

Sassia melpangi, a new ranellid species (Gastropoda: Tonnoidea) from the Central Pacific

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ABSTRACT

Sassia melpangi is described from bathyal depths off Oahu, Hawaii. This new species is most similar to *S. nassariformis* (Sowerby, 1902) from comparable depths off southeastern Africa, and to a lesser extent to *S. remensa* (Iredale, 1936) from the western Pacific. *Sassia melpangi* may be distinguished from all other *Sassia* on the basis of its broad, evenly rounded whorls, absence of a distinct shoulder on the varices, numerous axial ribs and spiral cords that produce an evenly reticulate surface sculpture, a broadly ovate aperture with distinctive inductura and strongly pigmented pattern along the edge of the outer lip.

INTRODUCTION

Sassia, the oldest of the ranellid genera, is represented in the Upper Cretaceous deposits of the United States, Europe, and northern Africa. This genus became cosmopolitan by the Eocene and has been considered to be a basal group that gave rise to all other Ranellidae (Beu, 1998a: 800). In the Recent fauna, *Sassia* appears to have dispersed via a Tethyan distribution route, ranging from South Africa [*Sassia nassariformis* (G. B. Sowerby II, 1902)] and Japan [*Sassia semitorta* (Kuroda and Habe in Habe, 1961)] to the South Atlantic [*Sassia philomelae* (Watson, 1880)]. Greatest diversity occurs in the Indo-Pacific, with most species inhabiting outer shelf to upper slope depths (100 to 600 m). The Indo-West Pacific *Sassia* were revised by Beu (1998b: 137), who distinguished as "*Sassia* sp. nov.?" a distinctive specimen from Raevavae, French Polynesia. He mentioned examining photographs of additional specimens from Guam and Hawaii, but deferred from naming it formally until more specimens became available.

Through the kindness of Mr. Chris Takahashi, five additional specimens, all taken in traps off Oahu, Hawaii, were made available for study. Based in this new material, the taxon *Sassia melpangi* is described as a new species.

Abbreviations and acronyms used in the text are: dd, dead-collected shell; MNHN, Muséum national d'Histoire naturelle, Paris; USNM, National Museum of Natural History, Smithsonian Institution, Washington, DC.

SYSTEMATICS

Superfamily Tonnoidea Suter, 1913
Family Ranellidae Gray, 1854
Subfamily Cymatiinae Iredale, 1913

