than dyed chicken feathers, the readers were urged to use the most beautiful, exotic feathers that they could obtain, including bird of paradise feathers. Of course, the creation of artistic flies soon parted ways with their initial, functional use.

Because of the conservation statutes that prohibit the sale and import of certain bird feathers, modern practitioners of the art of fly-tying find it challenging and expensive to obtain prized feathers. Rist, who by his late teenage years had become an expert in fly-tying, apparently could not resist the lure of financial gain and having possession of exquisite, rare feathers for his own flies. So, he became a feather thief.

How was Rist caught? What was his punishment? Were the feathers returned? To find the answers to these questions and much more, it's worth reading this entertaining, informative book.

The Dangers of Anticoagulant Rat Poison

By Joanna Beacom

Under the bright light of a full moon, a Norway rat (Rattus norvegicus) *staggers along a quiet street in the Hollywood Hills. His movements are slow and hesitant. Instead of scurrying in the cover of darkness, he has become vulnerable to the threat of a watchful nocturnal predator, a barn owl* (Tyto alba). *With a sudden rush and a flap of wings, the barn owl swoops down from a nearby sycamore tree* (Platanus occidentalis) *to catch the rat in her talons. It's an easy, welcome meal for the owl. She takes the rat back to her cavity nest in the tree to feed her three wobbly, squeaking owlets who eagerly await their mother's return. She tears small pieces of flesh from the dead rat and drops them into her offsprings' hungry mouths. Two weeks later, the chicks are dead. Droplets of dried blood are visible around their beaks and eyes, their lifeless bodies desiccated. There's no sign of the mother owl, who has abandoned the nest.*

This bleak scenario depicts the harmful, often lethal effects of anticoagulant rat poisons on wildlife. These poisons are some of the most toxic chemicals known to mankind. Each year, thousands of non-target species, pets, and children fall victim to them. The most potent chemicals are known as second-generation anticoagulant rodenticides or SGARs. They are *toxic to all vertebrates.* SGARs are commonly and widely used by pest control companies and big agricultural firms to control rats, squirrels, gophers, and other "nuisance" species that eat crops, invade gardens, infest human structures, and contaminate food sources for livestock and humans. When ingested, these poisons act by preventing blood from clotting in the tissues and organs, with devastating consequences. They kill their intended victim slowly. It can take up to two weeks for a rodent to succumb. In that time, the rat may feed on the bait numerous times, which increases its toxicity. The poison slows the animal's movements and diminishes its instincts to seek shelter, which makes it more vulnerable to predation.

Here in Los Angeles County, we live in one of the most biodiverse urban areas in the world. Wild inhabitants include mountain lions, coyotes, bobcats, raptors, small mammals, and scavenger birds such as crows and turkey vultures, to name a few. In a 2014 survey conducted by the California Department of Pesticide Regulation, 29 out of 39 species, or 74 percent, tested positive for at least one anticoagulant rodenticide. Consider this: 94 percent of radio-collared California mountain lions and 90 percent of collared bobcats tested positive for at least one second-

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generation anticoagulant. Anticoagulant poisons remain in the system of non-target species for 100 days or more. If a bobcat eats several poisoned rats over the course of a few days, weeks, or months, toxicity levels multiply, which further increase the likelihood of death. Mammalian predators such as coyotes, bobcats, and cougars exposed to anticoagulants may also develop notoedric mange, a disease that gradually weakens the animal until it can no longer hunt for food and dies from starvation.

When our local predators are compromised by poison, they fail to perform their pest-control roles effectively. Owls, hawks, eagles, cougars, coyotes, and bobcats are natural rodent-control predators that help suppress rodent populations. Widespread use of anticoagulants may in fact increase rodent population numbers by causing harm to predator populations. This threatens the delicate balance of our local ecosystems, and other problems may ensue. For example, rats carry fleas that can spread deadly diseases such as the plague, hantavirus, and typhus to humans, which has seen a resurgence from the squalor of past centuries to the streets of downtown Los Angeles. Rats are prolific breeders and omnivores who can eat garbage and have adapted alongside humans to thrive in unsanitary environments. A foot-long rat can squeeze into a quarter-size hole under a roof or in a wall where they breed and multiply at rapid rates. In fact, a female Norway rat reaches sexual maturity in just 90 days; a male reaches sexual maturity at 70 days. Females can give birth to 3.9 litters a year with an average of 9.9 pups per litter. In five generations, over 450 days, a single pair of rats can produce over 39,000 offspring. Norway rats are also a non-native species, and uncontrolled populations can wreak havoc on native species and their food resources.

Illustrator Tristan Edgarian

So how do we control rodent infestations without the use of anticoagulants? According to the California Department of Fish and Wildlife (CDFW), the safest and most effective control methods are "exclusion and sanitation." Seal off openings where rats may find their way inside structures. Ensure that garbage and foodstuffs are properly contained and tamperproof. Don't leave pet food outside. Pick up attractants such as fallen fruit and other food sources.

