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ARTICLE-A-DAY™

Animals in Danger

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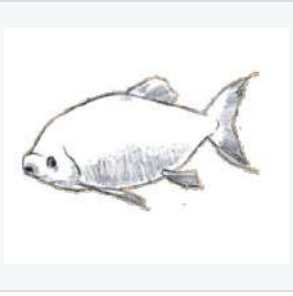
Around the World with DNA: How to Avoid a Pacu Snafu

This text is provided courtesy of OLogy, the American Museum of Natural History's website for kids.

Do you ever wonder if there's something we could do to make sure an animal doesn't become endangered? I'm Daniela Calcagnotto, and that's exactly what I'm trying to figure out.

I study a species of fish called the pacu. These fish are close vegetarian relatives of the meat-eating piranha. They are found in several rivers in South America. They can grow to be as heavy as a human kid – that's about 50 pounds! The pacu is very important to the economy of many communities. Recently the wild populations have been overfished, and their numbers are decreasing.

The Brazilian government approved a project to study the pacu populations to see how the fish vary from river to river. As a first step, I took little pieces of fin from various fish and removed DNA. Now, I am comparing the DNA to see how genetically different, or diverse, the populations are. Scientists need this information to breed fish in fish farms. They want the farm populations to have the same genetic diversity as the wild populations. If the fish become endangered, we can then help the populations grow again. We can gradually move the fish from the breeding places to the rivers.



Around the World with DNA: We Want Future Generations to Inherit the Parrot

By American Museum of Natural History

This text is provided courtesy of OLogy, the American Museum of Natural History's website for kids.

We Want Future Generations to Inherit the Parrot

Courtesy of Mike Russello

I'm Mike Russello, and I'm a graduate student. I also work at the American Museum of Natural History. I study a bird named the St. Vincent parrot. It's named the St. Vincent parrot because it makes its home on the island of St. Vincent in the West Indies.

Courtesy of Mike Russel

Many people want to keep these rare, colorful birds as pets. One bird can sell for $10,000! So, sometimes people try to smuggle them to countries around the world. The forest where they live is also being destroyed. This illegal trade and habitat destruction have made the St. Vincent parrot an endangered species. Scientists now think that there are only about 500 individuals on the island.

Eric Hamilton

We want to conserve this precious animal. To do this, we need to protect the forest. We also need to help the St. Vincent parrot population increase. So, we breed them. But it's not that easy. Male and female parrots look exactly the same. In the past, the most common way scientists discovered whether a parrot was male or female was through surgery. But now we can study DNA from a bird's feathers to see whether it is male or female. DNA analysis can also tell us which birds are the best matches. We want to breed the birds so that there's variation in the gene pool. The greater the genetic differences within a species, the greater the chances that it will survive – today and in the future.

Courtesy of Mike Russel

Around the World with DNA: What's Black and White and Fluffy All Over?

By American Museum of Natural History

This text is provided courtesy of OLogy, the American Museum of Natural History's website for kids.

Photo Credit: courtesy of Yael Wyner

The answer to this riddle is one of my favorite animals. My name is Yael Wyner, and I study black-and-white ruffed lemurs. These small, furry mammals live in Madagascar, an island off the southeast coast of Africa.

Many forests in Madagascar have been destroyed because

people need land for grazing and farming. So now lemurs are endangered. Scientists want to prevent these marvelous creatures from becoming extinct. So they are sending lemurs that have been bred in U.S. zoos back home to their native Madagascar.

Scientists hope that the imported lemurs will mate with the native ones, and that the population will gradually increase. In the lab, I analyzed the DNA sequences from several lemurs from both Madagascar and U.S. zoos. Scientists are using my results to help track how the "zoo lemurs" are adjusting to their new habitat over time.

Illustration Credit: Steve Thurston

Photo Credit: courtesy of Duke University Primate Center

Around the World With DNA: Whoooose Life Is It, Anyway?

By American Museum of Natural History

This text is provided courtesy of OLogy, the American Museum of Natural History's website for kids.

Courtesy of R.J. Gutierrez

I'm George Barrowclough and I investigate spotted owls. These magnificent birds live in the western United States, where they nest in the largest, oldest trees. I am worried that northern spotted owls may become extinct because the forest that is their home is being cut down.

I analyzed DNA taken from blood samples of northern spotted owls and California spotted owls to see if these bird species are different. I concluded that they are. The government is considering my DNA evidence as they figure out how to preserve the northern spotted owl.

Image credits: courtesy of AMNH; George Barrowclough.

Ornithologists, or scientists who study birds, want to prevent the forests of the Pacific Northwest from being chopped down for lumber. Why? Because these forests are home to the northern spotted owl, one of three kinds of spotted owls. In 1990, this bird was added to the Threatened Species List. Now it is illegal to destroy its habitat.

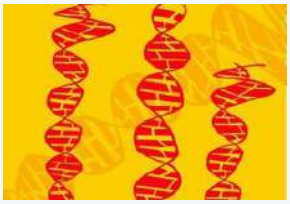


Image credits: Kelvin Chan; Kevin Chan.

