

Spiders' weird meals show how topsy-turvy Amazon food webs can be

A tarantula eating an opossum was one of many surprising sights

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A fishing spider prepares to chow down on a tadpole in the Amazon rainforest. This and other vertebrate-eating invertebrates are helping scientists connect the dots of the Amazon's complex food web

EMANUELE BIGGI/AMPHIBIAN & REPTILE CONSERVATION 2019

Rudolf von May has seen some pretty wild things in Peru's Amazon rainforest. But a team member's cell phone video took things to a whole new level. It showed a giant tarantula about the size of a dinner plate. Even more surprising? The spider wobbled through the leaf litter with the body of a mouse opossum hanging from its fangs.

An ecologist, von May works at the University of Michigan in Ann Arbor. To see the first-ever recording of such an encounter "was very surprising — to some extent shocking," he says. "It's very rare to see mammals being preyed upon by a large spider." Far more common is to see predators that are vertebrates higher up the food chain.

Over the past 10 years, von May and his colleagues have made many trips to the rainforest. Each may last three to four weeks. At night, the team divides into groups and begins hiking. They trek through thick humidity and clouds of biting bugs in search of data on amphibians and reptiles. Depending on the project, they might count critters or take tissue samples.

Along the way, they've discovered some surprises about who's eating who. From 2008 to 2017, the team logged 15 instances of invertebrates — animals without a backbone — preying on vertebrates. Once, it was a wandering spider gripping a Bolivian bleating frog. Another time, a centipede nibbled on a very venomous young coral snake — that it had beheaded. And, of course, there was the jaw-dropping tarantula vs. opossum. The researchers described these strange meals February 28 in *Amphibian & Reptile Conservation*.

"It is very valuable and necessary to document these interactions in the field because tropical ecosystems are super diverse," von May says. With so many organisms around, it's hard to know how they all interact.

Many invertebrates are predators. Some have vibration-detecting hairs or paralyzing venom to help catch prey. And scientists have known since at least the 1980s that spineless critters can eat vertebrates.

But it's not known how common such events are. "We just have very limited knowledge," von May says. Now, here's more proof of how complex — and topsy-turvy — the Amazon food web can be.

Researchers working in the Amazon rainforest in Peru heard scrabbling in the leaf litter. They shined their flashlights on the ground and witnessed something never documented before: a dinner plate-sized tarantula dragging a young mouse opossum it had killed.

Science News/YouTube

Power Words

(more about **Power Words**)

amphibians A group of animals that includes frogs, salamanders and caecilians. Amphibians have backbones and can breathe through their skin. Unlike reptiles, birds and mammals, unborn or unhatched amphibians do not develop in a special protective sac called an amniotic sac.

bug The slang term for an insect. Sometimes it's even used to refer to a germ.

colleague Someone who works with another; a co-worker or team member.

conservation The act of preserving or protecting something. The focus of this work can range from art objects to endangered species and other aspects of the natural environment.

ecology A branch of biology that deals with the relations of organisms to one another and to their physical surroundings. A scientist who works in this field is called an **ecologist**.

ecosystem A group of interacting living organisms — including microorganisms, plants and animals — and their physical environment within a particular climate. Examples include tropical reefs, rainforests, alpine meadows and polar tundra. The term can also be applied to elements that make up some an artificial environment, such as a company, classroom or the internet.

field An area of study, as in: *Her field of research was biology*. Also a term to describe a real-world environment in which some research is conducted, such as at sea, in a forest, on a mountaintop or on a city street. It is the opposite of an artificial setting, such as a research laboratory.

food web (also known as a food chain) The network of relationships among organisms sharing an ecosystem. Member organisms depend on others within this network as a source of food.

humidity A measure of the amount of water vapor in the atmosphere. (Air with a lot of water vapor in it is known as humid.)

invertebrate An animal lacking a backbone. About 90 percent of animal species are invertebrates.

litter (in biology) Decaying leaves and other plant matter on the surface of a forest floor.

mammal A warm-blooded animal distinguished by the possession of hair or fur, the secretion of milk by females for feeding their young, and (typically) the bearing of live young.

organism Any living thing, from elephants and plants to bacteria and other types of single-celled life.

predator (adjective: predatory) A creature that preys on other animals for most or all of its food.

prey (n.) Animal species eaten by others. (v.) To attack and eat another species.

rainforest Dense forest rich in biodiversity found in tropical areas with consistent heavy rainfall.

reptile Cold-blooded vertebrate animals, whose skin is covered with scales or horny plates. Snakes, turtles, lizards and alligators are all reptiles.

spider A type of arthropod with four pairs of legs that usually spin threads of silk that they can use to create webs or other structures.

tarantula A hairy spider, some of which grow large enough to catch small lizards, frogs and birds.

tissue Made of cells, it is any of the distinct types of materials that make up animals, plants or fungi. Cells within a tissue work as a unit to perform a particular function in living organisms. Different organs of the human body, for instance, often are made from many different types of tissues.

venom A poisonous secretion of an animal, such as a snake, spider or scorpion, usually transmitted by a bite or sting.

vertebrate The group of animals with a brain, two eyes, and a stiff nerve cord or backbone running down the back. This group includes amphibians, reptiles, birds, mammals and most fish.