by fat on many skins) around neck, around foreflippers and around rump; stripes conspicuous in adult male, inconspicuous in females and young animals; cheek teeth, except foremost, conical with few if any accessory peaks (cusps); associated with ice floes. Ribbon seal, page 23.

JJ. Coat spotted; cheek teeth with well defined accessory peaks or cusps. Ringed and harbor seals.

K. Color variable but often many of the spots in the shape of large elongated rings, which blend into a dark area along the back; claws of digits on foreflippers heavy for use in digging through ice and snow; teeth smaller than in harbor seal and upper teeth have only one cusp behind main point of cheek teeth; claws triangular in cross section and sometimes show annual growth ridges; interorbital space of skull very narrow; newborn pup always white; weight up to 200 pounds; associated with ice floes in northern Bering Sea. Ringed seal, page 24.

KK. Color varies from almost white to black marked with spots and rings, but rings do not ordinarily blend into a dark back as in the previous species; foreflipper claws not conspicuously heavy; claws rounded (not triangular) in cross sections and smooth, without growth ridges; teeth larger than in previous species and with two cusps behind main point of upper cheek teeth; newborn pup white only in Alaska, elsewhere spotted; weight up to 250 pounds; the common spotted seal all along the Pacific coast, Mexico to Bering Strait. Harbor seal, page 20.

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