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New Records of Introduced Land and Freshwater Snails in the Hawaiian Islands

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Ampullariidae

Pomacea canaliculata (Lamarck)

New island record

This freshwater species, here reported from Lanai, is 1 of 4 species of Ampullariidae (“apple snails”) recorded from the Hawaiian islands (Cowie 1995). It has previously only been reported from the islands of Kauai, Oahu, Maui and Hawaii. It is of South American origin, but was deliberately introduced to South-East Asia in the late 1970s or early 1980s as a potential food source, and has since become an extremely serious pest of rice and other crops (Mochida 1991). It was probably brought deliberately to Hawaii from Asia in about 1989 and has rapidly become a serious pest of taro.

Material examined. LANAI: Koele golf course, water hazard at hole no. 15, 1760 ft. [536 m.], 27.iv.1995, D.J. Preston (BPBM Malacology 250486).

Cerionidae

Cerion viaregis Bartsch

New state record

Cerionidae are land snails native to the Caribbean islands and Florida Keys. Studies of their genetics and morphological variation have made major contributions to evolutionary biology (e.g., Gould & Woodruff 1990). This species is from the island of Andros (Bahamas).

Live specimens were sent by Paul Bartsch of the U.S. National Museum (Smith-

sonian Institution) in 1922 to C. Montague Cooke, Jr., who attempted to establish populations in a number of places on Oahu. The purpose of these introductions was presumably similar to that of the introduction of Bahamian *Cerion* to Florida by Bartsch to investigate the extent (if any) of environmental, as opposed to genetic, determination of shell morphology (Bartsch 1920; Woodruff & Gould 1987). The populations on Oahu failed to establish (correspondence between Paul Bartsch and C. Montague Cooke, Jr., 3.viii.1922, 21.viii.1922, 6.ix.1922, 14.ii.1924, 8.ix.1924; Bishop Museum Archives).

Also introduced to Oahu as part of the same experiment were *Cerion casablancae* Bartsch, 1920, also from Andros, and an additional unspecified *Cerion* sp. from Cuba. Neither species became established and neither is represented in the collections of Bishop Museum.

Material examined. OAHU: Malaekahana, collected dead, 23.xi.1940, C.M. Cooke, Jr. (BPBM Malacology 188771).

Polygyridae

Polygyra cereolus (Mühlfeld, 1818)

New state record

Polygyrids are terrestrial snails occurring naturally in North America. This is the first record of the family in Hawaii. *Polygyra cereolus* is native to Florida, where it is common. It is not known when or how it was introduced to Hawaii.

Material examined: OAHU: Commons lot on south side of Crozier Drive, Mokeleia, 28.vii.1995, L. Miyano (lot split: BPBM Malacology 250724, ANSP 398833); same location (including live specimens), 2.xii.1995, L. Miyano (BPBM Malacology 250716).

Helicidae

Helix aspersa Müller, 1774

This western European land snail was first recorded in Hawaii in 1952 (Kondo 1956a), and again in 1956 (Kondo 1956b), on both occasions from Oahu. It was first reported on the Island of Hawaii in 1976 (articles in the *Honolulu Star Bulletin* newspaper) and is apparently still present there, around Waimea at least (L. Miyano, pers. comm.). It was confirmed as still present on Oahu in 1980 and recorded from Maui (Kula) for the first time in 1981 (Tamura *et al.* 1981). The present record confirms its continuing presence on Maui, based on material collected in 1995 and deposited in the Bishop Museum collections.

Helix aspersa is a common snail in its native range, frequently found in cultivated gardens, where it can become a pest. It has been introduced to many parts of the world, where it has also frequently achieved serious pest status, e.g., California (Gammon 1943). It has not achieved a wide distribution in Hawaii nor become a serious agricultural pest. Being of temperate origin, it may be restricted in Hawaii to higher elevation localities and be unable to colonize low areas where temperatures may be too high.

Material examined. MAUI: Kula, 377 Haleakala Highway, 0.2 mi. [0.1 km.] makai [in the direction of the ocean] of Crater Rd., mauka [mountain] side of road, 3300 ft. [1006 m.] (elevation given by landowner), 3.ix.1995, P. Thomas (BPBM Malacology 250489).

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New Records and Synonymies of Hawaiian Diptera

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All specimens examined in this paper are vouchered in the Bishop Museum.

Dolichopodidae

Pelastoneurus lububris Loew

New state record

Specimens of this species were first collected by William D. Perreira at the Magoon Facilities at the University of Hawaii, Manoa on 30 January 1994. Since that collection, other specimens have turned up in ongoing Malaise trapping in north Halawa Valley by the Hawaii Biological Survey and in a recent survey of Lualualei Naval Magazine. All collections were made in grassy areas.

The species occurs naturally in the eastern United States from Michigan south to Mexico.

Material examined: OAHU: UH Manoa, Magoon Facilities, 30.i.1994 (W.D. Perreira); Lualualei Naval Magazine, Halona Valley, 21°25.862N, 158°05.708W, 1620 ft [495 m], 18–19.i.1996 (D.J. Preston), Malaise trap.

Tachytrechus sp.

New state record

Numerous individuals of this circumtropical genus were collected at 6 different localities on Kauai by D.A. Polhemus during stream surveys. Determination to species has not yet been made.

Material Examined: KAUAI: Hanakapiai Str, 23.x.1993 (D.A. Polhemus); Hanalei Riv, 600 ft [183 m], 4.xi.1994 (D.A. Polhemus), wet bedrock; same except 12.vi.1994, 1200 ft [365 m]; Waimea Riv, 750–785 ft [229–240 m], 12.vi.1994 (D.A. Polhemus), midstream rocks; Waihula Str, 12.vi.1994, 1000 ft [305 m] (D.A. Polhemus).