Genus *Sassia* Bellardi, 1873

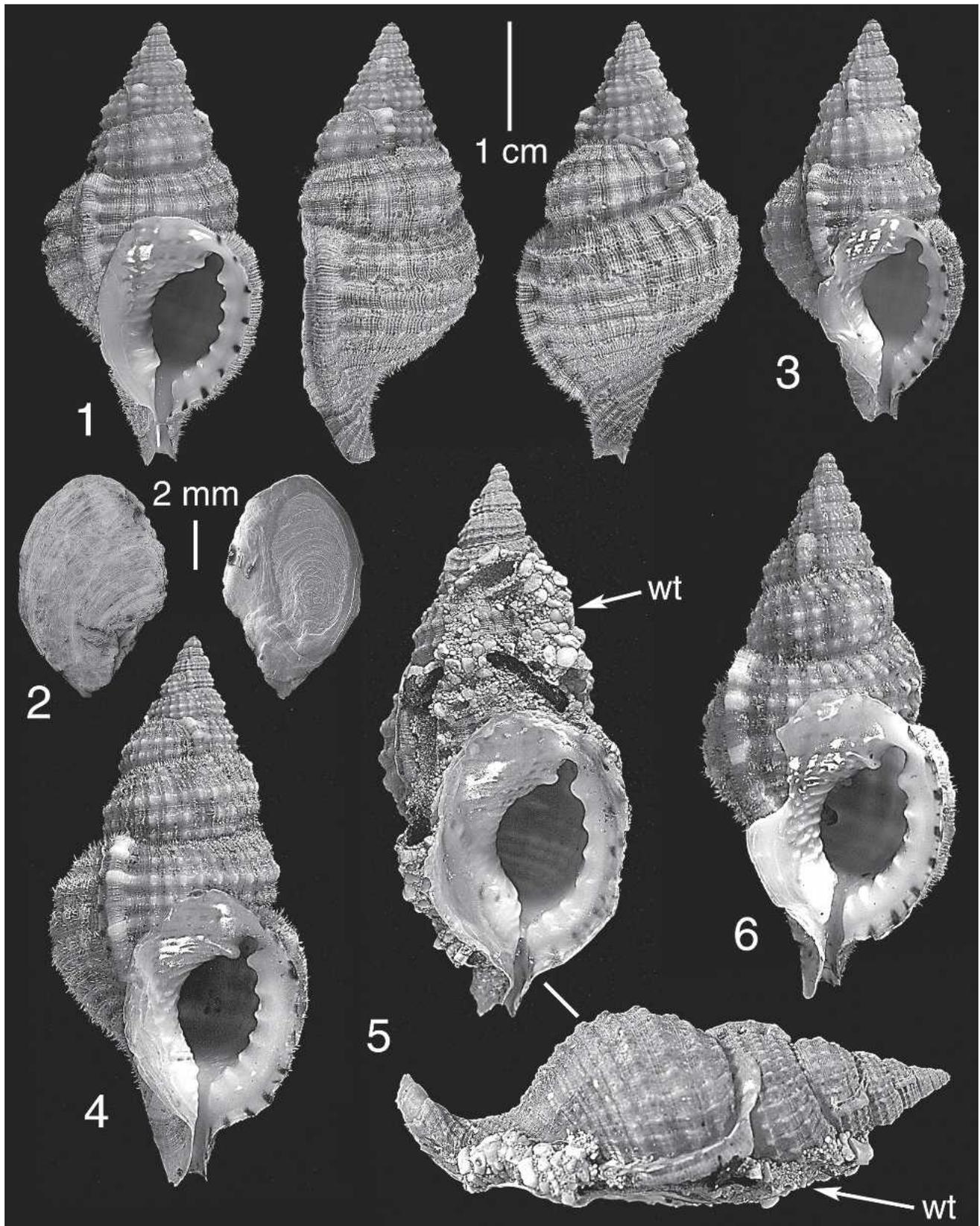
Type Species: *Triton apenninicum* Sassi, 1827, from the Miocene and Pliocene of Europe (by subsequent designation, Cossmann, 1903: 93). For an extensive synonymy, see Beu, 1998b: 139.

Sassia melpangi new species
(Figures 1–13)

Sassia sp. nov.? Beu, 1998: 141–142, fig. 43, 1.

Diagnosis: *Sassia* with up to 8 broad, evenly rounded whorls, without distinct shoulder on varices; sculpture of numerous axial ribs and spiral cords that produce an evenly reticulate surface sculpture; a broadly ovate aperture forming a distinctive inductura with ventrally reflected edges and strongly pigmented pattern along the edge of the outer lip.

Description: Shell (Figures 1, 3–6, 11–13) large for genus (reaching 51.7 mm; Table 1), fusiform, with tall, conical spire, large aperture, oval inductura with reflected edge, and short, open, axially oriented siphonal canal. Protoconch (Figures 12–13), tall-conical, increasing in diameter from 185 μm to 1.67 mm in 2.75 evenly rounded, glossy whorls. First half whorl smooth, followed by onset of sharp, narrow axial cords (26–29 per whorl) and 3–4 narrow, weaker, spiral cords. Transition to teleoconch abrupt, marked by change in color from amber



Figures 1–6. *Sassia melpangi* new species **1.** Holotype, USNM 1099759, apertural, right lateral, and dorsal views. **2.** SEMs of the inner and outer surfaces of the operculum of the holotype. **3.** Apertural view of paratype 1. **4.** Apertural view of paratype 2. **5.** Apertural and left lateral views of Paratype 3, USNM 1099760, showing adherent polychaete tubes (wt). **6.** Apertural view of Paratype 4. Scale bar = 1 cm (applies to all shells.) Abbreviation: wt, worm tube.

Table 1. Measurements of the holotype and four paratypes of *Sassia melpangi*. Linear measurements in mm.

