



## Three new species of *Periploma* (Bivalvia, Periplomatidae) from the Panamic Province

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While preparing a manual on the marine bivalves of the Panamic Province, we have found three species of the Periplomatidae that lack names. In this paper, we describe two new species from Mexico, *Periploma skoglundae* and *P. hendrickxi*, and one new species from El Salvador, *P. kaiserae*.

**Abbreviations:** ANSP—Academy of Natural Sciences, Philadelphia, Pennsylvania; BMNH—The Natural History Museum, London; CAS—California Academy of Sciences, San Francisco, California; LACM—Natural History Museum of Los Angeles County, Los Angeles, California; SBMNH—Santa Barbara Museum of Natural History, Santa Barbara, California; USNM—United States National Museum of Natural History, Washington, D.C.

### Genus *Periploma* Schumacher, 1817

*Periploma* Schumacher, 1817. Type species (by monotypy): *Periploma inaequivalvis* Schumacher, 1817, = *Corbula margaritacea* Lamarck, 1801. Recent, Florida.

Shell ovate to subquadrate, thin, inequivalve; right valve more inflated, overlapping left; anterior end rounded; posterior end truncate; umbones opisthogyrate, with radial fissure; sculpture granulate or pustulate; hinge plate narrow, with large chondrophore in each valve supported by rib or clavicle; lithodesma usually present; interior subnacreous.

The genus, known from the Cretaceous, is primarily temperate and tropical in distribution. The name is derived from the Greek *peri-*, from, and *-plyma*, dirty water; the gender is neuter.

### *Periploma skoglundae* Valentich-Scott & Coan, new species

Figures 1 A–G

*Periploma margaritaceum* (Lamarck), *auctt.*, non *Corbula margaritacea* Lamarck, 1801: 137; *P. margaritaceum* Lamarck: Bernard, 1989: 3–4; *P. margaritaceum* Lamarck: Skoglund, 1991: 53.

**Description.** Shell ovate-elongate; right valve much more inflated than left; left valve fitting well inside right valve; anterior end broadly to sharply rounded; inequilateral, anterior end much longer; posterior end truncate, with broad, deep radial sulcus, more prominent in right valve; sculpture of fine commarginally arranged granules, densely pustulose posterior to sulcus; pallial sinus moderately wide and deep, extending past beaks; chondrophore moderately small, narrow, anteriorly directed; lithodesma small, narrow, just anterior of chondrophore. Length to 12 mm [SBMNH].

**Type material.** SBMNH 83429, holotype, paired valves; length, 11 mm; height, 7 mm; paratypes, SBMNH 14601, 1 pair valves from holotype lot; SBMNH 149603, 3 paired valves, 9 single valves from type locality. Additional paratypes from Caleta de los Angeles, Jalisco, Mexico; 19°18'11"N, 104°49'52"W; 6–20 m: SBMNH 149602, 3 paired valves, 22 single valves; UNSM 1146206, 1 paired valves, 2 single valves; CAS 184227, 1 paired valves, 2 valves; LACM 3136, 1 paired valves, 2 single valves.

**Type locality.** Bahía Chamela, Jalisco, Mexico; 19°33'N, 105°07'W; 12–18 m; mud.

**Etymology.** Named in honor of Carol Skoglund of Phoenix, Arizona, who has continually advanced our understanding of the Panamic Mollusca for the past four decades.

**Distribution.** Punta Raza, Nayarit (21.0°N) [SBMNH], to Bahía Cuastecomate, Jalisco (19.2°N) [SBMNH], Mexico; 2–33 m [SBMNH], mud.

**Comparisons.** Initially reported by Bernard (1989) from the eastern Pacific as the western Atlantic type species of the genus, *P. margaritacea* (Lamarck, 1801) (Figures 1 H–I), this new species differs from it in having a prominent posterior radial sulcus, a wider, deeper pallial sinus, and lacking an escutcheon. The western Atlantic species is well

figured in Mikkelsen & Bieler (2007: 196).

