

Scientists select new species for top 10 list; issue SOS

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The top 10 new species list includes a carnivorous sponge, bug-eating slug, edible yam, stinkhorn fungus, golden orb spider, flat-faced frogfish, banded knifefish, minnow with fangs, deep-sea worm and charismatic plant that feeds on insects. The top 10 new species list is issued annually by the International Institute for Species Exploration at Arizona State University and an international committee of taxonomists - scientists responsible for species exploration and classification.

The International Institute for Species Exploration at Arizona State University and an international committee of taxonomists - scientists responsible for species exploration and classification - today announce the top 10 new species described in 2009.

On the list are a minnow with fangs, golden orb spider and carnivorous sponge. The top 10 new [species](#) also include a deep-sea worm that when

threatened releases green luminescent "bombs," a [sea slug](#) that eats insects, a flat-faced frogfish with an unusual psychedelic pattern, and a two-inch mushroom that was the subject of a "Bluff the Listener" segment on the National Public Radio quiz show "Wait, Wait Don't Tell Me." Rounding out the top 10 list are a banded knifefish, a charismatic plant that produces insect-trapping pitchers the size of an American football, and an edible yam that uncharacteristically sports multiple lobes instead of just one.

The top 10 new species come from around the world, including Africa, Indonesia, Madagascar, Myanmar, New Zealand, the Philippines, Thailand, the United States and Uruguay.

Issuing an SOS

The taxonomists also are issuing an SOS - State of Observed Species - report on human knowledge of Earth's species. In it, they report that 18,225 living species new to science were described in 2008, the most recent year for which complete data are available. The SOS report trumpets the latest discoveries of previously unknown plants, animals, microbes, algae and fungi. It also notes 2,140 [fossil species](#) described as new in 2008.

The SOS report was compiled by ASU's International Institute for Species Exploration in partnership with the International Plant Names Index, Zoological Record published by Thomson Reuters, International Journal of Systematic and Evolutionary Microbiology, AlgaeBase, MycoBank and World Register of Marine Species.

Information about the top 10 new species, including the explorers who made the discoveries, and the SOS report are online at species.asu.edu . Also at the site is a Google world map that pinpoints the location for each of the top 10 new species.

The winners are ...

Among this year's top 10 picks is a minnow with fangs - *Danionella dracula* - found in a stream at Sha Du Zup between Mogaung and Tanai in Kachin State, Myanmar. The males of the species have canine-like fangs for sparring with other males. This is the first record of oral teeth-like structures being found in the *Cyprinidae*, the largest family of freshwater fishes.

A top 10 choice in the animal kingdom is a golden orb spider - *Nephila komaci* - the first species of *Nephila* to be described since 1879 and the largest to date. *Nephila* has the distinction of spinning the largest webs known, often greater than a meter in diameter.

In the category of "killer sponge" is a carnivorous deep-sea sponge - *Chondrocladia (Meliiderma) turbiformis* - that displays a special type of spicule for which the new term "trochirhabd" has been coined.

Another deep-sea selection for this year's list is a worm discovered off the central coast of California - *Swima bombiviridis* - that when threatened releases "bombs" that illuminate for several seconds with green bioluminescence.

From Pak Phanang Bay in the Gulf of Thailand is a sea slug - *Aiteng ater* - that eats bugs, which is unusual since nearly all sacoglossans eat algae and a few specialize in gastropod eggs. Its discovery has resulted in a new family, *Aitengidae*.

Several fish made this year's top 10 new species list, including a frogfish - *Histiophryne psychedelica* - that has an unusual psychedelic pattern and is unique among frogfishes for its flat face.

A two-inch mushroom - *Phallus drewesii* - was named, with permission,

in honor of Robert C. Drewes at the California Academy of Sciences. Drewes, who initiated extensive multi-organism biodiversity studies on the island of São Tomé, Africa, where this new species of stinkhorn fungus was found, dedicated more than 30 years of his life to research in Africa, according to the scientists who made the discovery.

An electric fish - *Gymnotus omarorum* - goes by the common name Omars' banded knifefish. The species was named to honor Omar Macadar and Omar Trujillo-Cenoz, pioneers in the anatomical and physiological study of electrogenesis in *Gymnotus*.

From the plant kingdom is a charismatic plant species - *Nepenthes attenboroughii* - that produces one of the largest pitchers known, each the size of an American football. It also is carnivorous, feeding on insects trapped by the fluid contained in the pitchers.

Rounding out the top 10 picks is another from the plant kingdom, an "udderly weird yam" - *Dioscorea orangeana* - that was found in Madagascar. Its tuber morphology is uncharacteristic of edible Malagasy yams exhibiting several digitate lobes, instead of just one.

It's about diversity

"Annually, an international committee of taxon experts, helps us draw attention to biodiversity, the field of taxonomy, and the importance of natural history museums and botanical gardens, in a fun-filled way by making the selection of the top 10 new species from the thousands described in the previous calendar year," says Quentin Wheeler, director of the International Institute for Species Exploration at Arizona State University and an entomologist in the School of Life Sciences.

"Charting the species of the world and their unique attributes are essential parts of understanding the history of life," says Wheeler. "It is

in our own self-interest as we face the challenges of living on a rapidly changing planet."

Wheeler advocates a new generation of cyber-tools and Web accessible resources that will vastly accelerate the rate at which humans are able to discover and describe species.

"Most people do not realize just how incomplete our knowledge of Earth's species is or the steady rate at which taxonomists are exploring that diversity. We are surrounded by such an exuberance of species diversity that we too often take it for granted," says Wheeler, who also is an ASU vice president and dean of the College of Liberal Arts and Sciences.

Commemorating May 23 birth of Linnaeus

The annual top 10 new species announcement and issuance of the SOS report commemorate the anniversary of the birth of Carolus Linnaeus, who initiated the modern system of plant and animal names and classifications. The 300th anniversary of his birth on May 23 was celebrated worldwide in 2007. The 250th anniversary of the beginning of animal naming was marked in 2008.

Since Linnaeus initiated the modern systems for naming plants and animals in the 18th century, an estimated 1.8 million species have been named, described and classified. Scientists estimate there are between 2 million and 100 million species on Earth, though most set the number closer to 10 million.

The SOS report summarizes the number of major plant and animal species newly described for the most recent year of complete data, which is 2008. The majority of the 18,225 species described (named) in 2008 were insects (48.25 percent), vascular plants (11.41 percent) and

fungi (7.37 percent) with arachnids coming in a close fourth (7.24 percent). The SOS report also includes data for prokaryotes (bacteria and Archaea) in addition to protists.

The State of Observed Species report and list of top 10 new species issued annually by ASU's International Institute for Species Exploration is part of its public awareness campaign to shine attention on biodiversity and the field of taxonomy. Previous top 10 lists and SOS reports are online at species.asu.edu.

Provided by Arizona State University

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