	HT	PT1	PT2	PT3	PT4
Shell length	41.1	37.6	51.1	51.7	50.3
Aperture length	16.1	14.9	19.8	20.5	19.3
Siphonal canal length	7.5	7.4	9.8	11.2	9.5
No. whorls, protoconch	3.3	3.3	3.2	3.2	3.2
No. whorls, teleoconch	6.5	6.5	7.3	7.0	7.2
No. cords on penultimate whorl	5	4	5	5	5
No. cords on last whorl	8	9	9	8	9
No. cords on siphonal canal	6	4	5	6	7
No. axial ribs on last whorl	24	20	29	26	21
No. axial ribs between varices	18	15	21	17	13
Spire angle	50.0°	48.5°	44.8°	45.8°	43.0°

to tan, loss of surface gloss, and coarsening of axial and spiral sculpture. Teleoconch of up to 8 convex, evenly rounded whorls. Suture adpressed. Axial sculpture of 13–29 weakly opisthocline to weakly prosocline ribs per whorl, as broad as interspaces, forming reticulate sculpture of hemispherical beads at intersections with strong spiral cords (3 on first whorl, 4–5 on penultimate whorl, 8–9 on last whorl, 4–7 on siphonal canal). Cords comprised of 3–5 broad fused threads with 3–9 finer threads between adjacent cords. Varices broad, strongly raised, begin after about 0.5 whorl and recur every 230–240° thereafter. Plane of inductura tangential to previous whorl, thus, varices form an angle of up to 10° with axial rib, intersecting at base of siphonal canal. Aperture large (0.38–0.40 shell length), broad (0.5–0.6 of aperture length), oval, major axis deflected from shell coiling axis by 20–23°. Outer lip reflected, forming rim of inductura, thickened, with 7 strong teeth that do not extend beyond the varix. Most adapical tooth largest, opposed to strong parietal tooth. Flaring edge of outer lip with rectangles of dark reddish brown pigment along its outer margin that are aligned with spiral cords. A broad, oval inductura with reflected edges extends over the parietal area. Parietal region with single, strong tooth that does not extend into the aperture and one or two weak folds that overlay spiral cords of previous whorl. Columella with multiple weak folds of varying lengths and angles, some ending before reaching the inductura, others short, originating on the inductura. Columellar fold at junction of siphonal canal most pronounced. Siphonal canal about half as long as aperture, axial, dorsally deflected, narrowly open, with proximal half covered by inductura. Base color cream to light tan, with axial bands of darker reddish brown, 3 bands between adjacent varices on early whorls, increasing to 6 bands between varices. Varices pigmented with reddish brown, darker on dorsal, lighter on ventral region, interrupted by slightly to much lighter bands along spiral cords. Interior of shell nacreous white, base color visible in thinner areas. Perios-

tracum (Figure 11), thin, brown, finely lamellose, hirsute, with hairs aligned along spiral threads and growth lines. Periostracum best preserved along suture in most specimens. Operculum (Figure 2) large (> 0.8 aperture length), ovate, thin, corneous, with terminal nucleus. Radula (Figures 7–9) short (0.33 aperture length) consisting of 48–51 rows of teeth (7 per row). Rachidian teeth broad, with wide, curved basal plate, with strong central cusp flanked by 5–8 short, conical denticles. Lateral teeth broad, with stout bases, 6–8 denticles along ventral edge. Marginal teeth scythe-like, with smooth edges. Jaws (Figure 10) paired, narrow dorsally, expanded ventro-laterally, with fringed edges.

Type Locality: Oahu, off the north shore district of Haleiwa, muddy sand, in red shrimp traps set at 300–350 m.

