

## In 2006, scientists discovered a whole new world of species

by Leigh Fenly

It can sometimes seem as if everything on Earth has already been discovered. In fact, scientists estimate that only one-tenth of the world's estimated 10 million species are known; all the time, more and more novel plants and animals are found.

**NEW SPECIES** - A new species of frog named *Rana compotriz* B was found in the jungle of Laos. CNS Photo courtesy of World Conservation Society Scott Zona discovered a new genus of palm during one of the year's most productive expeditions, to the mostly unexplored Foja Mountains in western New Guinea. "Just because Google Earth serves up satellite images of the planet," says Zona, a palm specialist at the Fairchild Tropical Botanic Garden in Florida, "we should not feel that our world is fully explored."

This year was especially bountiful. Scientists found a snake that changes color. A spitting spider that loves company. A translucent pill bug. And even a new monkey.

African primates have been tracked and studied in the wild by scientists for more than a century, so it was quite a shock to find an entirely new monkey in a farmer's trap in Tanzania. *Rungwecebus kipunji* - with a mane of hair crisscrossing its head like a Mohawk cut in two directions - is the first new African monkey genus designated in 83 years.

The 30-pound, gray-brown monkey was first spotted by two researchers working in two separate regions of Tanzania. Its appearance convinced Tim Davenport of the Wildlife Conservation Society and Carolyn Ehardt at the University of Georgia that it was a type of mangabey.

But new genetic analysis from the trapped monkey shows it to be more closely related to baboons, even though its skeletal anatomy and physical appearance are dissimilar.

"It wasn't a (mangabey), but it wasn't a baboon," said William Stanley, who published the new genetic work in *Science* in June. "So we had no choice but to put it into its own category, placing it in its own genus."

As typical, the classification is being debated by other scientists, and a final determination will await further study - and the capture of additional individuals of this most elusive bunch of monkeys.

The Foja Mountains became famous in 1981 when biologist and author Jared Diamond found a long-lost species there, the golden-fronted bowerbird. But the area had never been systematically surveyed until last

year.

A team of scientists from the United States, Australia and Indonesia surveyed 600,000 acres of pristine forest and 1.25 million acres of nearly untouched land. There they found the mother lode - 20 new species of frogs, four new butterflies, five new palms and the largest recorded rhododendron flowers. They also found a red-faced, wattled honeyeater bird and rediscovered Berlepsch's six-wired bird of paradise, never before seen by Western scientists.

They also discovered a population of golden-mantled tree kangaroos, the first of the species recorded in Indonesia. Altogether the team collected 550 plant species and more than 150 insects.

Finding so much new biodiversity is a rare event - occurring only every few decades. Scientists hope their finds - which are expected to multiply after a second expedition during the dry season - will spur the government to protect the remote area.

By virtue of being the first arachnologist to survey the dry, deciduous forests of eastern Madagascar, Jerry Miller wasn't surprised when he found a new species of spider. His find belongs to the family Scytodidae, so-called spitting spiders that trap prey by spewing out a mixture of venom and glue.

What did surprise Miller was the spiders' living arrangements. Most of the 40,000 known species of spiders are solitary creatures. But the new Madagascar arachnids, about one-eighth-inch long, live in cooperative family groups of about 16 members.

**FIRST GLIMPSE** - A shark that 'walks' on its fins was among the wildlife discoveries at Indonesia's Bird's Head Seascape. CNS Photo courtesy of Conservation International. When a hapless victim blunders in the web, multiple members of the colony use their hind legs to comb silk over the prey. If the fight is prolonged, they spray the intruder with toxic, sticky spit.

With their combined muscle, the spiders are able to ensnare much larger prey than if they were working alone, explained Miller, who works at the California Academy of Sciences in San Francisco. He watched the tactic applied on big roaches and moths.

Miller also noted that the spiders share the fruits of their labor quite freely - even spiders that did not partake in the brawl were invited to the feast.

Small, shy and active only at night, mouse lemurs are difficult to study and have long been considered one of the least well-known primate groups. Until the late 1970s, biologists thought only two species of mouse lemurs lived on the African island nation of Madagascar. With the addition of three new species described this year, the number has risen to 16.

