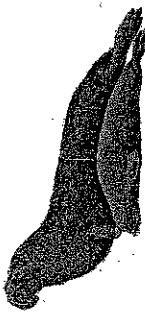







**Six California Pinnipeds**

**Otariids**

**Phocids**

 <p><b>Northern Elephant Seal</b></p> <p><b>Measurements at Birth</b>          Length: 4'1" (1.25 m)          Weight: 77 lb (35 kg)</p> <p><b>Maximum Measurements</b>          Length: Male: 13' 6" (4.1 m)          Female: 10' (3 m)          Weight: Male: 4,400 lb (2,000 kg)          Female: 1,300 lb (600 kg)</p> <p><b>Life Span</b> Male: 12-14 yrs.          Female: 18-20 yrs.</p>	 <p><b>California Sea Lion</b></p> <p><b>Measurements at Birth</b>          Length: 31" (80 cm)          Weight: 13-20 lb (6-9 kg)</p> <p><b>Maximum Measurements</b>          Length: Male: 7' 10" (2.4 m)          Female: 6' 7" (2 m)          Weight: Male: 860 lb (390 kg)          Female: 240 lb (110 kg)</p> <p><b>Life Span</b> Male: 15-20 yrs.          Female: 20-30 yrs.</p>	 <p><b>Northern Fur Seal</b></p> <p><b>Measurements at Birth</b>          Length: 24-26" (60-65 cm)          Weight: 9-13 lb (4-6 kg)</p> <p><b>Maximum Measurements</b>          Length: Male: 6' 11" (2.1 m)          Female: 4' 11" (1.5 m)          Weight: Male: 600 lb (270 kg)          Female: 130 lb (60 kg)</p> <p><b>Life Span</b> Male: 18-20 yrs.          Female: 20-25 yrs.</p>
 <p><b>Pacific Harbor Seal</b></p> <p><b>Measurements at Birth</b>          Length: 28-40" (70-100 cm)          Weight: 18-26 lb (8-12 kg)</p> <p><b>Maximum Measurements</b>          Length: Male: 6' 3" (1.9 m)          Female: 5' 7" (1.7 m)          Weight: Male: 370 lb (170 kg)          Female: 290 lb (130 kg)</p> <p><b>Life Span</b> Male: 25 yrs.          Female: 35 yrs.</p>	 <p><b>Steller Sea Lion</b></p> <p><b>Measurements at Birth</b>          Length: 3' 4" (1 m)          Weight: 35-51 lb (16-23 kg)</p> <p><b>Maximum Measurements</b>          Length: Male: 11' (3.3 m)          Female: 9' 6" (2.9 m)          Weight: Male: 2,400 lb (1,100 kg)          Female: 770 lb (350 kg)</p> <p><b>Life Span</b> Male: slightly less than female          Female: 18-25 yrs.</p>	 <p><b>Guadalupe Fur Seal</b></p> <p><b>Measurements at Birth</b>          Length: 24" (60 cm)          Weight: 4-9 lb (2-4 kg)</p> <p><b>Maximum Measurements</b>          Length: Male: 7' 3" (2.2 m)          Female: 6' 3" (1.9 m)          Weight: Male: 490 lb (220 kg)          Female: 121 lb (55 kg)</p> <p><b>Life Span</b> Male: 18 yrs.          Female: 23 yrs.</p>