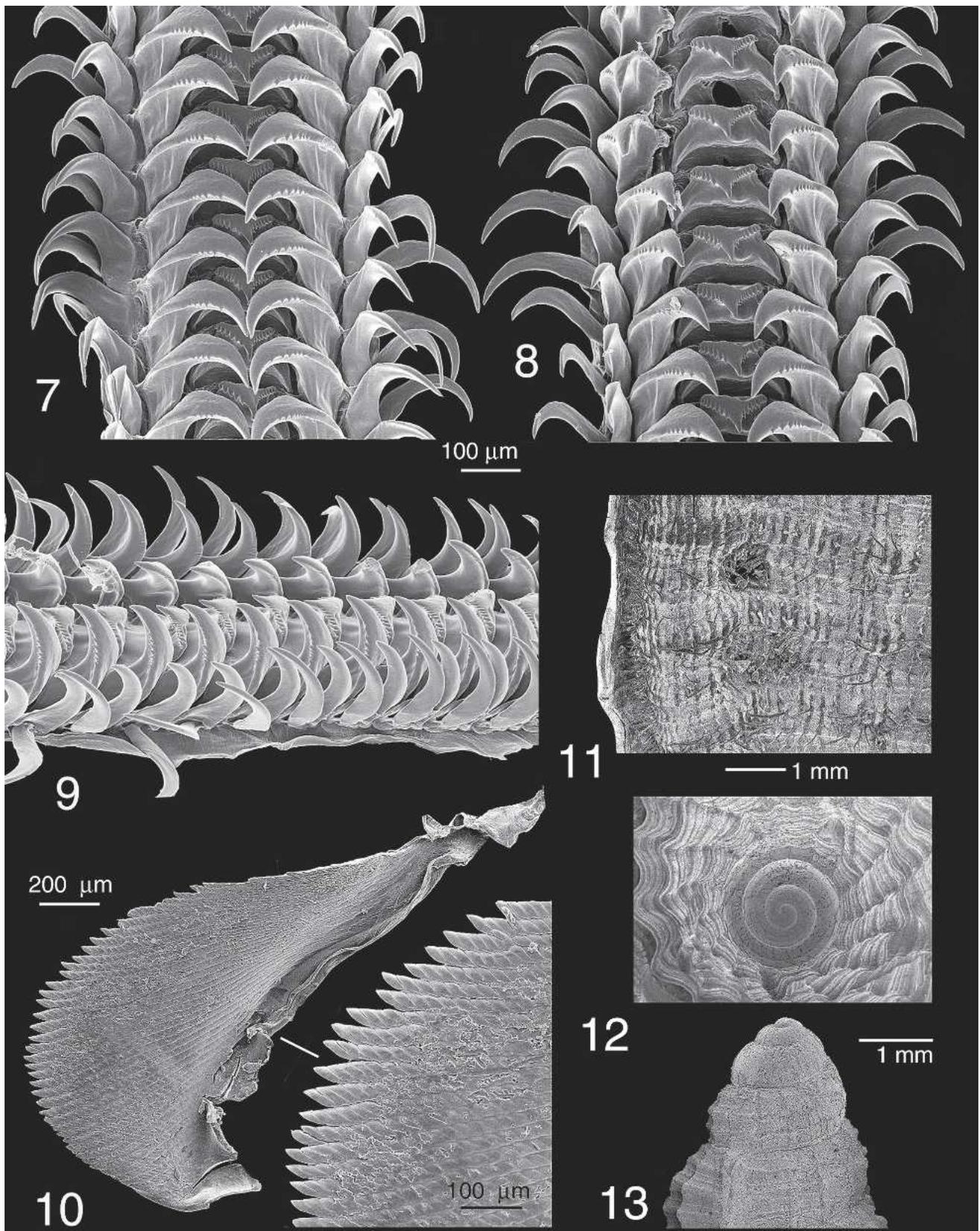
Type Material: Holotype, USNM 1099759; Paratype 3, USNM 1099760, Paratypes 1, 2, 4, Takahashi collection. All from the type locality.

