



Volume 28 · Issue 3, 2012

## Welcome to SeaScope!

### California Academy of Sciences: The Doctor Is In

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Our August issue showcases a guest feature from the California Academy of Sciences, the San Francisco facility that, among other accomplishments, houses one of the deepest exhibits of live coral in the world (212,000 gallons of water, at a depth of 25 feet). Their Steinhart Aquarium is home to an amazing 38,000 live animals from around the world! With that in mind, have you ever considered the level of expertise and creativity required to be a veterinarian for a public aquarium? In this case, Dr. Freeland Dunker is responsible for providing all medical and surgical treatment for sick or injured animals. Find out what a day in his life looks like in this fascinating piece.

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### Product Feature



**Reef Accelerator™**  
from Instant Ocean: Use regularly to maintain balanced levels of essential elements that encourage growth of corals and purple algae.



Jenny Ji

Dr. Freeland Dunker's "to do" list is unlike anyone else's at the California Academy of Sciences. On a small whiteboard in his basement office is a neatly written list of ongoing and upcoming activities:

- Screen the anaconda for viruses
- Box turtle in the Early Explorers Cove is lethargic -- monitor his weight
- Conduct physicals on alligator snapping turtles
- Treat Homey the penguin's bumblefoot
- Take blood samples from giant octopus
- Swainson's hawk has a cough
- Methuselah (70+ year old lungfish) is constipated
- Vaccinate the raptors

### Events

**Greater Seattle Aquarium Society**  
September 14, 2012  
Pacific University  
Otter Miller Hall  
Seattle, WA  
[www.gsas.org](http://www.gsas.org)

**Palm Beach Marine Aquarium Society Fall Frag Swap**

As the Academy's veterinarian for the past 16 years, Dunker oversees the health and well-being of one of the most diverse aquarium collections in the world. His patients range from spineless, brainless jellyfish to an eight-foot-long albino alligator, and none of them can speak, answer questions, or tell him where it hurts. There is no typical day at the Academy for Dunker -- the

September 22, 2012  
Knights of Columbus  
West Palm Beach, FL  
[www.pbmas.org](http://www.pbmas.org)

**Marine Aquarium Conference  
of North America (MACNA)**  
September 28-30, 2012  
The Sheraton Dallas Hotel  
Dallas/Fort Worth, TX  
[www.dfwmacna.com](http://www.dfwmacna.com)

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in there. There is the typical day at the Academy for Dunker. The situations that arise when dealing with 900 species and 38,000 animals are virtually endless.

"Through preventive health programs, treatments for the sick and injured, and necropsies, I get a general feel for the health of all the animals here," says Dunker. "I can use this knowledge to assist the staff with decision-making whenever animals are involved. For example, if a curator wants to move an animal from one part of the aquarium to another, I can provide a risk assessment as to whether that move will harm the animal or its future tankmates. If a biologist wants to change the diet of an animal, I can weigh in. We work as a team here."

This team -- the staff of the Academy's Steinhart Aquarium -- includes several dozen biologists and technicians. After closing the old Academy building in 2003 and opening a new building in 2008, the staff has grown to accommodate the needs of a larger and more ambitious aquarium: the new Steinhart is larger than the old in terms of number of species (900 vs. 500), number of animals (38,000 vs. 6,000), and gallons of water (500,000 vs. 300,000). And while the animals of the old Steinhart were confined to their own building, live animals are now dispersed throughout the new Academy -- incorporated into the exhibits of the natural history museum and even nestled against the planetarium. This spatial layout adds to the aquarium's complexity.

Getting the animals to the new Academy in Golden Gate Park was also a challenge. "One of the highlights of my career was helping with the move from the Academy's interim location in downtown San Francisco back to Golden Gate Park," Dunker says. "It was an enormous undertaking. However, we accomplished it with virtually zero mortality. I feel this is a reflection of how great the aquarium staff is."

While the move across town in 2008 was delicate and complex, Dunker's long and varied career prepared him for the challenge. After all, what fazes a man who has spent almost three decades dealing with dismembered spiders, elephants with tuberculosis, and everything in between?



*Charles Delbeek*

## **A Long and Winding Road**

Since childhood, Dunker has harbored an interest in animals and wildlife, and he originally wanted to be a forest ranger. Though he initially pursued a degree in natural resources management at California Polytechnic State University, he switched to biology halfway through to better serve his love of animals. He then earned his Doctor of Veterinary Medicine degree at the University of California, Davis.

Dunker spent the first decade of his veterinary career in private practice. In his first job in Tehachapi, California -- a tiny town at the base of the Sierra Nevada Mountains -- he saw everything from domestic animals (cats, dogs, and livestock) to wild deer, hawks, and burros. His interest in zoos and aquariums began during his second job, at an equine surgical practice whose owner was affiliated with the San Diego Zoo. Deciding that he needed to bolster his credentials, he interned at a South Carolina zoo before finally acquiring a position at the San Francisco Zoo in 1990, which remained his primary place of employment for 17 years. There, his work brought him up close with elephants, big cats, bears, apes, and more.