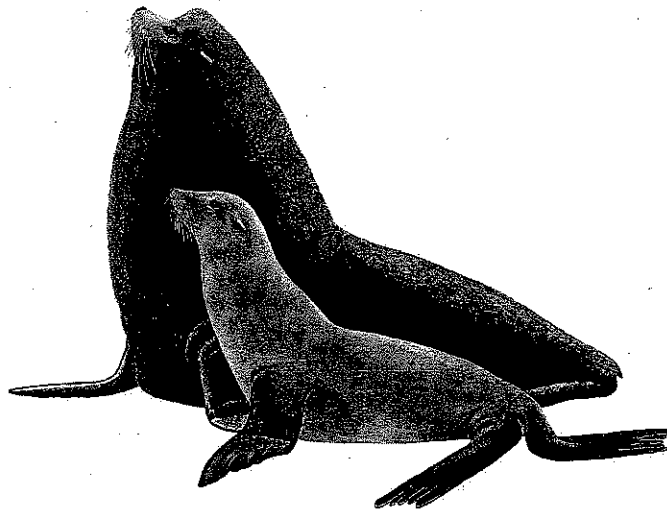
# The Marine Mammal



# Center™

Advancing Rehabilitation,  
Scientific Discovery and Education

## Teacher Background Information Pinniped Patients



Education Department  
The Marine Mammal Center  
Marin Headlands, GGNRA  
1065 Fort Cronkhite  
Sausalito, CA 94965  
[www.marinemammalcenter.org](http://www.marinemammalcenter.org)

Revised December 2002

## Types of Marine Mammals

**Pinnipeds** are flipper-footed marine mammals. There are three groups of pinnipeds:

1. **True seals** (family phocidae) in California include harbor seals and Northern elephant seals. True seals have no external ear flaps, just the ear hole may be visible. They crawl on land, using their front flippers and stomach muscles to move. Their front flippers are small and clawed. Swimming power comes from their rear flippers.
2. **Sea lions and fur seals** (family otariidae) in California includes California sea lions, Steller sea lions, northern fur seals, and Guadalupe fur seals. They have visible external ear flaps. On land, they walk on all four flippers. Their front flippers are long and wing-like without claws. Swimming power comes from their front flippers.
3. **Walrus** (family odobenidae) have no external ear flaps; the ear hole is visible. On land, they walk on all four flippers. Swimming power comes from their front flippers. The upper canines of both sexes grow into long tusks. Walrus inhabit the Arctic seas.

**Cetaceans** include all whales, dolphins, and porpoises.

1. **Toothed whales** (suborder odontoceti) include cetaceans such as dolphins, porpoises, sperm whales, pilot whales, belugas, beaked whales, killer whales, and narwhals. These whales have from two to more than 100 teeth, and breathe through a single blowhole.
2. **Baleen whales** (suborder mysticeti) include cetaceans such as the blue, gray, humpback, and bowhead whales. Instead of teeth, baleen whales have plates of baleen arranged in a row along the upper jaw, which serve to filter their food. Baleen whales breathe through a pair of blowholes.

**Sirenians** include two types (four species) of plant-eating marine mammals that inhabit tropical and subtropical waters. Dugongs (family dugongidae) are found in the Indo-West Pacific including Australia and China. Manatees (family trichechidae) are found in the waters of the Caribbean, Florida, the Amazon and West Africa.

**Sea otters** (family mustelidae) are found along the coast of the northwestern Pacific Ocean. Their thick, dark fur, long tail, and lack of true flippers distinguish them from other marine mammals. Another species, the marine otter, is found in coastal waters of western South America. Sea otters are the smallest marine mammals.

**Polar bears** (family ursidae) are included as marine mammals because they depend on the ocean for a majority of their food (seals) and are adapted for swimming. They have been known to swim 100 km across open water. They have a circumpolar distribution in the Arctic.

## **Mammals in the Oceans: Adaptations for Survival**

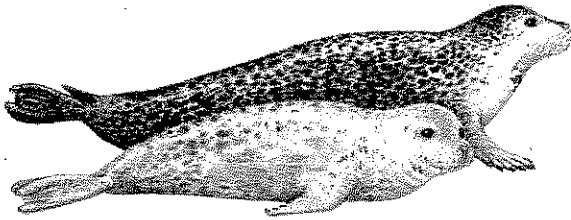
Mammals are a group of vertebrates, with a combination of characteristics that separate them from all other animals. Mammals breathe air through lungs, are warm-blooded, bear live young, produce milk, and have hair or fur. Marine mammals are mammals which have the above characteristics, but are adapted to life in the ocean. Therefore, they are distinctive in their appearance and survival strategies or adaptations.

In many ways, the ocean is a very inhospitable place for mammals. The water is cold (55 °F in central California), salty, and powerful. There is no air available under water for marine mammals. They must cope with a more three-dimensional habitat than terrestrial mammals. Predators, such as the great white shark are abundant in all directions. Finding food may require diving into deep dark waters at high pressure and staying underwater for a long time. Food supply varies, depending on currents, sunlight, and season.

