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Three New Volutid Species (Mollusca) from Formosa and the Arafura Sea

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In 1970, WEAVER and DU PONT published an excellent monograph of the family Volutidae entitled "The Living Volutes". In this book all the species of the family known at that time were illustrated.

Of the collections from the sea around Formosa (Taiwan) and the Arafura Sea made by Mr. Ryosuke KAWAMURA, three volutid species were brought to me. They are not included in the monograph and seem to be new to science after a critical observation. Therefore, they are described in the following lines.

It is a pleasure to name them in honor of Mr. Ryosuke KAWAMURA, who has the largest shell collection in Japan, for the celebration of his 77th birthday.

Lyria (*Lyria*) *kawamurai* sp. nov.

(Pl. 1, figs. 1, 2)

Shell large for the genus, solid, fusiform in shape, with the pyramidally elevated spire, pale brown in basic color with blackish brown spiral lines of various intervals in each other. Blackish brown blotches of various size are on the longitudinal ribs under the sutures on teleoconch whorls and just below the periphery and at the base of body whorl. Protoconch small, smooth and polished, globose and consisting of 2.5 whorls. Teleoconch of 8 whorls slightly convex and shallowly constricted at the sutures indented by the upper end of longitudinal ribs. Number of longitudinal ribs 12 on the body whorl and 11 on the penultimate whorl in the fully grown holotype specimen; 11 on the body whorl and 10 on the penultimate whorl in the young paratype specimen. Body whorl large and high, occupying about two-thirds of shell height and having 19–20 blackish brown spiral lines. Other teleoconch whorls have 4–5 spiral lines. Aperture rather large and long, pale pink within. Outer margin slightly curved and somewhat thickened and with blackish brown spots arranged on its edge corresponding to the endings of blackish brown spiral lines on the surface. Parietal wall has the callus forming the thick knob at the posterior corner of the aperture. Columellar margin also weakly callous. Plaits from the columellar margin to the parietal wall are 12 in the fully grown specimen, anterior three being strong and large and others gradually reducing in size posteriorly. Siphonal canal short and rather wide, oblique and sinuated backwards. Fasciole distinctly formed and moderately rounded.

Total height 65.8 mm, height of body whorl 44.8 mm and breadth 27.2 mm (figured holotype specimen deposited in KAWAMURA's collection).

Total height 47.5 mm, height of body whorl 34.3 mm and breadth 19.8 mm (paratype specimen deposited in the National Science Museum, NSMT–Mo 49726).

Type-locality. Off Suo, Formosa (collected by coral fishing boats).

Remarks. *Lyria cloveriana* WEAVER, 1863, from Ceylon, is closely related to this new species in shape and coloration, but has rather regularly arranged revolving lines, alternated thick with narrow, and densely set longitudinal ribs reducing to the aperture on the surface, and bears a large protoconch at the apex.

Lyria lyriaeformis (SWAINSON, 1821) from the East Coast of Africa, chiefly from Kenya, and *Lyria delessertiana* PETIT DE LA SAUSSAYE, 1842, from Madagascar north to Comoro Ids. and Seychelles, somewhat resemble this new species in shape, but have the distinct surface sculpture and coloration.

Amoria (*Amoria*) *kawamurai* sp. nov.

(Pl. 1, figs. 3, 4)

Shell rather large for the genus, thin but solid, elongate ovate with conically elevated spire, smooth and highly polished, cream yellow in basic color overlaid with 9–11 narrow longitudinal blackish brown stripes of about 1 mm wide and 5 mm apart from each other on the body whorl. These undulated stripes sinuated to the periphery posteriorly. On the penultimate whorl, they are 11–13 in number and about 0.5 mm in width and 2–4 mm apart from each other. Protoconch large, smooth, dome-shaped with about 6 whorls and slightly mammillated at the apex and pale brown with the white line along the sutures. Teleoconch of 2 whorls large and elongate, occupying about four-fifths of shell height. Aperture long and rather wide, white, though coffee within. Outer margin slightly curved laterally and produced forwards, rather thin and sharp at its edge, on which usually 7 blackish brown spots are arranged corresponding to the endings of stripes on the surface. Columellar margin rather straight and covered by pale orange callus, bearing 4 strong white plaits running up spirally and obliquely into the aperture. Siphonal canal short but wide, shallowly sinuated backwards. Fasciole distinctly formed with a keel.

