



BISHOP MUSEUM

July 23, 2020

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Bishop Museum Describes First Living Native Hawaiian Land Snail Species in More Than 60 Years *Discovery provides hope that native populations may still exist in the face of a biodiversity crisis*

Honolulu, Hawai‘i – For the first time in more than 60 years, Bishop Museum scientists have named a new species of living native Hawaiian land snail. The discovery provides hope that there may be other populations existing of this and other species of native land snails – an animal group known for its mass extinctions. The arduous research process that was required to give the species a scientific name also marks a massive step forward in preservation, and will enable researchers and cultural practitioners to better integrate their respective fields in understanding this species and conserving biocultural resources that are unique to Hawai‘i at large.

Since 1600, Pacific land snails have accounted for more recorded extinctions than any other group of animals. The Hawaiian Islands were once home to more than 750 species, with over half of these becoming extinct due to habitat loss, the effects of global warming and invasive species. Norine Yeung, Bishop Museum malacologist and the lead author on the study, said that the confirmation of this new species “brings that little glimmer of hope that this isn’t all a depressing story.”

“This is a happy story where we discovered a snail that is still around,” said Yeung. “There are so many things in our collection that we can no longer find in the wild. But in this snail’s case, we can finally put a name to it and describe it, which is huge for the conservation of this species.”

The new species, *Auricullela gagneorum*, is endemic to the Wai‘anae Mountains of O‘ahu and is a close relative of other O‘ahu tree snails. This new species has a small shell, less than five millimeters (two-tenths of an inch) tall when fully grown, and displaying significant color variation, ranging from burnished tiger’s-eye patterning to dramatic sable and white stripes.

The species was first discovered by Bishop Museum researchers in 1912, but remained in the collections without sufficient resources to conduct the research required to give it a scientific name, thereby confirming it as a new species. In 2013, a population of this species was rediscovered and a collaborative team of researchers from Bishop Museum (Yeung; Ken Hayes, Bishop Museum director of Pacific Center

for Molecular Biodiversity; and Jaynee Kim, malacology collection manager), Florida Museum of Natural History (John Slapcinsky, invertebrate zoology collection manager), and the Smithsonian's Natural History Museum (Ellen Strong, malacology curator), began the task of studying its shell, anatomy, and genetics so that it may be formally described as a new species. The naming of this species comes more than 100 years after its initial discovery, and marks the first new living native Hawaiian snail species to be described in more than 60 years.

Hawai'i's land snails are primarily decomposers and fungivores, "our natural recyclers keeping our ecosystems healthy," said Yeung. "They are food for our native species such as our endemic carnivorous caterpillar, *Hypsmocoma molluscivora*, and forest bird, the po'ouli. They are also important in Hawaiian culture as they are often thought of as hō'ailona, symbols or omens, for change, voices, and romance."

Bishop Museum's researchers and its partners are now monitoring some *Auricullela gagneorum* snails in Hawai'i's captive breeding program (DLNR Snail Extinction Prevention Program) with the objective of breeding them and returning them to the wild to boost populations. The name *Auricullela gagneorum* was chosen to honor long-time champions of Hawaiian biodiversity, Wayne and Betsy Gagne. The couple spent their lives advocating for the discovery, study and preservation of Hawai'i's biocultural resources.

Plants and animals are going extinct faster than scientists can discover and name them. "Without a name, a species cannot be studied, it cannot be understood, and it cannot be saved from extinction," said Hayes, "This taxonomic backlog exists because there are too few people trained to recognize and describe new species, a symptom of a problem known as the taxonomic impediment."

Since 2004, Hayes and Yeung have led a team of local, national and international researchers to update the conservation status of Hawai'i's land snails. After surveying more than 1,000 locations across the islands, the team has rediscovered the number of living land snails, once thought to number as few as 75 species, but now known to be at least 300.

Through its research and preservation work with Hawaiian land snails, Bishop Museum remains committed to the global mission of reducing the taxonomic backlog of the estimated seven million species awaiting a formal name.

The study of the new land snail species was published in the journal ZooKeys, along with the data from five other species that had not been fully described previously. Funding for this project was provided by NSF (National Science Foundation) (DBI-1902328, DEB-1656231, DBI-1561774, DEB1120906).

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About Bernice Pauahi Bishop Museum:

Bernice Pauahi Bishop Museum's mission is to inspire our community and visitors through the exploration, celebration and perpetuation of the extraordinary history, culture, and environment of Hawai'i and the Pacific. The Museum was founded in 1889 by Charles Reed Bishop in memory of his wife Bernice Pauahi Bishop, a royal descendant of King Kamehameha I. Today, the Museum thrives as an educational center for the community and is widely regarded as the world's premier institution for Hawaiian and Pacific content. Its vast collections of more than 25 million objects and specimens represent nine disciplines and include more than 22 million biological specimens, over two million cultural objects, 115,000 historical publications, and one million photographs, films, works of art, audio recordings, and

manuscripts. These collections tell the stories of the cultures and biodiversity of Hawai'i and the Pacific as well as the proud legacy of scholarly research spanning 130 years. Bishop Museum proudly serves more than 200,000 visitors each year, including 20,000 children on school visits. To learn more about the Museum's research, collections, exhibits, and programs, visit www.bishopmuseum.org, follow @BishopMuseum on Twitter and Instagram, become a fan of Bishop Museum on Facebook, visit Bishop Museum's YouTube channel at youtube.com/user/BishopMuseum, or call (808) 847-3511. Bishop Museum is a 501(c)(3) nonprofit organization.