Madagascar is the only place in the world where lemurs occur. All are thought to share a common evolutionary ancestor that arrived on the island more than 60 million years ago.

"Unlike their larger relatives, mouse lemurs are not hunted for food, due to their small body size," explained Mireya Mayor, a biologist at State University of New York at Stony Brook and one of the researchers who discovered the new lemurs. "But they are just as at risk of going extinct because of their rapidly disappearing habitat."

Happily, the new discoveries might be helping the conservation cause. Madagascar's president this year announced the government would triple the total size of the island's protected areas to 15 million acres.

"These small lemurs have become huge ambassadors for all things wild in Madagascar," Mayor said.

One of the world's most biologically diverse forests contains a snake that changes color like a chameleon. "I put the reddish brown snake in a dark bucket. When I retrieved it a few minutes later, it was almost entirely white," explained Mark Auliya, a German reptile expert.

Auliya collected two of the 18-inch-long, poisonous snakes in the wetlands and swamp forests around the Kapuas river in Borneo. Color changing is common in chameleons, but is highly unusual and poorly understood in snakes. Auliya speculates that the Borneo snake changes color to control temperature - becoming darker during the day to attract the sun's warmth and turning a creamy color in total darkness.

The newly named Kapuas mud snake is one of 160 known species of snakes on Borneo. These include the world's most dangerous snake, the Russell's viper, responsible for more human fatalities than any other venomous snake and the world's longest snake, the reticulated python, which can reach 30 feet and weigh 300 pounds.

In addition to the new mud snake, scientists have found 52 new species in Borneo since 2005, including a catfish with protruding teeth and suction cups on its belly to help it stick to rocks, six new Siamese fighting fish and a tree frog with bright green eyes.

Bird's Head Seascape, one of Earth's richest marine habitats, stretches 70,000 square miles off the northwestern coast of Indonesia's Papua province. It is home to almost 600 species of reef-building coral - 75 percent of the world's total - and to whales, sea turtles, crocodiles, giant clams, manta rays and dugongs.

A team of scientists sponsored by U.S.-based Conservation International took a visit earlier this year. Combing through the undersea fauna over six weeks, they discovered 52 new species, including 24 new fish, 20 new corals and eight new shrimp and two kinds of epaulette shark that use their pectoral fins to "walk" across the sea floor.

The diversity of hard corals was the highest ever recorded: Four times the number of coral species in the entire Caribbean Sea were found in an area the size of two football fields.

The scientists also observed signs of human intrusion, including evidence of bomb fishing, used to stun fish that are collected for bait by shark finners. Conservationists worry that plans to expand fisheries into this remote area could degrade the reefs and place a growing hardship on local populations that use the sea for their livelihoods.

New frogs were discovered in Laos and Tanzania this year.

"Nobody has really paid much attention to Laos in terms of amphibian and reptile research," explained Bryan Stuart, a scientist working with the New York-based World Conservation Society. His team has discovered eight new species of frogs in Laos in the past two years. One has a row of spines on its stomach.

In eastern Tanzania, the first field surveys of the Rubeho Mountains revealed more than 160 animal species, including a red duiker and two species of galago - small, nocturnal primates commonly known as bush babies. The new frog, *Arthroleptis nikeae*, was found in a small valley, hiding among the leaf litter under the forest canopy. The smooth-skinned, brown patterned frog measured about 2 inches. "Surveying just one section, we discovered a little frog no one knew existed," explained Nike Doggart, of the Tanzania Forest Conservation Group and the frog's discoverer. "Imagine what other wildlife we may discover if we can help preserve the whole mountain range."

When biologists explored two dark, damp caves in California's Sequoia National Park, they discovered 27 previously unknown species, including spiders, centipedes and scorpion-like creatures.

"Not only are these animals new to science, but they're adapted to very specific environments - some of them, to a single room in one cave," explained cave specialist Joel Despain.

The discoveries included a relative of the pill bug so translucent its internal organs are visible, particularly its long, bright yellow liver. There was also a daddy long legs with jaws bigger than its body and a tiny fluorescent orange spider.

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