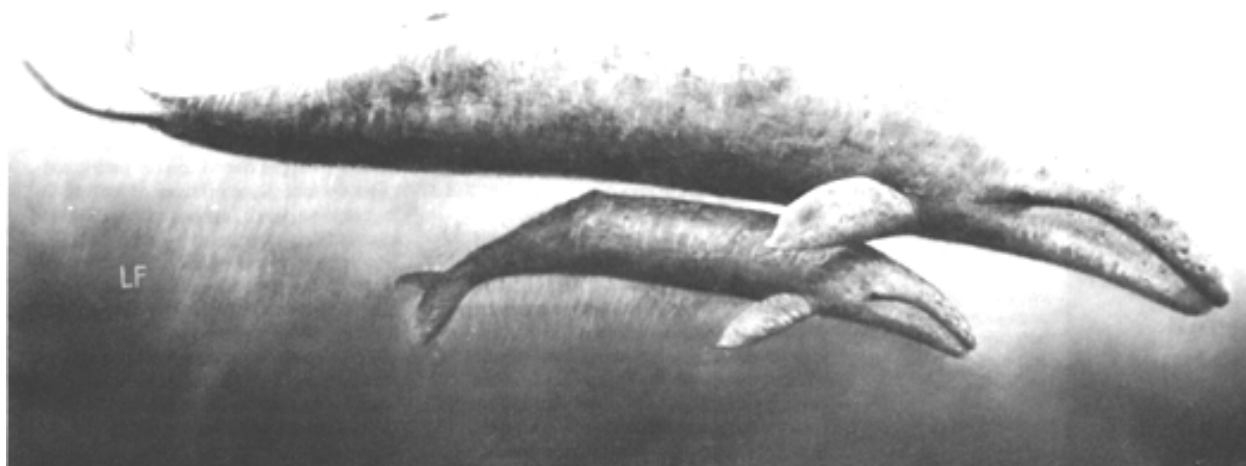


Used with permission of:
Oregon State University Extension Service
SG 52 - Reprinted September 1992

Gray Whales *Eschrichtius robustus*

Bruce R. Mate, Extension marine biologist
Oregon State University



The seasonal appearance of gray whales along the Oregon coast attracts knowledgeable residents to rocky headlands, to watch these large mammals on their yearly journey from the Bering Sea and Arctic waters to the lagoons of Mexico. Generally, whale watchers see migrants from December through May. Up to 100 gray whales also spend the summer feeding along the Oregon coast. These tend to be small- to medium-sized whales, some nursing a calf.

The gray whale gets its name from its blotchy pattern of light and dark gray coloration. Some of this pattern is natural at birth, but most is caused by barnacles growing in the skin or depigmented scar tissue where barnacles have been.

Gray whales reach 45 feet (14 m) in length and 45 tons (40.5 metric tons) in weight. Adult females on the average are larger than males. For comparison, a cross-country bus is about 40 feet, or 12 m, long.

Whales are warm-blooded and breathe air. They are mammals. They have hair (mostly limited to single hairs around the front of the head). Females give birth to live young and suckle them with milk.

There are two basic types of whales, toothed and baleen. The gray whale is a baleen whale, without true teeth. Instead, a row of baleen plates grows from the roof of the mouth along each side. Each piece of baleen is made of material like a human fingernail.

Appearing quite stiff and solid at its outer edge, each piece is "fringed" inside the mouth and tapers from several inches wide at its attachment at the roof of the mouth to nearly a point at its bottom. These plates are separated by approximately 1/3 inch (6 to 10 mm); inside the mouth, their fringes overlap to form an effective screen.



Baleen grows from the edges of the upper jaw. It is very similar in composition to human fingernails. The smooth outer edges look a bit like a comb (two baleen plates have been removed).



A single baleen plate. The smooth outer edge (at your left) is all you can see in the picture above. However the fringed inner edge (at your right) overlaps the fringes of plates on either side, to form an effective mesh for trapping food.

Gray whales feed primarily on benthic (bottom-dwelling) amphipods (shrimplike animals). The whales go to the sea floor and suck up several cubic feet of sediment at a time, making large pits on the bottom. Gray whale baleen is stiffer than that of other baleen whales so it can strain amphipods from bottom sediments. The food is trapped on the baleen filter inside the mouth, while the mud and sand pass between the baleen plates with the water. Sometimes you can see "muddy" water near the whale's head when it surfaces after feeding.

During late spring to midfall, most gray whales feed in the Bering and Chukchi Seas, although some whales are observed feeding every summer from British Columbia to Mexico.

