

Point Reyes National Seashore Elephant Seal Interpretive Talk

Theme:

Northern elephant seals were once on the brink of extinction, but thanks to protection and conservation efforts, their population is now growing. Spending most of their lives at sea, each year they also spend extended time on land, their survival depends upon their ability to adapt to extreme environments.

Goal:

To foster an awareness and appreciation for the Northern elephant seal and to develop an understanding of behavior which helps to keep seals safe.

Objectives:

1. Describe 2 of the differences between elephant seals and sea lions
2. Describe why female and male elephant seals come ashore
3. Identify 1 of the traits which allows elephant seals to dive deeply for extended periods
4. Name 1 thing that you can do to help to keep seals safe when you encounter them on the beach

Some comments about the structure of this interpretive talk

This talk was written for all Drakes Beach, for the Elephant Seal Overlook and for the Historic Lifeboat Station (when elephant seals are present).

For the Elephant Seal Overlook and for the Historic Lifeboat Station, you can skip the safety section.

If giving this talk at Drakes Beach:

- *You must be approved by Sean or Carlo*
- *The talk should be given at a predetermined time(s). In the morning be sure that the KPVC ranger knows when your talk will begin so that they can inform visitors AND display the time(s) on a Windmaster sign.*
- *Your talk should be given when there are elephant seals in proximity to the Ken Patrick Visitor Center as this will allow for better connections between the visitor and the resource.*
- *For safety reasons:*
 - *Your talk should be given to a group of no more than 25 visitors.*
 - *Only give your talk in the vicinity of animals that are not active AND where you and the visitors can gather safely without disturbing the animal*
 - *You, and your fellow docents, are responsible for ensuring that you and the visitors remain more than 25 feet from the animal(s).*
 - *Never turn your back on the animal(s).*

Outline

- General introduction and safety on the beach
- Elephant Seals vs. Sea Lions
- On the brink of extinction
- Why they are here
 - Males
 - Females
 - Weaners
- Life on land
- Life at sea

- Their annual cycle
- How can you help
- Optional Topics:
 - How can they go so long without drinking?
 - Pregnancy and delayed implantation
 - Molting
 - Monitoring and tagging
 - Sensory ability at depth

General Introduction and Safety

Location: Drakes Beach. If there are animals in the ice plant, you can give the talk from the sidewalk. If there are animals on the beach, AFTER you have done your introduction and safety briefing, you can take the group to a safe location for the talk which is at least 25 feet from the animal(s).

(Begin with some small talk until you think everyone who would like to listen to your talk is gathered. You may have to get the group together yourself. Don't be shy, loudly announce that your talk is about to begin.)

Hello, my name is (insert your name), I am a volunteer with the National Park Service. Welcome to Point Reyes! I am going to do a short talk about northern elephant seals. The talk will be 15-20 minutes. I am happy to answer questions both during and after we finish. Is anyone here a first time visitor to Point Reyes? Is anyone here seeing elephant seals for the first time?

We're very fortunate today to have elephant seals very close to the visitor center. This provides for a great learning opportunity. The first item that I'd like to talk about is safety. These are wild animals and they are protected under the marine mammal protection act. It is illegal for anyone to disturb or interact with these animals. Adult males likely weigh more than the car that you drove to the park and the females are very protective of their pups. They are deceptively fast so we ask that everyone keep a safe distance from the animals. A safe distance is a minimum of 25 feet. 25 feet is about 10 strides. If the animal is active, we ask that you stay at least 50-100 feet away. If the animal is altering their behavior because of your presence, then you are too close and should move away. Lastly, the seals are quite camouflaged when on the beach so we ask that you be aware of where you are walking so that you don't accidentally walk into a seal. Are there any questions?

TRANSITION: Let's start our talk over here near this (insert adult male/female/female with pup/weaner). (lead the group to an animal where people can gather at a safe distance)

1. Elephant Seal Introduction

This is a (insert adult male/female/female with pup/weaner) northern elephant seal. He/she is part of a broader group of animals called pinnipeds. Seals, sea lions and walrus are all pinnipeds. Does anyone know how to tell a seal from a sea lions (answers below)?

- Elephant seals do not have earflaps whereas sea lions do.
- Seals undulate to move on land whereas sea lions articulate their hips and walk on all four flippers.
- Seals propel themselves, in the water, primarily with their rear flippers whereas sea lions propel themselves primarily with their larger pectoral/front flippers.

These animals were very near extinction in the early 1900s. For hundreds of years they were hunted, primarily for their blubber. When harvested, an adult male seal produced 25 gallons of oil. As an example, this oil was used to light the lighthouse out here at Point Reyes. Protection for these animals began in 1922 by the Mexican government. Today, thanks to protection and conservation efforts there are more than 200,000 northern elephant seals. While their populations are growing, scientists are carefully monitoring elephant seal colonies.

