



# AMONG FRIENDS

Friends of the Elephant Seal Member Newsletter



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Summer

2016

## Meet Dan Falat



Friends of the Elephant Seal welcomes Dan Falat, his wife, Karen, and their three sons back to the Central Coast. Six years after he left his San Luis Obispo post as Park Operations Superintendent to become Sector Superintendent of the Santa Barbara Channel Coast District, Dan has recently returned to lead the San Luis Obispo Coast District of the California Department of Parks and Recreation.

Dan began his State Parks career as a visitor services aid and quickly rose through the ranks. During an 18-year career he has earned a reputation for outstanding leadership by combining hands-on field experience with personal charm, intelligence and carefully chosen educational pursuits—he is one of only two members of State Parks to graduate from North Carolina State University's National State Park Leadership School. Most recently, he has been the District Superintendent of the Colorado Desert District near San Diego.

Superintendent Falat's new responsibilities include Hearst San Simeon State Historical Monument (Hearst Castle) and ten California state parks, beaches and reserves from south of Morro Bay, (Montana De Oro,) to north of the Castle, (Hearst San Simeon State Park.) On a tour of the Piedras Blancas Outstanding Natural Area, (PONA,) Dan spoke eagerly of the challenges ahead, "My vision for the District is to create a balance between preservation, protection, education & recreation. . This will give our visitors an opportunity to discover the essence of "place" to fully experience and appreciate what our parks have to offer."

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## The Value of Fur

During the molting season, docents are often asked about the significance of fur<sup>1</sup> for the elephant seals. A study<sup>2</sup> involving harp and hooded seals, both arctic seals of the north Atlantic, gives us some information as to its value. Both are, as is the elephant seal, phocid or earless seals. The harp seal is born with a striking white lanugo (birth) coat that provides about 80% of its total insulation against the cold. The fur of the hooded seal provides about 60% of its insulation, but the hooded seal is born with a layer of blubber that provides the rest. By weaning – 12 days for the harp seal and only 4 days for the hooded seal – the insulation provided by the fur and blubber is about equal. As adults, fur provides about one-third of their insulation.

So far, all of this refers to the seals on land or ice, not in the water. The pups don't usually go in the water, but if they did, their fur would provide much less insulation; about 50% of the total for the harp seal and only about 25% for the hooded seal. After weaning, the seals do go in the water where blubber provides about 75% of the insulation for both species. We think of seals as being protected from the cold seas by blubber, and in fact, as adults, blubber provides about 95% of their insulation in the ocean. As pups, fur is very important for staying warm on land. As adults, fur provides very little insulation for their life in the water.

We expect these facts also apply to elephant seals. Their pups are born with a black lanugo coat that can absorb heat from the sun. They are born with some fat, which will be burned if they get cold before they have been able to nurse. By the time they are weaned, they have a great blubber layer to insulate them.

By being wet or dry, covered with sand or not, fur may help juvenile and adult elephant seals maintain a desired body temperature while on land. It may protect them as they drag their bodies over sand and rocks. At sea, the light on the belly and dark on the back coloring of the fur (countershading) makes it more difficult for predators or prey to see them. Fur may also reduce swimming resistance or provide protection against parasites.

1. In common usage, fur is more dense and warmer than hair, but generally scientists do not distinguish between them.
2. Thermal Function of Phocid Seal Fur by P. H. Kvaldsheim and J. J. Aarseth

## The 2016 Birthing Season

The federally designated PBONA includes 20 acres of federal land and 424 acres of Hearst San Simeon State Park where FES provides interpretive services for visitors to the elephant seal rookery. The PBONA will be jointly managed by Dan and an administrator from the U.S. Bureau of Land Management. When asked about this challenge, Dan replied, “Fortunately, State Parks and BLM are not alone in this effort. State Parks’ cooperating association, Friends of the Elephant Seal and BLM’s support organization, Piedras Blancas Light Station Association, will continue to play pivotal roles as we move into the future.”