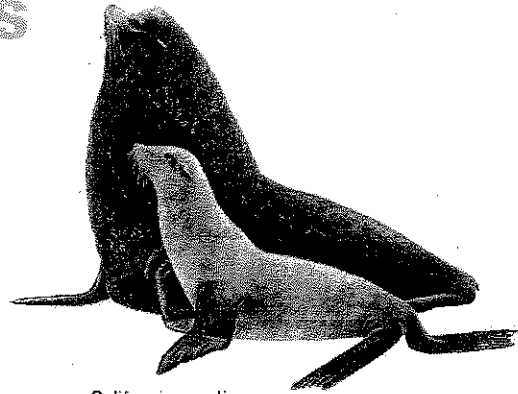
In order to survive in the ocean, marine mammals have developed many survival strategies, called adaptations. Some adaptations are behavioral, such as complex social systems (e.g. pod or group of dolphins), yearly migration patterns and communication via vocalizations, posturing and position. Other adaptations are seen in characteristics of marine mammal anatomy and physiology. Their streamlined bodies and flippers minimize energy spent moving through water. Efficient oxygen storage in the blood and muscles (nine times human capacity!) enable marine mammals to stay under water longer than other mammals; some whales and adult elephant seals can stay under water for more than one and a half hours. A blubber layer under the skin of pinnipeds and whales insulates them against the cold ocean, and nursing mothers provide their young with milk that is 25-50% fat in order to promote growth of the blubber. Echolocation aids odontocetes (toothed whales, dolphins, and porpoises) in sensing their surroundings, as do the super-sensitive whiskers on the faces of pinnipeds.

The concept of adaptation can be difficult to teach. Emphasize that an adaptation is something unique that aids in survival. If you live in the sea, you need to swim to survive; therefore, flippers are an adaptation. If you have to catch your food under water, then the ability to hold your breath for a long time is an adaptation. If you are warm-blooded in the ocean, then you need insulation from the cold; therefore, blubber is an adaptation. In teaching about adaptations, the following focuses are helpful: 1) what adaptations are unique to marine mammals, 2) why each adaptation is important or what difficulty it helps to overcome, and 3) how adaptations for securing basic needs (food, water, shelter, space) differ depending on particular habitats. Then consider how the adaptations that marine mammals have influence the care and facilities at The Marine Mammal Center.

# The Pinnipeds: Seals, Sea Lions, and Walruses



harbor seals



California sea lions

The word pinniped means flipper-footed, and refers to the marine mammals that have front and hind flippers. These include the seals, sea lions, and walruses. Most of these animals live in the ocean but are able to come on land for long periods of time. Millions of years ago, the ancestors of pinnipeds lived on land. These were probably weasel or bear-like animals that spent more and more time in the ocean, and eventually adapted to this marine environment.

There are three families of pinnipeds: phocids, otariids, and odobenids, and each of them is a little different. One family is the true seals (phocids). There are many different kinds of true seals, but you can always recognize them by looking at their ears and flippers. True seals have ear holes, but no external ear flaps. They also have small flippers and move on land by flopping along on their bellies. At sea, they move their rear flippers back and forth like a fish's tail to power themselves along.

Two seal species that live in the Pacific Ocean are the harbor seal and the northern elephant seal. Even though they are both true seals, they are very different. Harbor seals have spotted fur and tend to stay near shore. Males and females are about the same size, reaching a maximum of 300 pounds (140 kg). Northern elephant seals are grayish and tan in color, only come onshore to mate, give birth, and molt (shed) their fur. Males and females are very different in size and appearance. Female elephant seals reach up to 1,500 pounds (600 kg). Males can grow up to 4,500 pounds (2,000 kg) and they develop a large nose or proboscis that looks like an elephant's trunk. Scientists have found that elephant seals can dive to over 5,000 feet (1,524 m) below the ocean's surface and stay under water for two hours!

Another group of pinnipeds includes sea lions and fur seals (otariids). You can also recognize these animals by their flippers and ears. Unlike true seals, they have external ear flaps. Their flippers are large, and on land they are able to bring all four flippers underneath their bodies, and walk on them. In the water, they swim using their front flippers like oars. Fur seals have longer flippers and thicker coats than sea lions.