Saying "deoxyribonucleic acid" is a real mouthful. Luckily, you can call it DNA for short. DNA is found in all living things, including YOU! DNA is in every cell of your body and is shaped like a long, twisted ladder. The steps of this "ladder" are made of only four building blocks, called bases. These bases are known by the letters A, C, G, and T.

Image credits: George with Oilbird, courtesy of Chuck Myers; George Barrowclough, courtesy of Chuck Myers.

At age 10, George Barrowclough began bird watching with his dad. He pursued his interest in birds by becoming an ornithologist, a scientist who studies birds. George studies northern spotted owls in the wild, and analyzes their DNA in the lab. George hopes his research will help preserve these animals' habitats and save them from extinction.

Around the World With DNA: Preserving Humpbacks is No Fluke

This text is provided courtesy of OLogy, the American Museum of Natural History's website for kids.

For centuries, humans have hunted humpback whales.

Photo Credit: Courtesy of Peter J. Ersts, Center for Biodiversity and Conservation, AMNH

It's no fluke that Howard Rosenbaum is wild about whales -- especially the endangered right whales and humpback whales. He's a conservation biologist specializing in genetics who deeply cares about the future of these marvelous mammals. Howard often travels to Madagascar to study humpbacks. By using observation, photography, and DNA analysis, he learns how these whales are related.

Image credits: montage of Silver sword, AMNH and Bald Eagle, courtesy of AMNH, Department of Library Services 1118.

Thousands of plants and animal species may be in danger of becoming extinct and disappearing forever. Some endangered species include giant pandas, tigers, and the silver sword plant, which is found only on the Hawaiian islands. Many species are threatened because of human actions. But by creating laws to preserve natural habitats, we may be able to save some of them.

There are only about 35,000 humpbacks left in the world. I'm Howard Rosenbaum, and I hope that my research will help preserve this endangered species.

Photo Credit: Courtesy of Peter J. Ersts, Center for Biodiversity and Conservation, AMNH

Photo Credit: Courtesy of Peter J. Ersts, Center for Biodiversity and Conservation, AMNH

In my research, I travel to Madagascar to observe humpbacks. I can tell the whales apart by their different flukes. Flukes are the broad, flat ends of a whale's tail.

Through careful observation, I can recognize more than 500 different whales.

By comparing DNA analyses with my field observations, I can see how the whales are related and how they interact with each other. Then, I will be able to recommend how we might protect these amazing animals.

Image credits: courtesy of W.S. Lawton, NMML, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Alaska Fisheries Science Center, National Marine Mammal Laboratory.; Howard Rosenbaum.

Even though this whale of a whale weighs many tons, the humpback whale can make acrobatic leaps out of the water! The name "humpback" comes from the way they arch their backs as they rise out of the ocean. This endangered whale is also known for its beautiful underwater "songs." Some scientists think these songs may be how whales "talk" to each other.

Image credits: Kelvin Chan; Kevin Chan.

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Saving Species: Chasing Spiders Down Under

This text is provided courtesy of OLogy, the American Museum of Natural History's website for kids.

Image credits: courtesy of AMNH; Vladimir Ovtsharenko: courtesy of AMNH.

Since he was a boy, Vladimir Ovtsharenko has been fascinated by nature. Growing up, he loved collecting spiders, beetles, and butterflies for fun. Vladimir began studying spiders while in high school. As an arachnologist at the American Museum of Natural History, this curious "spider man" identifies new species and figures out how different spiders are related to each other.

Hi, I'm Vladimir Ovtsharenko and I study and collect spiders in Australia. Australia is like an amusement park for scientists like me. There are thousands of species of spiders, including species we haven't even discovered yet.

Why are there so many species?

One reason for this unusual variety of spiders is Australia's separation from other continents. For millions of years, plants and animals lived in isolation, so Australia has its own unique ecosystems with species unlike anywhere else on Earth. But some of Australia's rare spiders are endangered. We need to gather information about each species quickly, before it becomes extinct and our chance to learn about and save that spider is lost forever.

Is losing a spider or two a big deal?

Yes! Spiders are one of the major predators of insects, so there might be a huge increase in insect populations. Insects would devour trees, crops, and grasses.

By studying all the different species of spiders we can learn what role they play in their ecosystems, how they can benefit our lives, and how we can protect them.

