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SAN DIEGO ZOO

# ZOOZ



## On the Prowl

Jaguars Heading to Elephant Odyssey

Siberia's Sea-Eagles

Science Learns from Nature

The Beauty of Ferns

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JANUARY 2009



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## GRIPPING CONSERVATION IN SIBERIA:

### Steller's Sea-Eagle

BY KARYL CARMIGNANI, Staff Writer

**O**n the frigid shores of Siberia in eastern Russia, the soundless flight of a winged carnivore ends in an 8-foot-wide nest made of sticks more than 75 feet off the ground. The hungry chick, still sporting downy feathers, eagerly rips into the meat delivered by its mother. From the ground, researchers peer through binoculars, trying to discern the prey. Salmon? Small mammal? Carrion? The Steller's sea-eagle *Haliaeetus pelagicus* is flexible in its dietary habits, a connoisseur of all things protein—dead or alive—including puffins, fish, crabs, and even deer carcasses. This is a sensible survival strategy in an extreme environment, but it's not without its trade-offs.



ABOVE: Steller's sea-eagles nest in trees or rocky outcrops where they can survey the land. RIGHT: Researcher Eugene Potapov climbs a tree to check for sea-eagle chicks—and finds one (opposite page).



## POWERFUL AND ELUSIVE

Steller's sea-eagles, named after famed 18th-century explorer and zoologist Georg Wilhelm Steller, are considered one of the largest and most powerful eagles. This yellow-beaked raptor is about three feet in height and has a wingspan of more than seven feet. Males weigh in at 11 to 13 pounds, while females tip the scales at 15 to 20 pounds.



This striking bird relies on its acute vision—its eagle eye—to find prey. Inhabiting seacoasts and rivers in northeastern Siberia, the bird perches on sea cliffs or trees, waiting to swoop in on its hapless victim, usually a fish. Like all raptors, it clamps onto its prey with talons as sharp as switchblades and quite literally cannot let go until the prey is dead. This poses a challenge for researchers, who need to capture, measure, and band these birds.

In spite of its high-flying lifestyle, little is known about this species, particularly the juveniles. This phase lasts from fledging and the first winter migration until the adult plumage at about four years of age. The birds may not breed until even later. Understanding the specific threats the young birds face will greatly benefit conservation efforts, since the population of Steller's sea-eagles stands at only about 5,000.

Research efforts began in 1992, at the Magadan State Nature Reserve. In 2006, the San Diego Zoo teamed up with scientists there and from Natural Research Ltd. to study the movements of young Steller's sea-eagles. While a sub-population lives on the Kamchatka peninsula all winter, most Steller's sea-eagles migrate south, wintering in the

Kuril Islands and Hokkaido, Japan. "It is critical to determine the hazards young birds face," said Dave Rimlinger, curator of birds at the San Diego Zoo. "Our goal is to attach GPS radio transmitters to five fledglings each year so we can track their movements on satellite maps. Led by Dr. Mike McGrady of Natural Research, Ltd., the ideal group of researchers came together for this project, and we've been able to survey a large area and measure several birds."

## A SEA OF CHALLENGES

The four-person research team traveled along rivers, inlets, and coastlines in a small, inflatable outboard motorboat in search of Steller's sea-eagle nests. For this far-flung exploration, all the necessities had to be on board: fuel, food, water, cameras, and equipment. Peering through drizzle, dodging grizzly bears, staying reasonably dry, and keeping the propeller off the rocks were just a few of the daily challenges.

Luckily, team member Dr. Eugene Potapov is a jack-of-all-trades. One minute he was coaxing the boat engine back to life so they could resume the survey, and the next he was shimmying up a larch tree, nimble as a monkey, to access an eagle's nest. He also

serves as technology expert for the project. "We are fortunate to have Eugene working with us," said Rimlinger. "When your boat engine dies several yards from shore as darkness falls, he's just the kind of person you want on your team. Our other Russian partner, Dr. Irina Utekhina, is also a talented scientist. She even surveyed the Steller's sea-eagle while piloting an ultra-light!"

## ON A WING AND A PRAYER

So how do you attach a satellite transmitter to a young Steller's sea-eagle? While reaching the nest 75 feet off the ground may be the hard part, coming face-to-face with a bird's sharp yellow beak is not for the faint of heart either. However, the young birds were largely cooperative, even as Potapov gently tucked one into an orange backpack and safely lowered it to the ground. At this stage, the birds are "branchers," meaning they cannot fly yet but hop from branch to branch instead. They are not particularly aggressive, but their talons can do some damage if not handled properly. In fact, if a researcher accidentally lets the bird latch its talons onto a forearm or leg, others have to help pry the bird's claws off.

Once on the ground, the young bird

IN SPITE OF ITS HIGH-FLYING  
LIFESTYLE, LITTLE IS KNOWN  
ABOUT THIS SPECIES...



is carefully weighed and measured, a band is put on its leg, and a lightweight radio transmitter is secured to its back. To reduce stress, researchers place a hood over the bird's head, which has a calming effect. Once the data are collected and the nest location recorded, Eugene once again loads the bird into the orange backpack and climbs back up the tree to place the bird in its nest. The youngster's parents look on from a distance, then return to the nest once Potapov is on the ground.

## IT IS HOPED THAT THIS VULNERABLE BIRD POPULATION MAY STABILIZE.

It is painstaking, cold, and exhausting work. But the team is determined to survey two major rivers for nests and chicks, attach five satellite transmitters annually to track youngsters for about four years, and collect feathers at each site for DNA analysis. The analysis will determine the "turnover rate" among mated pairs and show whether or not the same pairs are returning to the same nests each year.

LEFT TO RIGHT: Eugene Potapov measures a chick—note the hood on the bird and the careful way of holding the talons! Irina Utekhina quickly jots down the measurements of her charge. Mike McGrady enjoys the luxuries of camp life in Siberia.

## OVERCOMING THE OBSTACLES

Of the five birds fitted with satellite transmitters in 2006, four began their migration but died soon after, while the fifth bird survived the winter. His free-flying years were successfully tracked until October 2008, when his signal stopped moving. In 2007, another five birds were fitted with transmitters. One perished near the nest, while the others began migrating but fell victim to humans. Only one bird continued transmitting.

The team was surprised to discover the extent of persecution these birds are exposed to in this part of the world, in spite of the species' protected status throughout its range. In July 2008, five more birds were fitted with transmitters. As of this writing, all five birds are headed south! You can actually track them yourself on a satellite map on our Web site at [www.sandiegozoo.org](http://www.sandiegozoo.org)—go to Steller's sea-eagle in Animal Bytes.

Fishing and caviar harvesting are major industries in Siberia, and they provide offal for birds to scavenge. However, overfishing can impact the birds' habits, forcing wintering birds to look inland for food. There, they often prey on deer carcasses, which can contain lead fragments from

bullets (California condors face the same threat). Japan responded to this hazard by banning lead bullet use throughout the birds' range within their country.

Other threats to Steller's sea-eagles include fossil fuel energy developments, wind farms, pollution, habitat loss, hunting, and possibly global warming. By learning more about the threats young Steller's sea-eagles face each autumn as they head off on their frosty migrations, it is hoped that this vulnerable bird population may stabilize. That may be the most gripping challenge of all.



San Diego Zoo Curator of Birds Dave Rimlinger savors a moment with a majestic Steller's sea-eagle.