**Literature.** F. R. Bernard (1989, 3–4, as *P. margaritaceum*), Skoglund (1991, as *P. margaritaceum*).

### *Periploma kaiserae* Valentich-Scott & Coan, new species

Figures 1 J–O

**Description.** Shell ovate-elongate; both valves inflated, right valve slightly more inflated than left; left valve slightly fitting inside right valve; anterior end broadly rounded; inequilateral, anterior end much longer; posterior end broadly rounded to subtruncate, with broad, shallow radial sulcus that is more prominent in left valve; sculpture of fine commarginally arranged granules; entire posterior end finely pustulose; pallial sinus moderately wide and long, extending past beaks; chondrophore small, rounded, anteroventrally directed; lithodesma robust, narrow, just anterior to chondrophore. Length to 15 mm [SBMNH].

**Type material.** SBMNH 149599, holotype, 1 paired valves; length, 15 mm; height, 10 mm.

**Type locality.** Bahía de Jiquilisco, Usulután, El Salvador; 13°11'30"N, 88°28'08"W; 11 m, mud and leaves.

**Etymology.** Named in honor of Kirstie L. Kaiser of Puerto Vallarta, Mexico, who greatly assisted in our understanding of offshore island mollusks in the Panamic Province.

**Distribution.** Known only from a single specimen from the type locality.

**Comparisons.** This species is more equivalve, has a longer posterior end, and is more inflated than *P. planiusculum* G. B. Sowerby I, 1834 (Figures 1 P–R).

**Remarks.** While we would prefer not to describe a new species from a single specimen, *P. kaiserae* is easily separable from all other Panamic and Atlantic species in shape, pallial sinus and chondrophore. We presume it has not been previously identified, due to its very thin shell, which is easily crushed. The habitat in Bahía de Jiquilisco is possibly estuarine, and thus less likely sampled in marine surveys. We are hopeful that with additional sampling in estuarine habitats the known distribution of the species will be greatly expanded.

### *Periploma hendrickxi* Valentich-Scott & Coan, new species

Figures 2 A–F

*Periploma carpenteri* Dall, 1896, *auctt.*, non *Periploma carpenteri* Dall, 1896: 20.

**Description.** Shell subovate to subtrigonal; inequilateral, anterior end slightly longer; both valves moderately inflated; left valve slightly fitting inside right valve; sculpture of irregular commarginal striae and broad commarginal undulations, especially near umbones; without granules or pustules; pallial sinus broad, deep, broadly rounded, extending just to beaks; chondrophore robust, small, projecting ventrally; lithodesma absent. Length to 21 mm [SBMNH].

**Type material.** SBMNH 83628, holotype, 1 paired valves; length, 20.1 mm; height, 15.7 mm. Paratypes: SBMNH 149600, 5 paired valves, 1 single valve; UNSM 1146205, 1 paired valves; CAS 184228, 1 paired valves; LACM 3135, 1 paired valves.

**Type locality.** Northeast of Isla Santa Cruz, Baja California Sur, Mexico; 25°24'N, 110°37'W; 1,030 m.

**Etymology.** Named in honor of Michel E. Hendrickx of the Instituto de Ciencias del Mar y Limnología, Unidad Académica Mazatlán, Sinaloa, Mexico, who has rigorously studied the deep-water benthos of the Golfo de California, and has greatly expanded our understanding of its fauna.