During the long polar summer days, the sun's energy stimulates the growth in ocean waters of phytoplankton (small marine plants), which are eaten by

herbivorous zooplankton (small marine animals). Thus plankton becomes the basic food for all ocean life, stimulating the growth of marine food chains, including amphipods and the gray whale.

Examination of the stomachs of whales during whaling days indicated that gray whales eat very little while migrating and while in the breeding and calving areas. Thus many whales may go without food for 3 to 5 months.

Gray whales start migrating south from the Bering Sea in November, and they begin to pass along the Pacific Northwest coast in early December. They move quite close to shore, on their way to three major lagoons along the west coast of Baja California, Mexico, where they breed and give birth to their young.

The migration is a 10,000-mile (16,000-km) round trip and is the longest known for any mammal. While other whales are known to migrate between summer high-latitude feeding grounds and more temperate, low-latitude breeding and calving areas, researchers know more about the gray whale because it moves so close to shore. This behavior has led to speculation that gray whales navigate by staying in shallow water and keeping the surf noise to one side.

The southward migration along the Oregon coast lasts until early February, with most of the animals moving by in late December and early January at a rate of 30 whales/hour. Pregnant females lead the migration, followed by mature adults of both sexes and then immature animals.



Profiles of the gray whales surfacing and blowing (left), beginning the dive, and diving (reproduced by permission from Gordon C. Pike, *Guide to the Whales, Porpoises and Dolphins of the North-East Pacific and Arctic Waters of Canada and Alaska*).

Whales travel at about 5 miles an hour (8 km/h) southbound and about half that speed northbound. The northward migration is much more spread out. The immature animals (some of which may not have gone all the way to Mexico), adult males, and females without calves are the first to head north, passing Oregon in March and April. Females with calves move somewhat slower; most pass the Oregon and Washington coasts during May.

Females not giving birth to a calf may mate one or more times during the calving season or during the northward migration. Frequently, more than one male will attempt to mate with a female at the same time, and "courting triads" are commonly seen rolling on the surface. Males may breed with more than one

female. There seem to be no long-term bonds between males and females, or any bonds between males and newborn animals.

Whales begin to arrive in their traditional wintering lagoons in mid-December. Most calves are born in January and February. Most baleen whales give birth in temperate or subtropical waters, presumably conserving the young's body heat.

Females become sexually mature at about 8 years of age and give birth to a single calf, usually every other year. Occasionally females give birth in consecutive years or may have a 3- or 4-year interval between calves. The 15-foot (4.5-m) calf is born tail first and weighs over 1 ton (.9 metric ton).

Births take place offshore as well as in lagoons, although lagoons may be favored because they have calmer water. Calf breathing is awkward at birth. Calves take shorter, shallower dives than adults, breathing twice as frequently as their mothers for the first several weeks.

Females nurse their young with rich milk that is nearly half fat and is squirted from two teats located on the underside of the mother. Calves are at least 1 month old before they start the northward migration.

Gray whales were heavily exploited in the mid-1800's by whalers operating along the migration route and in the calving lagoons. Shore stations to process whales were set up in San Diego around 1855, when navigation inside San Diego Bay was judged hazardous because of the abundance of breeding whales (according to one writer of that period).

By 1873, gray whales had been so reduced in number that these shore stations closed. Operations continued within the lagoons and the gray whale population was further depleted.

Gray whales were first protected by Mexican law, then by the League of Nations, and now by the International Whaling Commission. Without commercial hunts for more than 50 years, the species has recovered to what is now thought to be its pre-exploitation number—about 20,000. A quota of 176 whales per year is harvested by the Soviet Union.



OREGON STATE UNIVERSITY

**EXTENSION
SERVICE**

Extension Service, Oregon State University, Corvallis, O.E. Smith, director. This publication was produced and distributed in furtherance of the Acts of Congress of May 8 and June 30, 1914. Extension work is a cooperative program of Oregon State University, the U.S. Department of Agriculture, and Oregon counties.

The Extension/Sea Grant program is supported in part by the National Oceanic and Atmospheric Administration, U.S. Department of Commerce.

Oregon State University Extension Service offers educational programs, activities, and materials—without regard to race, color, national origin, sex, age, or disability—as required by Title VI of the Civil Rights Act of 1964, Title IX of the Education Amendments of 1972, and Section 504 of the Rehabilitation Act of 1973. Oregon State University Extension Service is an Equal Opportunity Employer.