

**The Asian polydesmidan milliped, *Helicorthomorpha holstii* (Pocock)
(Paradoxosomatidae), established in Hawai'i**

FRANCIS G. HOWARTH (Hawaii Biological Survey, Bishop Museum, 1525 Bernice Street,
Honolulu, Hawai'i 96817-2704, USA; email: fhowarth@bishopmuseum.org) and ROWLAND M.
SHELLEY (North Carolina State Museum of Natural Sciences, Research Lab., MSC #1626, Raleigh,
North Carolina 27699-1626, USA; email: rowland.shelley@ncmail.net)

In their review of the milliped family Paradoxosomatidae in Hawai'i, Shelley *et al.* (1998) provided distinguishing features and occurrences for three Asian species inhabiting the archipelago: *Oxidus gracilis* (C.L. Koch, 1847), *Asiomorpha coarctata* (Saussure, 1860), and *Akamptogonus novarae* (Humbert and Saussure, 1869); all are widely introduced globally, particularly on islands. They deleted three species from the state's fauna that had been intercepted in quarantines but were not known to occur on the islands *per se*; however, they predicted that these and other widely introduced millipeds might eventually become established. We report here the establishment of one deleted species, *Helicorthomorpha holstii* (Pocock, 1895), on O'ahu; it is indigenous to east Asia. Voucher specimens are deposited in the Bishop Museum (BPBM) and the North Carolina State Museum of Natural Sciences (NCSM).

Paradoxosomatidae

***Helicorthomorpha holstii* (Pocock, 1895) New state record**

Diagnosis. Distinguished from the 3 other Hawaiian paradoxosomatids by the color pattern and configuration of the gonopods in males. Color (Fig. 1; Shelley & Lehtinen 1998:90, fig. 22; Chen & Chang 2004: figs. 15.1–15.8): dark brown with broad longitudinal stripe extending from collum to segment 19; stripe narrow on prozona but expanded and somewhat “egg shaped” on metazona, orange to bright red in life fading to whitish in alcohol. Paranota greatly reduced, represented by rounded peritremal swellings, similarly colored as stripe; legs orange. Body surface smooth, subcylindrical, sides nearly parallel, narrowing slightly caudad, more so near epiproct; approximately 20 mm in length. Gonopod (Fig. 2; Shelley & Lehtinen 1998:90, figs. 23–24; Chen & Chang 2004: figs. 42.1–42.4): telopodite elongate, narrow, branches intertwined into helical configuration, with 3 apical terminations.

Distribution. Ryukyu Islands, Taiwan, China, and Viet Nam; introduced into Florida, USA (Shelley & Lehtinen, 1998, Shelley & Edwards, 2001).

Occurrence in Hawai'i. Known only from Honolulu and vicinity, O'ahu.



Figure 1. *Helicorthomorpha holstii*, female dorsal color pattern. Photo: F.G. Howarth.

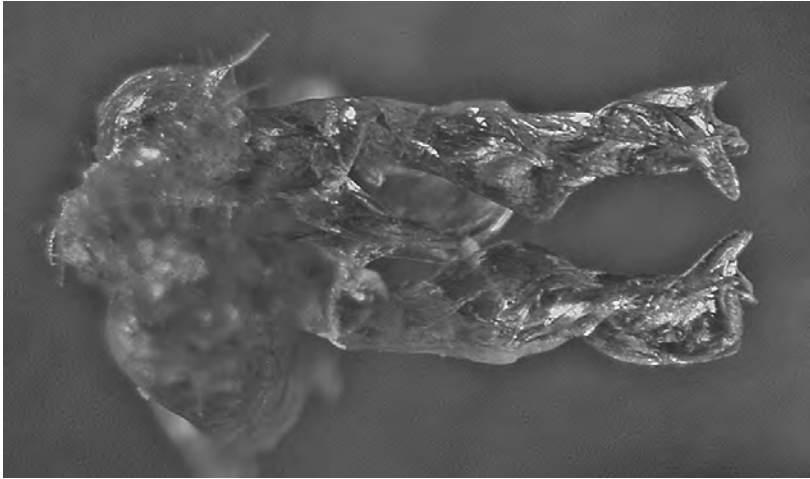


Figure 2. *Helicorthomorpha holstii*, distal portion of telepodites, ventral view. Photo F.G. Howarth.

Material examined. OAHU: Honolulu, Kalihi, 120 m, N21°20.6', W157°52.61', 15–17 Feb 2008, in leaf litter and invading house, FG Howarth, 10♂, 10♀ (NCSM), 20♂, 25♀ (BPBM); same data except 12 May 2008, in house, FG Howarth, 2♂, 5♀ (BPBM); Tripler Army Medical Center, near unnamed stream, N21.361°, W157.893°, 26 Jul 2008, under rocks, DJ Preston & K Arakaki, 3♀ (BPBM).

Remarks. *Helicorthomorpha holstii* was first recorded from Hawai'i by Chamberlin (1923). He described it as *Chinosoma hodites* n. gen., n. sp. based on one male and three juveniles that had been intercepted in quarantine at Honolulu and were found in soil with a cactus plant from China. Jeekel (1980) subsequently synonymized *Chinosoma* with *Helicorthomorpha* and *C. hodites* with *H. holstii*. As no further Hawaiian specimens were known, Shelley *et al.* (1998) concluded that the species was not an inhabitant and deleted it from the state's fauna; we suspect that the present Honolulu population represents a separate and recent introduction. In 2000, a heavy infestation of *H. holstii* was discovered in a plant nursery greenhouse in Orange County, Florida (Shelley & Edwards, 2001). The greenhouse contained orchids imported from Taiwan, and the authors speculated that the millipeds had been introduced as eggs with the plants.

Literature Cited

- Chamberlin, R.V. 1923. Two diplopod immigrants taken at Honolulu. *Proceedings of the Biological Society of Washington* **36**: 165–168.
- Chen, Chao-Chun & Chang, Hsueh-Wen. 2004. Taxonomic study of Paradoxosomatidae (Diplopoda) from Taiwan. Thesis. National Sun Yat-sen University 211 pp. Available at: http://etd.lib.nsysu.edu.tw/ETD-db/ETD-search/view_etd?URN=etd-0302104-115319. Accessed 3 Jun 2008.
- Jeekel, C.A.W. 1980. The generic allocation of some little-known Paradoxosomatidae from south-east Asia (Diplopoda: Polydesmida). *Revue Suisse de Zoologie* **87**: 651–670.
- Shelley, R.M., Bauer, S.B. & Swift, S.F. 1998. The milliped family Paradoxosomatidae in the Hawaiian Islands (Diplopoda: Polydesmida). *Bishop Museum Occasional Papers* **56**: 43–53.
- & Edwards, G.B. 2001. Introduction of the milliped, *Helicorthomorpha holstii*, in Florida (Polydesmida: Paradoxosomatidae). *Entomological News* **112**: 200.
- & Lehtinen, P.T. 1998. Introduced millipeds of the family Paradoxosomatidae on Pacific Islands (Diplopoda: Polydesmida). *Arthropoda Selecta* **7**(2): 81–94.