Two sea lion species live along the California coast: the California sea lion and the Steller sea lion. California sea lions have brown fur, act playful, like to stay together in large groups, and sound like barking dogs. You can often see them in large groups hauled out on offshore rocks or floating together. Males can weigh up to 850 pounds (390 kg), while females may weigh up to 250 pounds (110 kg). Steller sea lions have light brown or auburn fur. The Steller sea lion is the largest otariid species, and males can weigh over 2,000 pounds (1,120 kg). Most Steller sea lions live in Alaskan waters, but about 500 live in California. The population is dropping, and they are on the endangered and threatened species list. Scientists are not sure why their numbers are dropping, but think it could be due to a change in their food resources and competition from commercial fishing.

Another type of otariid found in California is the fur seal. The fur seal species most commonly seen in California is the northern fur seal. They tend to stay far offshore and are often seen floating on their backs with their flippers sticking out of the water, a behavior called "jughandling." As their name implies, they are very furry. Over 300,000 hairs per square inch keeps them well insulated. Years ago, people made fur coats from their fur. The northern fur seal population is now considered depleted, and thousands of them are caught each year in plastic trash and nets. Another fur seal, the Guadalupe fur seal, is found in Mexico and sometimes off the California coast. Once there were many of them in California, but they almost became extinct due to over hunting for their fur. With protection from the Mexican and U.S. governments, there are now 7,400 Guadalupe fur seals.

The third family of pinnipeds is the walruses (odobenids). They have a combination of the traits found in seals and sea lions; like seals they have no external ears, but like sea lions they can rotate their hind flippers forward. Both males and females have tusks and vacuum-like mouths for sucking up shellfish from the ocean floor. Walruses are one of the largest pinnipeds, with males reaching over 3,000 pounds (1,500 kg). They live in the North Atlantic and Pacific Oceans, in the Arctic region. Walruses are protected under U.S. and Canadian laws, but limited hunting by the Inuit people is allowed.

If you have a chance, look for your pinniped neighbors along the water or at a zoo or an aquarium. You might want to read books to learn more about these wonderful creatures and also keep informed on current events to learn how you can help protect them.

© The Marine Mammal Center [www.marinemammalcenter.org](http://www.marinemammalcenter.org)

Illustrations by Pieter Arend Folkens © 2000

May be reprinted for non-commercial or educational purposes.

Revised 1/02

## Why Do Marine Mammals Strand?

Marine mammals have stranded for many thousands of years. In the past, people in many parts of the world took advantage of these events to harvest the animals for food and oil, thinking they were gifts from the gods. Today, we try to save stranded marine mammals, learn why they strand, and if we cannot save them, find the cause of mortality.

Possible reasons for stranding depend on the type and number of marine mammals involved. Since pinnipeds (seals and sea lions) normally come to shore to rest when healthy, it is natural for them to come to shore to rest if they are sick or injured. Seal and sea lion pups are born on land and are temporarily left on the beach, while their mothers hunt for food. Pinnipeds that seem to be stranded may be simply resting. They must be carefully observed for signs of injury, illness, or abandonment to be considered stranded. Pinnipeds are susceptible to many kinds of diseases, parasites, and biological toxins such as red tide. They are also vulnerable to predators such as sharks and killer whales.

While many causes for stranding are natural, humans can sometimes be responsible. In the United States, marine mammals have been protected from hunting (except by specific native tribes with permission to hunt a limited number for subsistence) since 1972 with the passing of the Marine Mammal Protection Act and the Endangered Species Act. However, in the United States, as competition increases for the limited ocean resources, more and more seals and sea lions are found with gunshot wounds. Stranded animals may also have injuries from collisions with boats or may be entangled in plastic debris and nets. Illnesses caused by oil spills and other toxic pollutants can also cause marine mammals to strand.