Dan returns to SLO County when the PBONA is being considered for transition to an on-shore unit of the California Coastal National Monument. Support for this transition comes from a coalition of governmental, commercial, service, fraternal and environmental entities that recognize that the elevation to national monument status will foster a healthy blend of joint responsibility, conservation, education and community engagement. Dan was quick to see the opportunity, “Together, we can build on existing relationships as we forge new partnerships.”

If the U.S. Congress and/or the President designates the PBONA as part of the California Coastal National Monument, Dan—sure of his vision--will lead his staff and FES volunteers in the state/federal partnership designed to preserve and protect the priceless national treasures surrounding Point Piedras Blancas while ensuring they are available to provide educational and recreational experiences for visitors from around the world.

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### Molting

Molting, the replacement of hair, skin, feathers or shell, is wide spread across the animal kingdom and is accomplished in many different ways. Insects, crabs and snakes molt because their skin doesn’t grow; this is not the case for elephant seals. Being aware of the many unusual characteristics of elephant seals, it should come as no surprise that they molt differently than other mammals. Generally mammals shed and replace skin cells and hairs one at a time, often related to a season. Elephant seals shed the top layer of skin and all their hair, including the roots, in a month-long process called a catastrophic molt.

Part of the dive response for elephant seals includes the reduction of blood flow to the limbs and skin. This makes less work for the heart, and greatly reduces the loss of heat to the ocean. By coming ashore to molt, elephant seals avoid the heat loss that would accompany circulating blood outside the blubber layer to grow new hair and skin.

The 2016 birthing season again set a record for the number of pups surviving to go to sea – 5000. Unfortunately, that does not tell the whole story. While the number of surviving pups increased by 100, the number of births, based upon a count of adult females, increased by more than 400 and the mortality rate rose from 7% to 12% along with a larger number of seriously underweight survivors<sup>1</sup>. The increase in pup mortality was almost certainly due to serious erosion of the beaches and high waves when pups are on the beach.

According to John Lindsey, meteorologist at the Diablo Canyon nuclear power plant west of San Luis Obispo, “This year has seen more long period west-northwesterly wave events than I can recall. It’s a combination of both climate change and El Nino.” The long period waves result in higher waves coming on shore eroding the beach significantly. A measurement of sand level next to a large rock on the north beach, seen here during a molting period a few years ago and this February, shows that the loss there approaches three feet.



As the amount of suitable beach is reduced, two things happen that put pups at risk. Greater crowding makes the likelihood of mother-pup separation greater, something that often results in the loss of pups from starvation. The second result is a female arriving late in the season is unable to get very high on the beach and has to give birth near the waterline, putting the pup at risk of getting washed out to sea.

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Not until the seals arrive on the beach does the skin layer begin to form. Its growth precludes any blood going to the old skin and hair. The new skin has no attachment to the old, and within a few days of arrival the old skin begins to slough off, first around body openings and scars, but soon in larger patches anywhere on the body. As you may have noticed, not many things irritate elephant seals except other elephant seals - shedding skin is no exception. They do not look for things to rub against and do not scratch at the old hair. With the patience of Job, they just let it happen. What you see as the old skin peels away is dark gray bare skin. The follicles, deep in the skin are growing new hair that has yet to get to the surface. As the pointed, flattened hairs reach the skin surface they are almost transparent and the seals begin to take on a more silver gray appearance. As the new hair grows longer and wider, it also begins to show more color. Nearing the end of their stay on the beach they look their best in a sleek, and except for old injuries, perfect coat.



Molting is not a sentence to prison on the beach. Juvenile males especially take advantage of the time to joust with others, in or out of the water. They apparently are not spending much time under water, which would cause the dive response to kick in and limit blood flow to the skin. If you visit during the molting months, look for the subtle differences in color that indicate how far along a seal is in the regrowth process. Notice if seals you see coming out of the water look like new arrivals, or clearly show the patchiness of mid-molt. As with arrival, leaving is solitary, governed by the seal's own body sense.

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**ALL NEW WEBSITE**

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What do Hitchcock's movie "The Birds," disoriented and dying California sea lions, and the closure of shellfisheries along the west coast have in common? They are all related to "harmful algal blooms" (HABs).