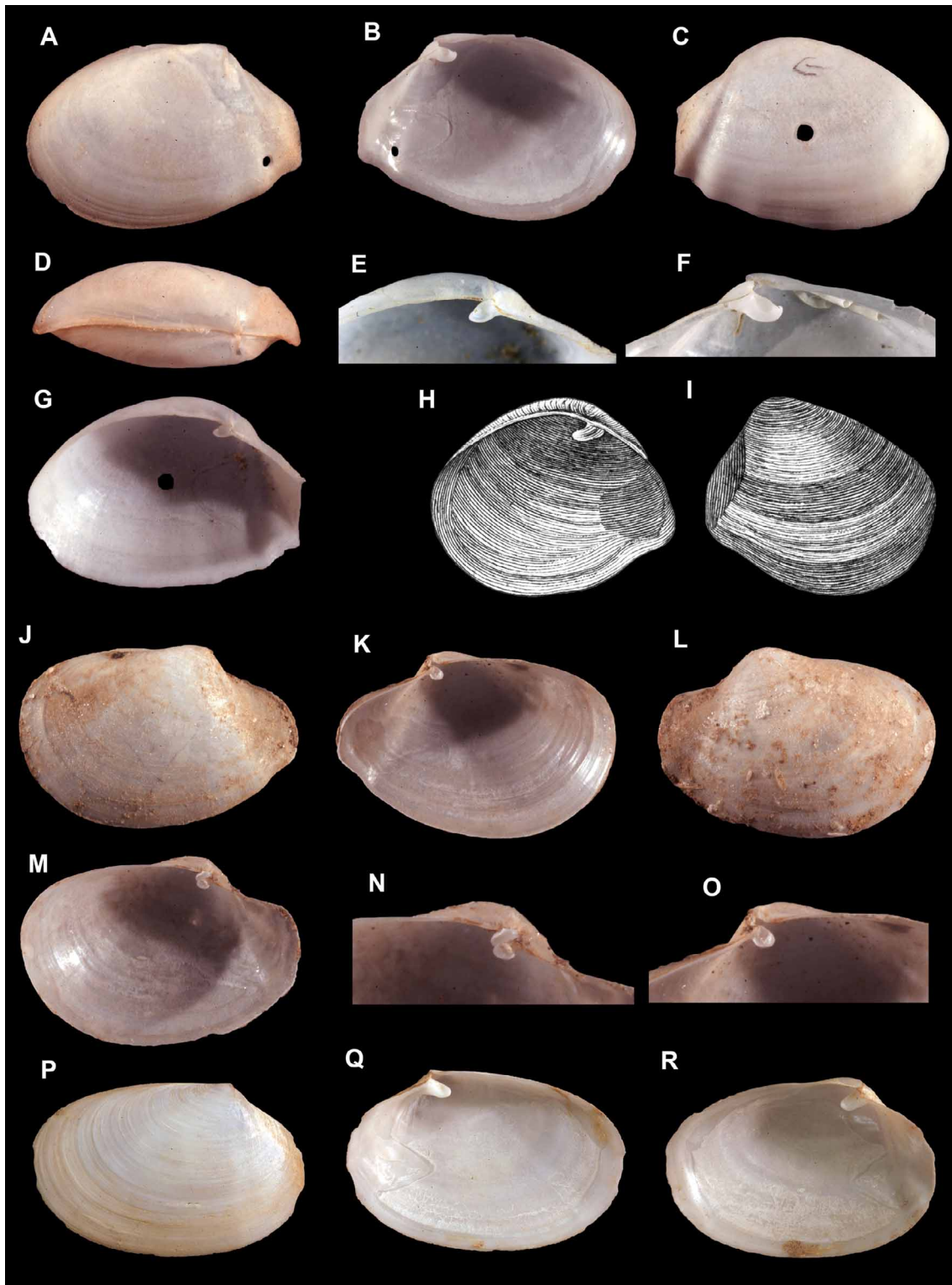
**Distribution.** Only known from the type locality northeast of Isla Santa Cruz, Baja California Sur, Mexico (25.4°N) [SBMNH]; 1,030 m [SBMNH].

**Comparisons.** Compared to *Periploma planiusculum* (Figures 1 P–R), this new species is more equilateral, lacks granules and has low, broad commarginal undulations. It has been reported as *P. (Cricoploma) carpenteri* Dall, 1896 (Figures 2 G–I), but the latter is circular in shape, has a much larger chondrophore, and weaker commarginal sculpture.