Ever the multi-tasker, Dunker also worked part-time at the Irving Street Veterinary Hospital near Golden Gate Park. During his tenure there, he became acquainted with Academy staff, who would bring in the Academy's ferrets and hedgehogs for check-ups. After spending time as a curator at the Academy, Dunker spent 1999

ups. When a part-time position at the Academy opened in 1993, Dunker leapt at the opportunity.

"People have told me that I'm lucky to get such great experiences, and to wind up at the Academy," says Dunker. "But I don't think it's luck. I think if you do a good job, you put yourself in a position to take advantage of these opportunities as they come up."

Only in 2008 did Dunker transition to a full-time position at Steinhart Aquarium. With the opening of the new Academy and the growth of the live animal collection, it was an inevitable appointment. Dunker's services remain prized outside of the Academy, too: he is currently an on-call vet for the Marine Mammal Center, Aquarium of the Bay, Safari West, and the San Francisco Zoo.



*California Academy of Sciences*

### **"Just deal with it. Don't be afraid."**

One question about Dunker's work that leaps to mind is how he handles such a diverse range of animals, from the lowly sponge to an albino alligator. At the zoo, he has the luxury of using well -- known domestic animals as models for treating more exotic species. For example, a giraffe is modeled after a cow, a rhino is a horse, a lion is a housecat, a bear is a dog, a gorilla is a human. The analogies are not perfect, but they work well enough to understand their physiology and treat their ailments.

At the Academy, however, Dunker's suite of patients is much more diverse. "Fish, amphibians, reptiles, and invertebrates don't have many domestic models," he says. "Take the Burmese vine snakes, for example. No other aquarium in the world has these on display. So I end up looking to the exotic pet trade and the greater veterinary community for guidelines."

For the vine snakes, Dunker uses the corn snake and python -- which are common to the pet trade -- as his models. He also refers to an old textbook diagram that separates the typical snake into four basic sections. If he wants to inspect the liver, the diagram shows him which section of the snake to focus on.

The unique properties of some of the Academy's animals also inspire creative solutions. Since amphibians absorb moisture through their skin, Dunker treats frogs by putting a drop of medicine on their skin, instead of injecting it. And one time, he used superglue to repair a tarantula that had broken its legs -- the idea being that once its exoskeleton was rejoined, the underlying tissue could heal.

Then there's Methuselah, the oldest animal in the aquarium. This Australian lungfish first arrived at the Academy in 1938. Not surprisingly, entering one's eighth decade of life has its share of challenges. One day, Dunker noticed that Methuselah was hunched over in his tank and not eating properly. So he brought the lungfish to his lab and took an X-ray: it turns out the fish was constipated.

"I gave him an enema," says Dunker. "It solved the problem."

The collective experience of the greater veterinary community is also a valuable resource. Through textbooks, papers, conferences, word of mouth, the Internet, and email lists, Dunker taps into decades of knowledge, of successes and failures. "Caring for the Academy's 900 different species can be challenging," he says. "But in the end, my motto is just deal with it. Don't be afraid."

What makes Dunker's job more complicated is the fact that few animals exist in isolation. Many live in large tanks and interact

animals exist in isolation. Many live in large tanks and interact with hundreds, even thousands, of other animals. The Philippine Coral Reef, Rainforests of the World, and California Coast tank are not only visually stunning exhibits in the Academy; they are also complete ecosystems with light, temperature, humidity, mineral, plant, and microbial components. Therefore, Dunker never treats an animal without considering how it will affect the entire tank, and vice-versa.

"Looking at the entire ecosystem is a new way of thinking for me," says Dunker. "In my prior zoo experiences, I examined and treated animals mostly on an individual basis. But working here has required me to change my approach. It's allowed me to grow professionally."

### **The Academy's Other Dunker**

On March 17, 2007, an African penguin chick hatched at the Academy's interim downtown location. He weighed three ounces and resembled a ball of fuzz. In appreciation for Dunker's many years of service, the aquarium biologists voted to name the newly hatched chick after the vet.

As Dunker recalls, "The little guy had trouble coming out of his egg. The penguin biologist and I helped him get out, so I guess we formed an attachment that way."

Today, Dunker the penguin has gained his adult plumage and can be found frolicking with the rest of the colony in African Hall. Although the biologists have commented that Dunker is noticeably chubbier than the other penguins, they insist that this fact is not a reflection of his eponymous vet.

"I've examined Dunker many times and there's nothing wrong with him," says the vet, with an air of a protective parent. "He's just big boned."

Whether or not he has weight issues, Dunker -- as well as his 38,000 compatriots -- can rest easy knowing that his stay at the Academy comes with a full health plan and speedy referrals to a dedicated, 30-year medical veteran.

*This article originally appeared in LIVE from the California Academy of Sciences (Winter 2009, Issue No. 15).*

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