TRANSITION: Now let's talk about the animal that is here on the beach with us (use 2a or 2b or 2c)

2a. Adult Male

Does anyone know why this adult male is on the beach? He is here hoping to mate. A few larger males will be able to establish and defend a harem of females or successfully challenge alpha males and take over their harem. Other males will lurk on the periphery, hoping to have a chance to mate if the alpha becomes preoccupied defending his harem. The vast majority of males on the beach will not successfully mate with any females this season. An adult male northern elephant seal can be 15 feet in length and weigh more than 5,000 pounds. Two large males fighting for a harem can be a spectacular fight, though the fights are rarely fatal.

The seals begin arriving for the mating season in December and they will remain on the beach until the last female leaves in March. During the three months that they are on the beach, they won't eat or drink anything.

Much of the animals' mass is made of blubber. The blubber acts as a store of energy while they are fasting and it helps them to retain heat while at sea. This insulating layer is like a heavy winter coat and can cause them to easily overheat while on the beach. Elephant seals have intertwining arteries and veins that allow blood to flow toward the skin rapidly facilitating heat loss when the animal is too warm. The same system can also shunt blood away from the skin to retain heat while at sea.

TRANSITION: When they return to sea in March, they will have lost about a third of their body mass.

(Pause for questions)

2b. Adult Female / Adult Female and Pup

Does anyone know why this adult female came to the beach? She came here to give birth to her pup. All seals and sea lions give birth to their pups on land. Within several days of her arrival she will give birth to a pup. The pups weigh about 70 pounds at birth and aren't able to swim. She will nurse her pup for about 28 days. During these 28 days, a healthy pup will grow from 70 pounds to about 250 pounds. This is an incredible transfer of energy from the mother to the pup. By the time the pup is weaned the milk upon which the pup is nursing is about 50% fat by volume and is roughly the consistency of ketchup.

After she gives birth, she stays on the beach nursing and fiercely protecting her pup. She will neither eat nor drink during her stay. By the time that she mates and weans her pup, she will have lost roughly a third of her body mass. Much of the animals' mass is made of blubber. The blubber acts as a store of energy while they are fasting and it helps them to retain heat while at sea. This insulating layer is like a heavy winter coat and can cause them to easily overheat while on the beach. Elephant seals have intertwining arteries and veins that allow blood to flow toward the skin rapidly facilitating heat loss when the animal is too warm. The same system can also shunt blood away from the skin to retain heat while at sea.

TRANSITION: Soon after mating and weaning her pup, she will return to sea to forage and regain the weight that she lost while on land.

(Pause for questions)

2c. Weaner(s)

These animals were born mostly in Jan/Feb. At birth they were about 70 pounds. Their moms, each of whom had one pup, nursed it for 4 weeks before weaning the pup, mating and going back to sea. The weaned pups are called weaners. As their mom's go back to sea, the weaners form pods. This is largely so that they can learn from each other and to stay out of the way from adult males that may be fighting to mate with other females. The weaners will stay on the beach until mid to late March. During this time they are building bone and muscle density. They are also starting to learn to swim and to hold their breath. Even though they are entering the water to learn to swim, they are not foraging for food.

TRANSITION: They will live entirely on the weight that they gained while nursing until it is time to leave the beach.

(Pause for questions)

3. Life At Sea

Whether male, female or weaner, after so long on the beach, these animals need to return to the sea to forage for food. They need to replenish their blubber so that they can remain warm AND to ensure that they can sustain their next return to land. The males predominately migrate north along the Pacific coast up to the Aleutian Islands and back. The females predominately migrate northwest out into the middle of the Pacific and back. These animals will migrate roughly 7,000 miles foraging for food before they return to the beach in several months to molt. After molting they will repeat this migration traveling 13,000 to 14,000 miles annually. This is the longest annual migration of any marine mammal.

While at sea, elephant seals spend the majority of time underwater. They are able to dive for extended periods and are able to go to extreme depths. Dives lasting up to 90 minutes and to depths well below 5,000 feet have been recorded. Elephant seals have very specific adaptations allowing them to accomplish deep dives for extended periods *(pick one or two to mention)*:

- Because of the extreme pressure, elephant seals exhale, emptying their lungs before they dive. *(you can ask a member of the audience how long they can go without breathing after they exhale).*
- Oxygen can be carried in the lungs, in the blood and muscles. Even though they don't rely on oxygen in the lungs while diving, elephant seals can carry more oxygen in their blood and in their muscles than other animals. Both their blood and their muscles are more efficient at carrying oxygen than humans. Additionally, as a percentage of body mass, they have 3x the amount of blood relative to humans.
- Seals are able to slow their heart rate significantly while diving (YY BPM)
- Seals are able to control the flow of their blood so that it only reaches specific areas of their bodies. For example, unless they are digesting food, there is no need to pump blood to their digestive tracks.