Like most quick fixes (think single-use disposable plastics), the use of anticoagulant rodenticides has been short-sighted. In *Silent Spring*, Rachel Carson sounded the alarm about the detrimental effects of widespread use of highly potent poisons back in 1962. Long-term effects of SGARs may be on a par with the insecticide DDT and its effect on bald eagle populations in the 1960s and 1970s. Yet, almost 60 years later, we are still committing the same foolish mistakes with chemicals even more potent than their predecessors. With an uncertain future for local predator species such as the mountain lion, we can no longer afford to turn a blind eye to the long-term effects of the choices we make, simply out of short-term convenience.

But there is hope. The State of California is blazing a trail to enact the most stringent legislation in the United States to further control the use and distribution of anticoagulant rodenticides. Assembly Bill 1788, aptly titled the California Ecosystems

Protection Act, calls for a total ban on second-generation anticoagulants and a ban of all rodenticides in and around state-owned lands. Write letters, send e-mails, make phone calls to your local legislators and urge them to support this bill. Become a local activist against the use of anticoagulants. Join a local nonprofit such as Citizens for Los Angeles Wildlife (clawonline.org) or Raptors are the Solution (raptorsarethesolution.org) to learn more. Spread the word to family, friends, and neighbors to protect our rodent-eating predators. Let them know that anticoagulants are lethal. These are just some of the small but mighty steps we can take to protect wildlife, pets, and small children and to raise awareness about the harm of anticoagulant rat poisons.

Small Creatures

Fun Touring Tips for Children

Assembled by Lynne Getz

In this issue, we continue the route that most docents take when touring children. These tips are aimed at first- and second-graders, the age group of most students on our school tours. In the Spring 2019 issue we finished the Australia section—now we'll find out what some docents say or do between Australia and Africa at the entrance to the gorillas. Our contributing docents are Tuesday Docent Marg Wolski; Wednesday Docent Armando Suarez; and Thursday Docents Eleanor Coskey, Karen Lack, and Lynne Getz.

Armando: I ask, "Who wants to see gorillas?" and "Who knows where they come from?" When we get to the entrance to the exhibit, I show them the map of the continent of Africa and explain that that is the only place they come from.

Eleanor: I usually wear a necklace that has a small globe hanging on it and I also carry a slightly bigger globe in my bag. I show them that we are going to another continent that starts with an A. I also show them the island Madagascar, because most of them have seen movies about Madagascar. I feel it's important that the students see where we are and how far away these animals are living. Before we see the gorillas, we talk about their hands, feet, and thumbs. We talk about the "thumbs" on their feet and what they use them for (one being holding food) and how, if we had them, we could not wear shoes very easily. I talk about knuckle-walking and ask whether we can we walk on our knuckles. I show them a print-out of the gorilla hand, then we become "detectives" and look for their prints in the cement. Hopefully, they are primed to OBSERVE the gorillas. I also prime the children for future encounters by pointing out the "two toes" in the cement and discuss with them what kind of animals make those prints, so they are looking for antelopes later. When the children recognize the antelope, I tell them how smart they are!

Marg: When we are at the Africa sign, we talk about endangered animals.

Karen: I ask whether they know where in the world gorillas come from and then show them the map on the sign. I explain that gorillas are quite calm and peaceful and don't like a lot of loud noise. We need to be respectful of them, be quiet, and not scare them.

Lynne: Before I enter the Australia section, I explain that Australia is an island, and I make sure that the students understand what an island is, and that those animals never get to see animals that don't live on the island since they are so far away.

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All Creatures

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Our Botanical Bounty

The Case of the Disappearing Bananas

By Kate Gaman

Behold the banana! It's the world's favorite fruit and is the fourth largest food crop after wheat, rice, and corn. Americans eat more bananas than apples and oranges combined. We eat them plain as dessert fruit or dressed up in banana bread, banana cream pie, banana splits, and banana pudding. We drink them in smoothies and banana daiquiris and place them in cereals, fruit salads, and lunch boxes. No kitchen is without bananas in the fruit bowl, but soon that may change.

Bananas seem prosaic and ordinary, but they are not. Bananas are an exotic tropical fruit, only recently introduced into our diet, an unusual plant with a long history of cultivation in Southeast Asia, India, Africa, and the Pacific Islands. They are an important food staple of millions of people living in the tropics. These very fruits are in danger of eradication and extinction by the Panama disease, a fatal fungal infection of bananas, and there is no current means of stopping it.

The Plant and the Problem

Bananas probably originated in Southeast Asia, still a center of diversity for wild bananas. Wild bananas are small with many hard, stone-like seeds and have never been considered edible. Very early in human history, natural mutations occurred among wild bananas, producing plants with edible, tasty fruits without seeds, which means that they had to be propagated vegetatively. These new plants were quickly selected for cultivation and spread throughout Southeast Asia, India, and Africa. They were of two varieties, still important today: dessert bananas, high in sugars and low in starch; and cooking bananas, low in sugars and high in starch. Often referred to as plantains, cooking bananas became a highly important food staple of the people living in the world's tropics.

What is often called a banana tree is actually a large herbaceous plant that grows from a kind of underground stem called a corm. A large shoot

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