Our Amorphophallus is smaller: New plant species from Madagascar smells like roadkill

February 7 2012

University of Utah botanist Greg Wahlert stands next to a new plant species he discovered -- *Amorphophallus perrieri* -- as it was starting to bloom on Feb. 2. A day later, the 4.5-foot-tall plant, began stinking like roadkill, just like its bigger and more famous, 20-foot-tall relative, *Amorphophallus titanum*, also known as the "corpse flower." Credit: Lee J. Siegel, University of Utah

The famed "corpse flower" plant – known for its giant size, rotten-meat odor and phallic shape – has a new, smaller relative: A University of Utah botanist discovered a new species of *Amorphophallus* that is one-fourth as tall but just as stinky.

The new species, collected on two small islands off Madagascar, brings to about 170 the number of species in the genus *Amorphophallus*, which is Greek for "misshapen penis" because of the shape of the plants' flower-covered shaft, called the inflorescence or the spadix, says Greg Wahlert, a postdoctoral researcher in biology.

The 4.5-foot-tall plant, *Amorphophallus perrieri*, began reeking Friday, Feb. 3 as it approached the peak of its bloom in a campus greenhouse. A day later, Wahlert began cutting down the plant in stages so the spadix, the surrounding leafy spathe and other parts could be pressed, mounted and submitted to the National Museum of Natural History in Paris as part of the process of designating the plant a new species.

That won't be official until about a year from now after Wahlert publishes a scientific paper formally describing the species, which can grow to 5 feet high, and how it differs from relatives in the genus, including *Amorphophallus titanum* – also known as the "corpse plant," "corpse flower" and "titan arum" – which grows to 20 feet high.

After Wahlert first collected specimens of the new plant in 2006 and 2007 and discovered it was a new species, he found the Paris museum's herbarium held a dried specimen collected from one of the same islands by French botanist-geologist Joseph Marie Henri Perrier de la Bâthie (1873-1958), who didn't realize it was a new species. So Wahlert is naming it for Perrier.

"Perrier collected it in 1932, and it sat in the museum until we dug it up and compared it to the other specimens and the plants that I had collected," Wahlert says. "Perrier spent years working on scores of other plant groups [and describing hundreds of other new species] and just never got around to it."

The corpse flower smells like rotting meat to attract the flies and beetles

that pollinate it. Wahlert had expected the new species would smell like cheese, which it did briefly when it began blooming Feb. 3. But the odor soon grew worse – much worse – and more like its giant relative.

"I smelled rotting roadkill out in the sun reeking," says University of Utah biology Professor Lynn Bohs, in whose lab Wahlert works. "There's also a note of public restroom – a Porta Potty smell."

This is a close-up of the reddish-purplish, leafy "spathe" surrounding the central "spadix" of the newly discovered plant species *Amorphophallus perrieri*, which grows to five feet tall, one-fourth the height of its more famous relative, the "corpse flower" or *Amorphophallus titanum*. While the spadix sometimes is referred to as the plant's "flower," in fact the lower part of the spadix, hidden by the spathe, is covered by hundreds of tiny flowers, each only a fraction of an inch big. Credit: Cameron McIntire, University of Utah

Wahlert added: "I would say carrion and feces. When you get right up to it, it's really foul and disgusting."

Another Utah researcher collected volatile gases emitted by the plant "and will identify the components of the smell," Wahlert says. Only a small group of *Amorphophallus* species have been tested for odors, but

the known aromas range from rotting meat to anise, cheese, dung, fish, urine, spice and chocolate, he adds.

Two weeks before the plant began to bloom, "it was just a little bud sticking out of the dirt," he says. When it bloomed, the stalk was almost 4 feet tall and the inflorescence or spadix was about 10 inches long. It was yellow, with pollen on the top part. The lower part, hidden by the reddish, leafy spathe, was covered by hundreds of tiny flowers, each a fraction of an inch wide. (Sometimes the entire spadix is referred to informally as the flower.)

"They are just so rude – their appearance and smell," Bohs says. "Everybody I've talked to says they almost started puking when they smelled it. It's horrid."

In the Same Family as Philodendrons and Skunk Cabbage

Some thought the plants' suggestive genus name was horrid. In 2008, Sir David Attenborough said he invented the name "titan arum" for the corpse flower for his BBC series "The Private Life of Plants" because he thought it would be inappropriate to repeatedly refer to *Amorphophallus*.

Bohs says the genus belongs to the family *Araceae*, commonly known as the arum or aroid family. The family includes philodendrons, taro root (from which Hawaiians make poi), skunk cabbage and anthurium, a plant common in floral arrangements, with a yellow spadix surrounded by a leafy, red, heart-shaped spathe.

Wahlert says plants in the genus *Amorphophallus* are found in southern Asia, the South Pacific, Australia and Africa, including Madagascar. Of the 170 or so species in the genus, which first was discovered in 1834, "a

lot have been known for 150 years, but one, two or three new species are described every year," he adds.

University of Utah botanist Greg Wahlert, a postdoctoral researcher in biology, and the upper part of a new plant species he discovered, *Amorphophallus perrieri*. The plant is in the same family as philodendrons, taro root, skunk cabbage and anthurium, which is common in floral arrangements. Credit: Lee Siegel, University of Utah

A. titanum grows naturally only in Sumatra in Indonesia, although it is found around the world in greenhouses that compete for the largest corpse flower plant. The Guinness Book of Records title currently is held by a New Hampshire specimen that had a spadix measuring 10-feet-2.25-inches tall in 2010. Counting the stem and spadix, *A. titanum* can reach 20 feet tall, compared with a 5-foot maximum for *A. perrieri*, which has a longer stem and shorter spadix – about 10 inches long in the case of the one that bloomed on campus.

New Species Collected from a Burial Island

Wahlert collected the new species from Nosy Mitsio and Nosy Ankarea

– two islands northwest of Madagascar, which is off the east coast of Africa. "Nosy" means island in the Malagasy language. The plant since has been found on Madagascar.

He had to obtain permission from a local village to visit Nosy Ankarea, an uninhabited, half-mile-wide island where the Sakalava people buried their rulers. Unlike Ankarea, which is still vegetated, Mitsio is heavily deforested. *A. perrieri* was found there in low scrub behind beach dunes.

"I went there in 2006 to collect tree violets, and when I got there I discovered these *Amorphophallus* in full bloom on the first day in the field," cutting and collecting four or five specimens, Wahlert says. "That night I got malaria. I stayed there a week but was so sick I couldn't do much collecting."

After the trip, Wahlert showed the specimens to Dutch botanist Wilbert Hetterscheid of Wageningen University. Hetterscheid, an expert on *Amorphophallus*, said they were a new species, and is co-authoring the descriptive paper with Wahlert.

In October 2007, Wahlert went back to the islands at the end of the dry season, and once again the new species were in full bloom. He collected 15 tubers – the roots – so he could grow the plants.

Wahlert kept the live plants at various institutions where he worked and gave others away, ending up with one left when he moved to Utah last fall.

Why should anyone care about a stinking plant with a suggestive shape?

"It's not high-tech, but it's still important to describe new species, to document biodiversity, particularly in a place like Madagascar, which is one of the world's great biodiversity hotspots," Wahlert says. "It's been

severely deforested and is continuing to be deforested. So it's important to document new species before they go extinct."

Provided by University of Utah