Elephant seals feed squid, lanternfish and deep sea smelts. While they have teeth, they tend to suck or grab their food with their mouths and then swallow it.

While at sea, elephant seals have two primary predators with which to worry, orcas and sharks, primarily white sharks. White sharks feed primarily on the younger seals, while orcas are able to take all seals, including adult males.

TRANSITION: After spending several months at sea, the elephant seals will return again to molt.

4. The Annual Cycle

These animals come to Point Reyes twice each year, once for pupping and breeding and once to molt. Between their two visits to Point Reyes, they follow roughly the same migration route for foraging.

5. Conclusion

I hope that you have enjoyed this talk. These talks are an important because they help visitors to have a greater awareness and appreciation of resources within our parks. We hope that with that appreciation comes a desire to help to care for our parks. I would challenge each of you to think about what you might be willing to do to help to care for and to protect parks and resources that are important to you. This could be as simple as:

- Switching to reef-safe sunscreens
- Reducing the use of fossil fuels by carpooling once a week
- Reducing the use of plastics
- Participating in a beach cleanup
- Donating to a park conservancy

Thanks for visiting Point Reyes National Seashore and enjoy the rest of your day. I'll be around to answer your questions.

6. Optional Topics

Because the duration of this talk should only be 15-20 minutes, it isn't possible to go into too much detail on all topics of potential interest to the visitors. Below are a few succinct points what you may wish to add to your talk or use to answer questions:

- How can these animals go so long without drinking?
 - Several components of their anatomy and physiology allow for this to happen. They have nasal turbinates, a bony structure in their nasal passage, which helps them to retain moisture while exhaling. While fasting, the animals metabolize their blubber and water is a byproduct of this process. Additionally, they have kidneys that have adapted to dispel very concentrated urine (more waste with little water).
- Pregnancy and delayed implantation
 - Females come into estrus 24 days after giving birth. They will mate after they come into estrus. Unlike humans, the fertilized egg does not implant in the uterine wall for four months, this is called "delayed implantation". Scientists theorize that this gives the female a chance to regain some of the body mass that she used to birth and nurse her pup, allowing her to better nourish the fertilized egg. The gestation period, once implanted in the uterine wall is about 7.5 months.
- Molting
 - Each year elephant seals must replace old skin and hair. Many mammals do this slowly throughout the year, however, elephant seals do this in a short period of time. Each Spring / Summer, these animals haul out for a "catastrophic molt". Females molt April – May. Sub-adult males molt May-June. Adult males molt July-Aug.
 - *(Docents should have some elephant seal fur with them to show visitors as this will help to connect the visitor to the resource in a tangible manner.)*
- Monitoring and tagging
 - Largely because of their physiological abilities, elephant seals are one of the most highly studied animals. Here at Point Reyes National Seashore, we have been monitoring the population since they first colonized here. Each year ecologists and interns dye-mark the largest male seals. This allows us to monitor movement of these males in the park throughout the breeding season. Additionally, we tag 300-400 weaned pups. This tagging is done in colonies along the Pacific coast. We do weekly counts of males, females, pups and weaned pups. As counts are done, any tags that are spotted are logged. This lets us monitor the age and location of seals each year. Roughly 90-95% of the tags that we see during these counts are on animals that were born in Point Reyes. Tag colors: Pink=Point Reyes/Farrallon, Orange=Marine Mammal Center, White=Piedras Blancas, Green=Ano Nuevo, Yellow=San Miguel Island, Red=San Nicolas Island. Note that the Point Reyes tags are drilled. This means that each numeral / letter has a unique drill patten. So that we can read them even when the numbers / letters, which are printed on the plastic, are worn off.
 - *(Docents should have a tag with them to show visitors.)*
- Sensory ability at depth. How do they find their prey in the dark depths?
 - Scientists do not have any evidence that suggests echolocation of prey, instead there is strong evidence that special adaptation to vision help elephant seals to find prey. Additionally, there is a belief, though little evidence, that these seals use their whiskers to sense the movement of prey. Seals have increased sensitivity to light, significantly greater than what humans experience. Their eyes are particularly sensitive to the colors and light of bioluminescent fish. Their eyes can focus well, and therefore see clearly, on the beach AND in the water. Additionally, their eyes are able to adapt to darkness much more quickly than humans. This helps them to be able to hunt throughout their dives.