Additional Material Examined: AUSTRAL ISLANDS: MNHN, Raevavae, 23°50.54' S, 147°42.73' W, in 400 m. BENTHAUS: stn DW 1884, Iles Marotiri, 570–620 m (1 dd); stn DW 1885, as last, 700–800 m (1 dd); stn DW 1897, ouest de Rapa, 480–700 m (2 dd); stn DW 1899, as last, 342–600 m (1 dd); stn DW 1903, Banc NE Rapa, 400–600 m (1 dd); stn DW 1923, Recif Nielsen, 360–840 m (1 dd); stn DW 1924, as last, 340–800 m (1 dd); stn DW 1925, as last, 560–790 m (1 dd); stn DW 1929, Banc Président Thiers, 350–370 m (1 dd); stn DW 1932, as last, 500–600 m (1 dd); stn DW 1933, as last, 500–859 m (2 dd); stn DW 1940, N de Raevavae, 100–460 m (3 dd); stn DW 1943, as last, 950 m (2 dd); stn DW 1945, Banc Lotus, 120–500 m (2 dd); stn DW 1951, as last, 206–450 m (1 dd); stn DW 1957, Tubuai, 558–1000 m (2 dd); stn DW 1961, as last, 470–800 m (3 dd); stn DW 1973, Banc Arago, 300–350 m (2 dd); stn DW 1974, as last, 450–618 m (2 dd); stn DW 1992, Rurutu, Mont de Lotus, 442–444 m (1 lv); stns 1997–2001, Rurutu, 200–1000 m (2 dd); stn DW 1998, cote N de Rurutu, 250–302 m (1 dd?); stn DW 1999, as last, 270–500 m (4 dd); stn DW 2000, cote N de Rurutu, 270–480 m (1 dd); stn DW 2001, port de Rurutu, 200–550 m (1 lv?); stn DW 2006, cote E de Rurutu, 35–450 m (1 dd); stn CAS 2008, cote E de Rurutu, 280–300 m (2 dd); stn DW 2018, Rimatara, 770–771 m (1 dd); stn DW 2021, Rimatara, 1200–1226 m (1 dd).

Distribution: *Sassia melpangi* is broadly distributed throughout the central West Pacific, from Guam to Hawaii and Raevavae in the Austral Islands, but does not occur in the Marquesas. It inhabits upper bathyal depths, with live specimens collected between 200 and 550 m.

Etymology: This species is named in honor of Mr. Melvin Pang, of Oahu, Hawaii, who collected the type series.

Comparative Remarks: The new species *Sassia melpangi* is readily distinguished from the western Pacific *S.*



Figures 7–13. *Sassia melpangi* new species. **7–9.** Radula of the holotype. **7.** Dorsal view of radula near mid-length. **8.** Dorsal view of radula near distal end, lateral teeth spread to reveal rachidian teeth. **9.** Right lateral view of radular ribbon. Scale bar = 100 µm (applies to Figures 7–9). **10.** Jaw of holotype, with detail of edge. **11.** Periostracum of paratype 1, at midpoint of final varix. **12.** Apical view of protoconch of paratype 1. **13.** Lateral views of protoconch of paratype 1. Scale bar = 1 mm (applies to Figures 12, 13).

remensa and *S. semitorta* in having: more evenly rounded whorls that lack a pronounced shoulder; the presence of more numerous, evenly spaced axial ribs that form a reticulate surface sculpture; a more evenly ovate aperture surrounded by an inductura with ventrally reflected edges; as well as a strong pigmentation pattern along the outer lip. *Sassia melpangi* most closely resembles *S. nassariformis* from southeastern Africa, with which it shares the rounded whorl profile and even cancellate sculpture. *Sassia nassariformis* can be differentiated by its shouldered varices, smaller aperture, weaker pigmentation along the outer lip, and by its thicker inductura, which is more triangular than ovate, and which is not reflected along its edges.

Sassia melpangi has a broad range throughout the tropical Pacific. While the type locality is off the Island of Oahu, a number of specimens are known from French Polynesia, and photographs of two specimens from Guam, Marianas Islands have been examined. This species inhabits upper bathyal depths (300–400 m). The position of worm tubes (Figure 5, wt) on the ventral surface of living specimen suggests that *Sassia melpangi* is epifaunal and inhabits hard substrates.

ACKNOWLEDGMENTS

We are grateful to Chris Takahashi, for bringing this material to our attention, and for donating the holotype

and one paratype to the National Museum of Natural History. Mr. Richard Salisbury kindly made available photographs of two specimens dredged off Guam, Marianas Islands, and Professor Alison Kay provided photographs of additional specimens dredged in Hawaii.

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