Stranded cetaceans (dolphins, porpoises, and whales) are obviously in trouble. Cetaceans are completely adapted to living under water, and spending time on land can quickly lead to death. If a lone cetacean strands, it is most likely sick, injured, or disoriented. If a large group of cetaceans strand (mass stranding), the answers are not as clear. Some theories for mass stranding are that gently sloping beaches may mislead marine mammals to think that the water is deeper than it really is, particularly in rough seas; whales or dolphins become trapped when they follow prey onto a beach or shallow inlet at high tide; parasites or pathogens (disease-causing organisms), may cause marine mammals to become disoriented and get too close to a beach; a pod of whales may be following an injured or disoriented member of the pod. Whales and dolphins may use the earth's magnetic field as a compass. In places where the field is weak, they may lose their sense of direction and beach themselves. Unfortunately, many mass strandings have occurred that cannot be explained by any of these theories. The one thing that is known about mass strandings is that they only involve toothed whales, cetaceans with a very close social structure. If one animal strands, the rest of the pod responds with a strong instinct to stay together, therefore they all become stranded.

## **Why The Marine Mammal Center Rehabilitates Stranded Marine Mammals**

Many marine mammals strand due to natural causes, however, few have the chance for a "natural" death. If they strand in a public area, they are often harassed by curious onlookers, dogs, or other traffic. The animals' reaction to harassment may be to bite or attack, creating a potential hazard to the public. We are not trying to keep all marine mammals from dying; we rescue those few that are accessible to us and save those that have a chance for survival. We do euthanize animals that have no chance for recovery, so their death is peaceful and quick.

By helping marine mammals that were hurt directly by humans (gunshot, entangled in plastic debris or fishing nets) we can often fix some of the damage that humans have caused. Marine mammals have also been affected by human impacts, such as the accumulation of pollutants in their food, past hunting depleting populations, from over fishing of prey species, habitat destruction, and loud human made sounds in the ocean. These impacts may increase a marine mammal species' susceptibility to disease, may cause illness, or influence population dynamics.

The intrinsic value of each individual animal is The Marine Mammal Center's primary focus upon rescue and throughout the rehabilitation process. Our goal is to release each animal back into the ocean once they are healthy. In the course of rehabilitating an animal we gather information from blood samples and fecal analysis that are kept on file for research purposes. If an animal dies, we perform a necropsy (same procedure as autopsy, but performed on animals), to see what was happening inside the animal and to try to determine the cause of death. Tissue samples are collected and stored. Our scientists and other researchers from around the world share data and samples collected. Study projects include marine mammals' diets; identification of viruses, bacteria, and parasites; toxin accumulation and its effects; improving husbandry techniques and the medical treatment of stranded animals; and research about rare species. The rehabilitation process for each animal gives us and the rest of the scientific community a noninvasive window to study marine mammal populations, the impacts of human activities, and the health of the ocean.

## How The Marine Mammal Center Cares for Sick, Injured, and Orphaned Marine Mammals

The background information below is written for all teachers. Use your expertise to adjust the information to the proper grade or knowledge level of your students. Please use this information to facilitate pre-and post-trip discussions.

### RESCUE

The Marine Mammal Center's Stranding Department depends on the public and local authorities to notify them of a beached marine mammal that appears to be in distress. Our rescue phone number is (415) 289-7325. The caller will be asked to describe the location of the animal, its physical characteristics and size, and the condition of the animal. Since most people do not know the difference between seals and sea lions we will try to determine what species it is by asking the caller questions including: Do you see ear flaps? Does it have a spotted coat? Does it flip sand on its back? The caller will be asked to keep dogs and people away and to stay back from the animal. Marine mammals are protected by The Marine Mammal Protection Act and it is illegal for unauthorized persons to handle or harass them. A trained rescue team equipped with a pickup truck, nets, cages, and herding boards will be dispatched to access the animal. It is normal for pinnipeds to haul out on land to rest. Sometimes no rescue is needed. Occasionally healthy animals beach themselves in areas that are not normal or safe, like on an airport runway or on a coastal highway. In these cases, The Marine Mammal Center will relocate the animal. If the beached animal is indeed sick, injured, or orphaned then it will be rescued and brought to The Marine Mammal Center hospital.

### DIAGNOSIS

Marine mammals cannot talk to tell us where it hurts. The Marine Mammal Center's veterinarians and veterinary technicians must find out what is wrong with each animal by relying on what they observe and the results of certain tests. The information gathered, along with their knowledge and past experience, will help the veterinary staff diagnose the problem.

