

# New species of ancient chirping giant pill-millipedes from Madagascar already threatened

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Gigantism in giant pill-millipedes on Madagascar is illustrated. On left is one of the newly discovered, 'small' giant pill-millipedes (*Sphaeromimus lavasoa*), on right a 'large' species (*Zoosphaerium* sp.). Credit: Wesener 2007

An international team of researchers comprised of Thomas Wesener, Museum Koenig, Bonn, Daniel Le, Field Museum, Chicago and Stephanie Loria, American Museum of Natural History, New York,

discovered seven new species of chirping giant pill-millipedes on Madagascar. The study was published in the open access journal *ZooKeys*.

The [species](#) discovered all belong to the genus *Sphaeromimus*, which is Latin for 'small ball animal'. However, the designation 'small' is not always true for the members of the genus as one of the newly discovered species surprises with a size larger than a ping-pong ball. Another special characteristic of the genus is that its species have the largest chirping organs of any millipede, which are most probably used during mating.

Despite sometimes sharing a habitat with Madagascar's 'large' pill-millipedes, which can reach the size of a baseball, the [new species](#) are more closely related to millipedes found in India than their Malagasy neighbours. This relationship dates back more than 80 million years to at least as early as the Cretaceous period, when dinosaurs walked the Earth and India and Madagascar were connected.

One of the new species *Sphaeromimus andrahomana* offers clues to Madagascar's ecosystems thousands of years ago. Although the species was found in a cave in Madagascar's southern dry spiny forest region, genetically, it is a rainforest taxon. The lemur skeletons found inside the same cave are also evidence that a rainforest existed in the now desert-like area until 3000-5000 years ago. The species, sheltered by the humid cave, is probably a living witness to this ancient rainforest.

The discovery is particularly exciting as some of species are microendemics, meaning they are only found in one tiny forest fragment, a few hundred meters long and wide.



Upper left to Lower right: This image shows different color morphs, genetically found to be identical, of the chirping giant pill-millipede (*Sphaeromimus musicus*), and a similar-looking species (lower left) of a different genus (*Zoosphaerium blandum*). Credit: Wesener 2007

*S. lavasoa*, for example, is restricted to the Lavasoa Mountain, which is covered by an isolated, slightly larger than 100 hectare, rainforest remnant, which is famous for the recent discovery of a large scorpion as well as a dwarf lemur species. This discovery further highlights the



importance of the area as a Center of Endemism.

Another new species (*S. saintelucei*) is probably the most endangered millipede on Madagascar. It was found in a fragment of the Sainte Luce littoral rainforest characterized by its laterite soil that is now so small that no lemur or other large vertebrate species can survive in it.



This is the entrance to the Cave Grotte d'Andrahomana -- a famous fossil site and habitat of a new species of giant pill-millipede (*Sphaeromimus andrahomana*). Credit: Wesener 2007

The nearby Sainte Luce forest fragment with sandy ground harbours a different species (*S. splendidus*) also believed to be a microendemic.

"Despite their close proximity, both species are not even closely related. Both the fragments where they were found are currently threatened by a huge, billion-dollar titanium ore strip mining project. Although there are intentions to designate and manage conservation zones, the plan is to protect only one large fragment may result in the extinction of some of the species if additional conservation measures aren't undertaken." explains the lead author Dr. Thomas Wesener from the Research Museum Alexander Koenig in Bonn, Germany.

**More information:** Wesener T, Le DM-T, Loria SF (2014) Integrative revision of the giant pill-millipede genus *Sphaeromimus* from Madagascar, with the description of seven new species (Diplopoda, Sphaerotheriida, Arthrosphaeridae). *ZooKeys* 414: 67. [DOI: 10.3897/zookeys.414.7730](https://doi.org/10.3897/zookeys.414.7730)

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