

## Notes on Three Erroneous Referrals of Non-Hawaiian Fossil Nonmarine Gastropods to Endemic Hawaiian<sup>1</sup> Genera and Species

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Several recent instances have come to light in which paleontologists unfamiliar with Hawaiian nonmarine mollusks have relied on superficial similarities in shell morphology to assign non-Hawaiian fossil species to genera or species endemic to the Hawaiian Islands notwithstanding obvious biogeographic and stratigraphic inconsistencies. Three of these are identified here to preclude the possibility that they could be the source of future unwarranted biogeographical inferences.

### Achatinellidae

#### ?*Newcombia delicata* Youluo, 1978

This species was described from fossil material from the early Tertiary of Bohai, northern China (Youluo 1978: 137–138, pl. 25, figs. 21, 22). The description of ?*N. delicata* compared it to *N. plicate* [sic] (Pfeiffer, 1848), now regarded as a synonym of *N. lirata* (Pfeiffer, 1853) (Cowie *et al.* 1995). While the overall appearance of the shell of ?*N. delicata* does somewhat resemble that of *N. lirata* in form and sculpture, the former is much smaller in size than any species of *Newcombia* (2.95 mm in height vs. 12.5–25.0 mm in *Newcombia* according to Schileyko 1998: 46). Furthermore, its description fails to differentiate it from several genera of Planorbidae (cf. *Glyptophysa* Crosse, 1872, *Pseudophysa* Yen, 1938, and *Bulinus* (*Pyrgophysa*) Crosse, 1879) reported by Youluo (1978) to be present in the Bohai material. The Achatinellidae are best characterized by anatomical characters (Pilsbry & Cooke 1912–1914; Cooke & Kondo 1961; Schileyko 1998), unavailable in fossil material such as ?*N. delicata*. Nevertheless, the statement that the apex of the shell of ?*N. delicata* is smooth (“壳顶小而光滑” [“top of shell small, smooth”]; Youluo 1978: 137) distinguishes it from *Newcombia*, in which the embryonic shell bears what are described as “comparatively coarse spirals” (Pilsbry & Cooke 1912–1914: 1, pl. 1, figs. 9, 12) or “distinct spiral cords” (Schileyko 1998: 46). Placement of the Chinese species in *Newcombia* is undoubtedly incorrect and the range of the genus, properly understood, is limited to the Hawaiian Islands. Species of *Newcombia* are known to inhabit, or formerly to have inhabited, the islands of Kaua‘i, Moloka‘i, and Maui (Pilsbry & Cooke 1912–1914; Cowie *et al.* 1995; Gage 1996; Severns 2009).

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### Amastridae

#### *Amastra (Amastra) patrulei* Moisescu, 1982

This species was described from the Oligocene of Transylvania, Romania (Moisescu 1982: 93–94, pl. 3, figs. 10a, 10b, 11a, 11b, pl. 4, figs. 1a–13b). As with the Achatinellidae discussed above, the most distinctive characters of the Amastridae are in the soft anatomy (Hyatt & Pilsbry 1911; Schileyko 1998), unknown in this fossil species. The description and accompanying figures of the poorly preserved type material show no conchological characteristics specific to the Amastridae or to *Amastra* (*s.s.*) and, although the description refers to the presence of a columellar callus (“*un cal collumellaire*”) or columellar fold (“*un plis collumellaire*”) (Moisescu 1982: 93), none of the figured specimens show the “spiral [columellar] lamella that penetrates the “*about a half whorl*” characteristic of *Amastra* (*s.l.*) (Hyatt & Pilsbry 1911: 134; emphasis in original) or the “thin, sharp, high” columellar lamella characteristic of *Amastra* (*s.s.*) (Schileyko 1998: 54). The Romanian snail’s maximum shells height of 3.6 mm is much smaller than the 9 to 36 mm shells of species of *Amastra* (*s.s.*) (Schileyko 1998: 54). All other species reported from the same site are of aquatic or marine taxa (*Hydrobia* Hartmann, 1821; *Kleinella* Adams, 1860; *Pseudamnicola* Paulucci, 1878; and *Stenothyrella* Wenz, 1939), and “*Amastra*” *patrulei* could belong to any of several families of small to minute prosobranchs. Placement in *Amastra*, a genus of pulmonate land snails otherwise restricted to the Hawaiian Islands, is without foundation and is undoubtedly erroneous.

### Vertiginidae

#### *Nesopupa (Nesodagys) wesleyana* Ancey, 1904

Huang & Guo (1991) and Wang & Guo (1991) reported the supposed occurrence of the Hawaiian endemic species *Nesopupa (Nesodagys) wesleyana* Ancey (1904), as a fossil in the Cenozoic of Shanxi, China. The discussion of *N. wesleyana* in the systematic review (Wang & Guo 1991:113) cites “pl. 29, fig. 12” in Pilsbry & Cooke (1918–1920) in support of the identification (apparently an error for pl. 29, figs. 1 and 2; pl. 29, fig. 12 is of another species, *Nesopupa (Limbatipupa) oahuensis* Cooke & Pilsbry in Pilsbry & Cooke, 1920). Figures of the supposed *N. wesleyana* (Wang & Guo 1991, pl. 23, figs. 16 & 17) are of a vertiginid consistent with either *Nesopupa* or *Vertigo* Müller, 1773, one species of the latter of which is also present in the same deposit. The illustrated specimen appears to have six apertural lamellae, including weak supracolumellar and columellar lamellae. *N. wesleyana* is distinguishable in that it has a strong columellar lamella and lacks the supracolumellar lamella, and the assignment of the Chinese material to the Hawaiian species is undoubtedly erroneous. *N. wesleyana* and its various subspecies have been reported from all of the main Hawaiian Islands except Ni‘ihau (Pilsbry & Cooke 1918–1920; Cowie *et al.* 1995).

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