**What do you think are some of the signs the veterinary staff observe when examining a new patient? Volunteers that rescue the animals are also trained to observe and make notes of the same signs.**

- Animals' behavior (not aggressive, allows humans to get close)
- Discharge from the eyes, nose, or ears
- Normal movement or paralysis
- Visible irregularities (abnormal bumps, wounds, abscesses, disjointed bones)
- Weight relative to size; thin (emaciated) or fat

**What tests or procedures might be done to help determine the diagnosis?**

- Listen to the lungs and heart
- Blood tests
- Fecal analysis
- Tissue samples
- Mucous samples
- X-ray
- Ultrasound
- Measurement of weight and length

## **PATIENT IDENTIFICATION**

**Why does The Marine Mammal Center's veterinary staff mark the patients with flipper tags ?**

With two or two hundred patients in the hospital the veterinary staff needs to be sure that each individual animal is receiving the care it requires. Within 24 hours of arrival all animals are marked for identification with a numbered orange Reise tag. The small two inch tags pierce the skin on the rear flipper of seals and the front flippers of sea lions, similar to a pierced ear. The tags are not removed upon release. Sighting tagged animals in the wild gives The Marine Mammal Center's scientists a method for tracking individuals, learning about population distribution and the success of our rehabilitation techniques.

## **MEDICAL TREATMENTS**

**After the veterinary staff determines "what is" or "might be" wrong, what medical treatments or procedures might be used to help the patient?**

- Medications (antibiotics, pain reducing medicines, medicine to eliminate parasites)
  - injections
  - pills in food
  - topical (eye infections)
  - Mucomyst (lung infections, pneumonia)
- Vitamin and salt supplements
- Regular monitoring of weight, blood values, and fecal samples
- Cleaning of wounds
- Surgery
- Stitches
- Amputation
- Quarantine
- Intensive care or no special care
- Euthanasia

## **HUSBANDRY**

At a human hospital the staff must also care for the patients' day-to-day or basic needs (food, water, shelter, and space). Even with the best medical treatment, if a patient's basic needs are not met they will not recover or their recovery may be slow. At a hospital the nursing staff, food preparation staff and cleaning staff all participate in providing for the basic needs of the patients. What are some procedures and practices that these people do? For animals this day to day care is called "husbandry." At The Marine Mammal Center, husbandry is done 24 hours a day by trained volunteers. Volunteers prepare the food, clean the pens and pools and some are also trained to collect some test samples and to do some medical treatments.

**What husbandry procedures and practices do you think are done (or did you observe) at The Marine Mammal Center?**

- Regular feedings with freshly prepared food
- Tube feeding pups or sick animals until they can feed themselves
- Regular cleaning of pools and pen floors (our patients do not go to a separate "bathroom" and they eat in their pools)
- Constant filtration of the pools' water

- Attention to animals' body temperature (Access to pools, sprinklers and spraying off by volunteers on hot days. Placement of underweight animals in cages with solid sides for protection in especially cold wind.)
- Sterilizing all equipment after each use in order to prevent the transfer of germs and diseases.
- Time and space to exercise (room to move on land and pools for swimming)
- Time and space to rest
- Time and space to interact with other animals of the same species
- Placement of animals in pens so that their interactions are not compromising the health of another animal (contagious animals separated, stronger animals separated from weaker animals)
- Minimizing animals' contact with hospital staff and visitors
- Regular observations of the animals' behavior

## **HUMAN SAFETY**

**What are some of the dangers to the volunteers and veterinary staff that rescue and care for wild marine mammals?**

- Getting bitten
- Contracting a disease contagious to humans
- Getting hurt lifting or restraining animals
- Slipping on wet surfaces
- Accidents in rough terrain during rescues