Saving Species: Magnificent Madagascar

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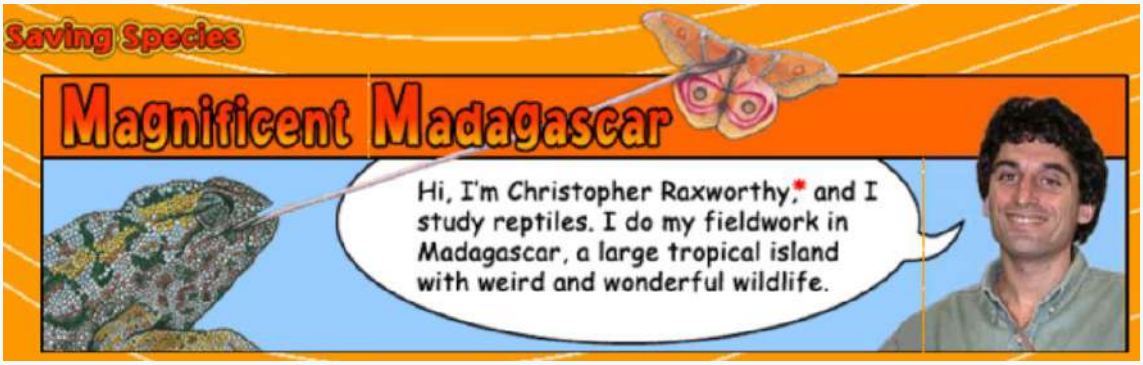


Illustrations by Barrett Klein

Chris Raxworthy

Chris Raxworthy has been fascinated by all things scaly and slimy since he was a kid. Chris is a herpetologist at the American Museum of Natural History. He travels to the remote island of Madagascar, where he studies the amazing diversity of chameleons that live there. One of the most exciting parts of Chris's fieldwork is rediscovering species that were thought to be extinct.

Illustrations by Barrett Klein

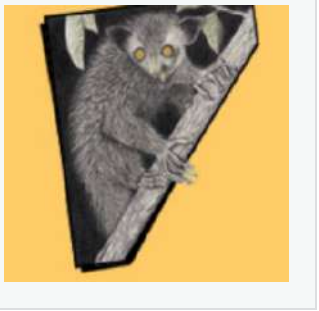
Madagascar has unique plants and animals found nowhere else on Earth, and new species are discovered all the time. By studying and collecting the island's species, we hope to learn more about the evolution of life. But our first goal is to find and save these species before they're lost forever.

Courtesy of Chris Raxworthy

Madagascar is a fantastic place for discovery!

The island's forests are disappearing. Many of them have been destroyed for farmland and fuelwood. As they disappear, so do many of their species, like the giant (10-foot!) elephant bird, which is now extinct. Collecting information

on Madagascar's species helps us make a case for conservation, decide on which forests to focus our efforts, and compare "healthy" populations to those in danger.



Illustrations by Barrett Klein

The endangered aye-aye makes its home in the tropical forests of Madagascar.

Our biggest challenge is to balance the importance of biodiversity with the needs of Madagascar's people, many of whom use the forests' resources to make a living. But I know that saving these species can save lives beyond Madagascar. A plant first found on Madagascar, called the rosy periwinkle, helps people who are seriously ill.

Illustrations by Barrett Klein

The rosy periwinkle

Going, Going...Gone? How Do You Know When a Species Has Become Extinct?

This text is provided courtesy of OLogy, the American Museum of Natural History's website for kids.

Image credits: montage of Silver sword, AMNH and Bald Eagle, courtesy of AMNH, Department of Library Services 1118.

Thousands of plants and animal species may be in danger of becoming extinct and disappearing forever. Some endangered species include giant pandas, tigers, and the silver sword plant, which is found only on the Hawaiian islands. Many species are threatened because of human actions. But by creating laws to preserve natural habitats, we may be able to save some of them.

Image credits: Laura Friedman.

Animals and plants are usually adapted to survive best in particular environments, known as their habitats. For example, an Amazon river fish couldn't survive in the freezing waters of the Arctic Ocean. A habitat is a place where an animal or plant lives and grows. Over time, animals and plants develop features to help them meet the challenges of their environments.

How do you know when a species has become extinct?

When a species is endangered, scientists should monitor it closely year after year. Accurate information about population size and distribution helps scientists plan conservation efforts and identify areas where the species is in most danger. Then they can take action before it's too late.

The Pipefish and the Sea Horse

In 1994, a South African river pipefish was listed as extinct. But one year later, a healthy new population was discovered. This second chance to save the pipefish might have been lost if scientists hadn't monitored local species.

Some species of sea horse, close relatives of the pipefish, are also under threat. Large numbers are taken from the wild and sold for home aquariums. Sea horses also live in threatened marine habitats, like coral reefs. By tracking sea horse populations, scientists can trace these problems and find solutions. Now they're working with fishermen to set up sea horse sanctuaries.

What you can do:

- Before you buy a fish for your aquarium, find out if it's endangered, or if it's from the wild.
- If you visit any coral reefs, be careful not to damage them.

Image credits: courtesy of Eugene Weber, California Academy of Sciences.

With vibrant colors and fantastic shapes, coral reefs are a breathtaking sight. These underwater structures are actually colonies of tiny animals called coral polyps. Gorgonian fan corals look like beautiful trees with many thin branches. Most species have an internal, horny skeleton made from proteins. Like trees, corals are quite flexible, and can be seen waving in the current.