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**Systematic review of diplommatinid land snails (Caenogastropoda, Diplommatinidae) endemic to the Palau Islands.
(1) Generic classification and revision of *Hungerfordia*
species with highly developed axial ribs**

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Abstract

Diplommatinidae is a family of terrestrial caenogastropod snails that shows extensive species diversity and endemic radiation within the Palau (Belau) Islands. In this paper, we revised the taxonomy of Palauan endemic diplommatinids based on the comparative morphology of shell, operculum, radula, and genitalia. Although the generic classification of Palauan diplommatinids has been confusing, they are currently classified into two genera, *Hungerfordia* Beddome, 1889 and *Palaina* Semper, 1865. Palauan diplommatinids of these two genera are primarily distinguished by the radular, genital and operculum morphology. However, shell morphology, on which taxonomy has traditionally been based, does not provide definitive characters for generic identification, because shell shape and sculpture are highly variable within each genus. Although *Hungerfordia* has long been known as a monotypic genus, the current study redefines the endemic genus to include a wider range of species that were formerly placed in *Diplommatina* or *Palaina*. Following species are transferred to *Hungerfordia*: *H. alata* (Crosse, 1866) **comb. nov.**; *H. lamellata* (Crosse, 1866) **comb. nov.**; *H. pyramis* (Crosse, 1866) **comb. nov.**; *H. ringens* (Crosse, 1866) **comb. nov.**; *H. polymorpha* (Crosse, 1866) **comb. nov.**; *H. inflatula* (Crosse, 1866) **comb. nov.**; *H. lutea* (Beddome, 1889) **comb. nov.**; *H. aurea* (Beddome, 1889) **comb. nov.**; *H. gibboni* (Beddome, 1889) **comb. nov.**; *H. crassilabris* (Beddome, 1889) **comb. nov.** *Pseudopalaina* Moellendorff in Kobelt & Moellendorff, 1898 (**synonym nov.**) is demoted as a junior synonym of *Hungerfordia*. *Palaina* is also redefined based on the internal shell features and operculum morphology, in addition to the external shell characters. Furthermore, *Eupalaina* Kobelt & Moellendorff, 1898 is restored as a subgenus of *Palaina* for Palauan species on the basis of a genital character. The taxonomy of *Hungerfordia* species with highly developed axial ribs is revised. *H. pelewensis* Beddome, 1889, *H. lamellata* (Crosse, 1866) **comb. nov.**, and *H. alata* (Crosse, 1866) **comb. nov.** are redescribed with new morphological data. Following new taxa are described: *H. triplochilus* **sp. nov.**, *H. expansilabris* **sp. nov.**, *H. nudicollum* **sp. nov.**, *H. echinata echinata* **sp. et subsp. nov.**, *H. echinata tubulispina* **subsp. nov.**, *H. elegantissima* **sp. nov.**, *H. goniobasis goniobasis* **sp. et subsp. nov.**, *H. goniobasis dmasechensis* **subsp. nov.**, *H. subalata* **sp. nov.**, *H. pteropurpuroides* **sp. nov.**, *H. papilio papilio* **sp. et subsp. nov.**, *H. papilio stenoptera* **subsp. nov.**

Key word: Pacific islands, speciation, biodiversity, land snail, taxonomic character, anatomy

Dimensions. Shell height 4.8–6.2 mm, diameter 3.6–5.0 mm, suture width 1.9–2.6 mm, peristome height 1.5–2.1 mm.

Operculum (Figs. 28J₁–J₄). Operculum corneous, multispiral, circular, transparent, amber colored, thin, flat, slightly concave; outer surface smooth; inner surface with a low, weak, arcuate ridge near the columellar margin.

Penis. Penis absent.

Radula (Fig. 9O). Radula of specialized type of taenioglossate; ribbon very long. Central tooth very large, with a very wide, large, and blunt central cusp, without lateral cup, basal plate longitudinally elongated and strongly constricted at the base. Lateral teeth also large, with a large, very wide and blunt major cusp, without inner nor outer cusp. Inner marginal teeth narrower and shorter than the lateral teeth, with a large major cusp, with two slender inner cusps, with a reduced outer cup. Outer marginal teeth shorter than the inner marginals, with a large and blunt major cusp, with a slender inner cusp, without outer cusp.

Distribution and ecology. Endemic to Palau: Mecherchar and Euidelchol islands, and their satellite islets. The species inhabits vertical walls of large limestone rocks or cliffs, occasionally on limestone rubbles.

Remarks. *H. papilio stenoptera* differs from the nominal subspecies in the following points. First, *H. papilio stenoptera* has narrower wing-like projections of the ribs on the penultimate and antepenultimate whorls, which are clearly separated from those on the previous whorls (Figs. 28A₁, 28D, 28G₃). Whereas, the nominal subspecies has much wider wing-like projections on these whorls, which are overlapped with and attaching to those on the previous whorls (Figs. 27A₁, 27D, 27G₃). Second, the less preserved synchronization of the wing-like ribs is also diagnostic of this subspecies. In the nominal subspecies, wing-like ribs on all whorls except the last one are perfectly synchronized with those on the previous whorls (Figs. 27A₃, 27D, 27G₁). In contrast, in *H. papilio stenoptera*, non-synchronized ribs occasionally occur on the apical whorls, and are frequently found on the penultimate and antepenultimate whorls (Figs. 28A₃, 28D, 28G₁). Third, in *H. papilio stenoptera*, the wing-like projections of ribs are more strongly folded at the periphery than the nominal subspecies, particularly on the penultimate and antepenultimate whorls (Figs. 27A₃, 27D, 28A₃, 28D). Fourth, in *H. papilio stenoptera*, the angular margin of the inner peristome is more strongly protruded (Figs. 27A₄, 28A₄), and thus, the palatal margin is more strongly concave in left lateral view (Figs. 27A₂, 28A₂). Fifth, the shell size is generally smaller and the umbilicus tends to be narrower compared to the nominal subspecies.

Mecherchar and Euidelchol populations are almost fixed for the characteristic phenotype, although there are few populations showing intermediate or exceptional phenotypes.

Etymology. The subspecific name, derived from Greek *stenos* (= narrow) and *pterus* (= with wing), refers to the narrower wing-like ribs on the last two whorls than the nominal subspecies.

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