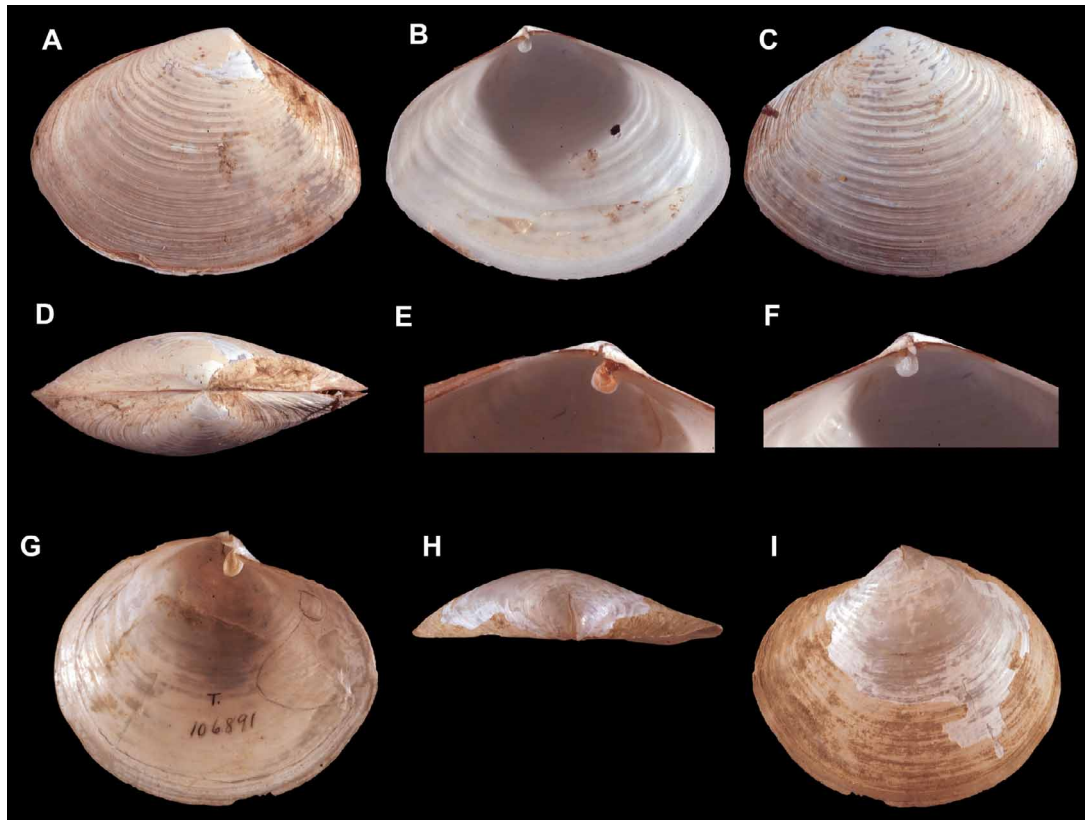
**Literature.** Zamorano *et al.* (2007, as *Periploma carpenteri*).

### Acknowledgements

We thank Carol Skoglund who provided many specimens for comparison from her collection and gave us useful information on two of the new species. We deeply thank the curators and staff at BMNH, USNM, ANSP, CAS, UMML, LACM, and Kirstie L. Kaiser and Michel E. Hendrickx for allowing us access to their collections, without which the present study would have been impossible. We thank Patricia Sadeghian (SBMNH) for photographs in Figures 1 A–G, and Figures 1 J–O.



**FIGURE 1.** A–G. *Periploma skoglundae* **new species**; A–C, E–F, holotype (SBMNH 83429) length = 11 mm. A. Exterior of left valve. B. Interior of left valve. C. Exterior of right valve. D. Dorsal view of both valves joined (paratype SBMNH 149601). E. Hinge of right valve. F. Hinge of left valve. G. Interior of right valve. H–I. *Periploma margaritacea* (Lamarck, 1801) original illustration from Bruguière (1797: pl. 230, fig. 6a, b), length = 28 mm. H. Interior of right valve. I. Exterior of right valve. J–O. *Periploma kaiserae* **new species**, holotype (SBMNH 149599) length = 15 mm. J. Exterior of left valve. K. Interior of left valve. L. Exterior of right valve. M. Interior of right valve. N. Hinge of right valve. O. Hinge of left valve. P–R. *Periploma planiscula* Sowerby, 1834, syntype (BMNH 1927.3.4.353) length = 42 mm. P. Exterior of left valve. Q. Interior of left valve. R. Interior of right valve.



**FIGURE 2.** A–F. *Periploma hendrickxi* new species, A, C, D, holotype (SBMNH 83628) length = 20 mm, B, E, F, paratype (SBMNH 149600) length = 21 mm. A. Exterior of left valve. B. Interior of left valve. C. Exterior of right valve. D. Dorsal view of both valves joined. E. Hinge of right valve. F. Hinge of right valve. G–I. *Periploma carpenteri* Dall, 1896, holotype, USNM 106891 length = 47 mm. G. Interior of right valve. H. Dorsal view of right valve. I. Exterior of left valve.

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