The organisms involved in algal blooms are various species of single celled, photosynthesizing algae. When conditions of water temperature, wind and/or water currents, and nutrients are right, these algae may multiply in massive numbers. If these algae also produce toxins that are harmful to sea life or humans we designate them as HABs. Various "red tides" are examples of HABs, as are the blooms that produce domoic acid currently in the news. In large enough concentrations, domoic acid produces disorientation by affecting the brain. The long lasting toxins produced by these algae are concentrated as they work their way up the food chain. Birds, marine mammals and humans may all be affected.

Although algal blooms have been happening for ages, our understanding of them is quite recent. Domoic acid was found to be the toxic agent in the death of 3 and the illness of over 100 people who consumed shellfish from Prince Edward Island, Canada in 1987.

Scientists suspect it was domoic acid that affected the multitude of sooty shearwaters and other birds that dove into street lamps, crashed through glass windows and attacked people in Capitola, California in 1961. Alfred Hitchcock used newspaper clippings about this incident to convince producers to make "The Birds," an adaptation of Daphne du Maurier's 1952 novel.

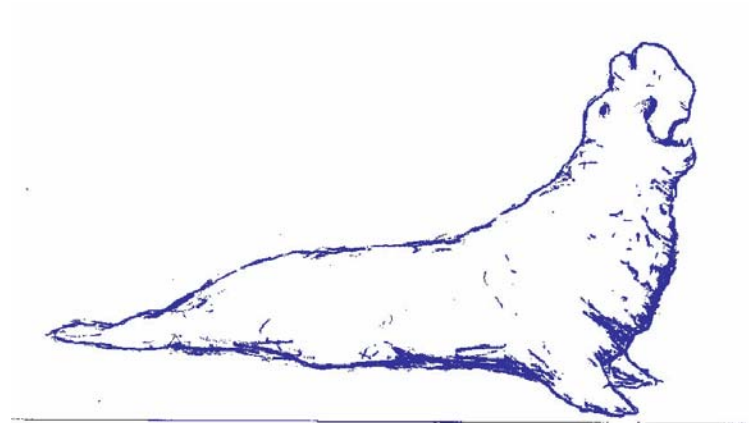
Domoic acid poisoning is responsible for the starving and disoriented sea lions currently seen on California beaches. Using magnetic resonance imaging (MRI) on over 30 stranded sea lions; researchers found that those suffering from domoic acid poisoning had shrunken areas in the hippocampal region of the brain. Those not suffering from domoic acid had no such damage. Sea lions suffering from domoic acid poisoning had navigation and memory problems - what one would expect from damage to the hippocampus.

The number, duration, and size of HABs have been increasing as the water temperature and amount of nutrients available have increased. The Sacramento Bee reported that the 2015 algae bloom was the largest ever recorded, lasting through the summer and extending from Santa Barbara to Alaska. For the first time ever, sea lions suffering from these symptoms were documented in Oregon and Washington.

Domoic acid poisoning is not a problem for elephant seals because they feed far to the north and east of areas that have produced HABs - far from the coasts where agricultural run-off provides nutrients for the over-production of harmful algae.



**Friends of the Elephant Seal**  
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### **Become a Docent**

- Great work environment
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- Interesting visitors on the boardwalk
- In-depth training and continuing education
- Satisfaction in protection of the seals and in helping visitors to appreciate their wonders



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#### **Volunteer Training Dates:**

Basic Training in San Simeon.  
Saturday, September 10, 2016

Advanced Training in San Simeon.  
Saturday, October 8, 2016  
Saturday, October 15, 2016  
Saturday, October 22, 2016

### **Calendar**

**January** - Females continue to arrive. Peak of births usually occurs during the last half of month.

**February** - Births end early in the month. The peak of mating is around Valentine's Day. Females begin leaving.

**March** - Last adults leave. Weaned pups teach themselves how to swim.

**April**—Females and juveniles return to molt.

**May** – Females and juveniles molt

**June** - Subadult males return to molt.

**July** - Subadult and adult males molt.

**August** - Last of males molt.

**September and October** - Young-of-the-year and juveniles haul out to rest.

**November** - Juveniles joined by subadult males. Mature males begin arriving at the end of the month.

**December** - Bulls continue to return. Females arrive. The first birth is usually mid-month.

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