**How do you think the staff protect themselves from the wild animals?**

- Knowledge of the safety procedures and equipment (first aid, eye wash, 911) that The Marine Mammal Center has available.
- Wearing the proper protection
  - Slickers or waterproof coveralls
  - Calf-length rubber boots with soles that do not slip
  - Gloves to protect against germs
  - Lead apron if assisting with an x-ray
- Using herding boards
- Using the proper equipment for medical treatment or husbandry procedures
- Making sure that equipment is in good condition and functioning before entering the pen and restraining the animal
- Working in pairs or teams; When performing a procedure each person must be aware of their role, when they are needed, to whom and when they can ask questions, and how to indicate when there is a problem (e.g. I cannot hold the head anymore, so...)
- If there is a problem and the procedure has to be abandoned, knowledge of the safest way for team members to stop and leave
- Knowledge of:
  - animal's health (sick and lethargic, wounded but otherwise healthy and alert, or transferring a healthy animal for release back to the ocean)
  - animal's behavior (aggressive adult, passive pup)
  - animal's size (15lbs. vs. 600+ lbs.)
- Awareness of their own abilities and the abilities of their partner or team members
  - Is the animal too big for me or us to restrain?
  - I am not trained in that procedure.
  - I am tired, my reactions or judgment may not be 100 percent, so today I cannot...

I am afraid to do this.  
Can I work when cold and wet?

## **RELEASE**

### **How does the veterinary staff determine whether a patient is ready for release?**

An animal is determined to be healthy when:

1. Blood, fecal, and other tests are normal
2. Wounds are no longer infected and are healing properly
3. The animal's weight is normal for its age, size, and species
4. The animal can swim and feed on its own in the pool (this is especially important for orphaned pups.)

When possible, animals of the same species are released together. Before release, each animal is weighed, measured, and another orange Reise tag is placed on the second flipper. A release date is posted and volunteers sign up to help. Twenty-four hours before release the animals are not fed; this encourages them to forage for food as soon as they return to the ocean. The animals are loaded into portable cages and transported by a truck to the release site. Animals are released on beaches that have few human visitors and are adjacent to populations of other pinnipeds of the same species. Certain species and animals with special case histories are released from boats at sea. The release back to the wild of our patients is the fulfillment of The Marine Mammal Center's ultimate goal!

## Glossary of Terms

- Blood sample:** A small amount of blood taken from a patient for a large variety of laboratory tests. Blood from every animal admitted to The Marine Mammal Center receives a baseline set of tests, including a complete blood count (CBC) and clinical chemistry.
- Euthanasia:** The bringing about of a gentle and easy death for an animal suffering from an incurable disease or untreatable wounds. An intravenous injection of pentobarbital is administered by one of The Marine Mammal Center's veterinary staff after a thorough examination and the consideration of all treatment options and prognosis for quality of life.
- Fecal sample:** A small amount of feces (solid waste) that has passed through the digestive tract of a patient and is taken externally to test for parasites or toxins.
- Filtration system:** The network of pumps, filters, and disinfection that keep the water in the pools clean.
- Fish milkshake:** Blended mixture of ground Atlantic herring, whipping cream, salmon oil, and granulated lecithin (a lipid compound) fed to elephant seal pups (also known as elephant seal formula).
- Fish school:** Process of introducing young animals of weaning age to whole fish.
- Foot bath:** Tray of dilute bleach placed at pen doors for dipping the soles of boots or shoes to sterilize them before entering.
- Free feed:** A type of feeding in which the animals find and eat fish on their own in a large pool.
- Herding board:** A large piece of wood with handles used by rescue and animal care staff to shield themselves from the animal, to break up their human silhouette, to "herd" animals in certain direction or to a certain location, to assist in restraining animals for husbandry procedures.
- Intensive care:** Type of care given to critically ill or sensitive animals, usually in isolation from humans and other animals.
- Lab or laboratory:** Building where samples are stored and analyzed for diagnosis and/or study using a variety of special equipment, such as microscopes.
- Live fish test:** Process of assessing that animals will be able to forage in the wild before they are released. Live fish are put in the animal's pool; if they track and catch the fish, they have minimal foraging skills that fulfill release criteria.
- Marine Mammal Protection Act (MMPA):** In 1972, the U.S. Congress passed the MMPA to give legal protection to cetaceans, pinnipeds, sirenians, sea otters, and polar bears. The MMPA prohibits harassing, hunting, capturing, or killing any marine mammal without a permit. For scientific, educational, and public health purposes, the Act creates a network of organizations specially authorized to respond to marine mammal strandings. The MMPA is managed by the Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service.
- Med Fish:** Fish that have had medicine, vitamins, or salt supplements inserted into them.
- Necropsy:** Post-mortem examination.
- Quarantine:** The separation of an animal that may have a contagious disease or may be susceptible to disease from other animals.
- Radio tag:** An electronic device attached to an animal which emits a radio signal. The signal is detected with a radio receiver allowing the animal's movements to be tracked.
- Rehabilitation:** To restore health in an organism; to make better.
- Reise tag:** (Also, flipper tag). Plastic tags attached to animal for ID purpose. On seals, it is attached to the hind flipper; on sea lions, it is attached to the fore flipper. The rehabilitation facilities in California use orange tags, another color denotes other researchers.

