

## Rediscovery of *Auriculella pulchra* Pease, 1868 (Gastropoda: Pulmonata: Achatinellidae)<sup>1</sup>

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Hawaii supports one of the world's most spectacular land snail radiations and is a diversity hotspot (Solem 1983, 1984, Cowie 1996a, b). Unfortunately, much of the Hawaiian land snail fauna has been lost, with overall extinction rates as high as ~70% (Hayes *et al.*, unpubl. data). However, the recent rediscovery of an extinct species provides hope that all is not lost, yet continued habitat destruction, impacts of invasive species, and climate change, necessitate the immediate development and deployment of effective conservation strategies to save this biodiversity treasure before it vanishes entirely (Solem 1990, Régnier *et al.* 2009).

### Achatinellidae

#### *Auriculella pulchra* Pease 1868

#### Notable rediscovery

*Auriculella pulchra* (Fig. 1) belongs in the Auriculellinae, a Hawaiian endemic land snail subfamily of the Achatinellidae with 32 species (Cowie *et al.* 1995). It was originally described from the island of O'ahu in 1868 and was subsequently recorded throughout the Ko'olau Mountain range. There are no known published records of this species from 1923 to 1973. However, unpublished field notes and uncataloged lots from 1930–1970 at the Bishop Museum indicate that the species was extant and in good numbers.

Although *Auriculella pulchra* was reported from Poamoho in 1914 and Waimano from 1915–1919, there were no records (i.e., publications or catalogued lots) of this species for the next 55 years until one of us (DC) observed *Auriculella pulchra* in Waimano and Poamoho in 1974. Many individuals (too numerous to count) were observed in both areas annually from 1974 to 1976. However, over the next few subsequent years, the populations experienced a sharp decline and the numbers were so low that even after extensive searching only a few individuals were found. By 1981, Chung observed no individuals in Waimano. From 1976–1986, anywhere from zero to five snails were recorded each year in Poamoho, with the last individual seen in 1986. Similar declines and eventual extirpations

1. Contribution No. 2015-008 the Hawaii Biological Survey

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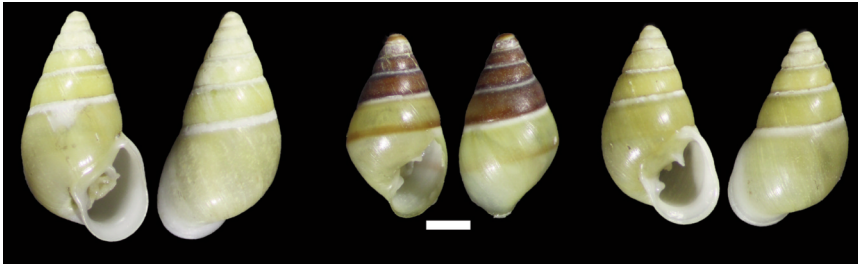


Fig. 1. *Auriculella pulchra*, Poamoho, Koʻolau Mountains (BPBM 278618); scale bar = 2 mm.

in *A. pulchra* populations were seen in other areas in the Koʻolau Mountains (i.e., Manana, Lanihuli, Haiku Stairs). The Waimano and Poamoho areas were surveyed annually by Chung from 1987–1997 and no *A. pulchra* were recorded. Based on these observations and a conservative estimate of extinction (>70% probability of extinction) calculated using the simplified Bayesian approach of Lee *et al.* (2014), *A. pulchra* was considered extinct as of 2011.

However, recent surveys resulted in rediscovery of *Auriculella pulchra* north of Poamoho, Koʻolau Mountains in July 2013. The population size was not estimated, but consisted of at least 30 individuals.

*Material examined* [The exact locality data for material listed here are not listed here for conservation purposes but are kept in the State of Hawaii Department of Land and Natural Resources Snail Extinction Prevention Program and Bishop Museum Malacology databases]: Oʻahu: Hālawā, 1923 (BPBM 75477); Kahauʻiki, 1918 (BPBM 46194); Kalihi, 1907–1918 (BPBM 35221, 35222, 35393, 35958, 38299, 40453, 42156, 42849, 42850, 42868, 42879, 42885, 42891, 42896, 43668, 43669, 43735, 43758, 44037, 45802, 45805, 45809, 45818, 45974); Kawaiʻiki, 1914 (BPBM 37336, 37342); Kīpapa, 1914 (BPBM 36633); Malaekahana, 1917 (BPBM 44852); Moanalua, 1919 (BPBM 49124, 49129, 49132, 49147, 49148, 49149); north of Poamoho, 2013 (BPBM 278617, 278618); Nuʻuanu, 1915–1917 (BPBM 44002, 44003, 44008, 44009, 44012, 42427, 42574, 43953, 43954, 43955, 43956, 43957); Opaēʻula, 1914–1917 (BPBM 37317, 37323, 37328, 37349, 43650); Poamoho, 1914 (BPBM 37349); Waimano, 1915–1919 (BPBM 40414, 47297, 49065).

#### Acknowledgments

We thank Jenny Prior of the State of Hawaii Department of Land and Natural Resources, Jamie Tanino and Vince Costello of the Oʻahu Army Natural Resources Program, and John Slapcinsky for logistical support, access to lands and/or collection of materials. Regina Kawamoto helped us with vouchersing specimens in the Bishop Museum. We also thank Kelley Leung and Dylan Ressler for photographic assistance. This work was supported by a National Science Foundation grant (DEB-1120906) to K.A. Hayes.

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