Total height 86.4 mm, height of body whorl 75.8 mm and breadth 33.6 mm (figured holotype specimen deposited in KAWAMURA's collection).

Total height 88.9 mm, height of body whorl 77.3 mm and breadth 34.1 mm (paratype specimen deposited in the National Science Museum, NSMT–Mo 49725).

Total height 89.3 mm, height of body whorl 77.8 mm and breadth 35.5 mm (paratype specimen deposited in KAWAMURA's collection).

Total height 75.8 mm, height of body whorl 63.5 mm and breadth 27.7 mm (paratype specimen deposited in the National Science Museum, NSMT–Mo 49724).

Type-locality. Arafura Sea (exact locality unknown).

Remarks. *Amoria* (*Amoria*) *ellioti* (SOWERBY, 1864), from Western Australia, is

the nearest ally to this new species, but that species has densely set, not distinctly curved but undulated longitudinal stripes, 20 in number, on the body whorl. *Amoria* (*Amoria*) *jarmachi* GRAY, 1864, also from Western Australia, is another ally to this new species, but has a different manner of coloration.

Amoria (*Amoria*) *ryosukei* sp. nov.

(Pl. 1, figs. 5, 6)

Shell rather small for the genus, thin, smooth and highly polished, elongate ovate in shape, with a conically elevated spire of 7 whorls, white in basic color, with about 15 brown undulated longitudinal stripes of 0.5–0.8 mm wide and 1.5–2.0 mm apart from each other on the body whorl and 11 stripes of 0.3–0.5 mm wide and 1.2–1.5 mm apart on the penultimate whorl. Two brown narrow spiral lines on the body whorl divided into three subequal parts crossing undulated longitudinal stripes. Protoconch of about 5 whorls rather large, dome-shaped, pale brown with the mammillated white apex. Teleoconch of 2.5 whorls large and high, occupying about six-sevenths of shell height and slightly convex. Body whorl also large, four-fifths of shell height. Aperture large, rather wide, coffee-colored within. Outer margin weakly curved laterally and produced forwards, forming a narrowly sinuated posterior corner, thin and sharp at its edge. Columellar margin white, bearing 4 strong plaits spirally and obliquely running within. Siphonal canal short, rather wide and shallowly sinuated backwards. Fasciole decidedly formed.

Total height 46.5 mm, height of body whorl 39.7 mm and breadth 19.5 mm (figured holotype specimen deposited in KAWAMURA's collection).

Type-locality. Arafura Sea (exact locality unknown).

Remarks. This new species is similar to *Paramoria guntheri guntheri* (SMITH, 1886) from South Australia in the manner of coloration on the surface, but the latter species has very solid ovate shell decorated with knobs on the shoulder of the body whorl. *Amoria* (*Amorena*) *undulata* (LAMARCK, 1804) from Tasmania has a shell decidedly larger than in this new species and is ornamented only with undulated longitudinal stripes, lacking in the narrow spiral lines.

Literature Cited

WEAVER, Cl. S., & J. E. DU PONT, 1970. The Living Volutes. 375 pp. (79 pls). Delaware Museum of Natural History, U.S.A.

Explanation of Plate 1

Figs. 1–2. *Lyria* (*Lyria*) *kawamurai* sp. nov. (holotype specimen).
Figs. 3–4. *Amoria* (*Amoria*) *kawamurai* sp. nov. (holotype specimen).
Figs. 5–6. *Amoria* (*Amoria*) *ryosukei* sp. nov. (holotype specimen).


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