- Release:** The process of returning an animal to the ocean once it is rehabilitated. Most animals are released from the beach, usually a remote beach near other pinnipeds. Pelagic (open ocean) species are released off shore from a boat.
- Rescue:** When a sick, injured, or orphaned marine mammal is taken from the coastal area (beach, dock, mud flat, etc.) and is brought to The Marine Mammal Center.
- Restraint feed:** (i.e. force feed) The process of force feeding a rehabilitating animal that will not eat fish. While one volunteer restrains the animal, another volunteer places a fish into the animal's mouth and gently attempts to coax the animal to swallow.
- Satellite tag:** A device attached to an animal prior to release which emits signals to satellites orbiting the Earth. The satellite then transmits data to a computer, including the animal's position (latitude and longitude), the depth to which the animal is diving, and other information.
- Sagittal crest:** A bony ridge on top of the skull that develops in adult male otariids. The crest is quite pronounced in California sea lions.
- Stranded:** Any live marine mammal that is on the shore and unable to return to the water; is on the shore and in need of medical attention; and/or is in the water but is unable to return to its natural habitat under its own power. Also, any dead marine mammal on the shore or in the water.
- Super weaner:** Elephant seal pups that continue to suckle milk or steal milk from other female elephant seals after they have been weaned. These pups may weigh over 400 pounds.
- Tide pool at The Center:** Small, shallow pools that are used to teach elephant seal pups how to swim and forage. These pools are also used by animals that may not be healthy or strong enough to swim in the larger pools.
- Tube feed:** The process of feeding a patient that is unable to eat whole food. A rubber tube is inserted in the animal's mouth and passed through to its stomach. Using a syringe or funnel, a liquid formula is poured into the tube and into the stomach. Pups are given a milk formula and adults are given ground fish.
- Ultrasound:** A diagnostic technique using sound waves that convert to electrical impulses that are displayed on a monitor. At The Marine Mammal Center ultrasound images are used to visualize abscesses, look for abnormal masses (e.g. cancerous tissue), and evaluate cardiovascular function.
- Veterinarian:** A person trained and authorized to diagnose and treat animals, including prescribing medication. Veterinarians need a minimum of six years of combined study at a university and experience. Like doctors, they can be generalists or specialists, concentrating in areas such radiology and pathology, or in the types of animals they treat from domestic pets, farm animals, zoo animals, to marine mammals.
- Veterinary technician:** A person trained to treat animals, comparable to a nurse in human care. They assist in treating animals but cannot prescribe medication. Training varies for different states, ranging from passing a basic test that allows one to begin working with a veterinarian for experience, to requiring two to four years of college and experience.
- Visitor area:** The area at The Marine Mammal Center that is open to the general public. Some areas of the hospital are off limits to visitors for their safety, the safety of patients, and so that our patients' care is not compromised.
- Volunteer:** A person who performs or gives services of his own initiative, without receiving any monetary compensation. At The Marine Mammal Center over 800 volunteers assist in all areas including administration, animal care, education, operations, retail, and rescue.
- Weaned pup or weaner:** A seal or sea lion pup that is no longer suckling mother's milk, or in the case of an orphaned pup, no longer being tube or bottle fed formula.

**X-ray:** (Radiograph) A photograph taken using ionizing radiation. At The Marine Mammal Center, x-rays are used to evaluate bone integrity (e.g. look for fractures), look for bullets, search for foreign bodies in the gastrointestinal track, and to evaluate the lungs.