

# New Hawaiian Species of Epitoniidae (Mollusca: Gastropoda)

by

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*Abstract.* Five new species of Epitoniidae from Hawaii are described: *Epitonium hemmesi*, *E. thorssoni*, *Asperiscala goldsmithi*, *Opalia burchorum*, and *Laeviscala luceo*. *Epitonium thorssoni* and *Asperiscala goldsmithi* have been recognized in collections from other Indo-Pacific localities.

## INTRODUCTION

Five species of Epitoniidae have been recognized as new to science in the course of preparation of a revision of the family in Hawaiian waters (DUSHANE, 1987a, b, 1988a, b, c). These new species are described in this paper.

Type specimens and other material of the new species have been located in the Thomas & Beatrice Burch Collection, Kialua, Oahu; DuShane Collection, Whittier, California; Don Hemmes Collection, Hilo, Hawaii; Merton Goldsmith Collection, Hilo, Hawaii; S. Jazwinski Collection, Honolulu; Wesley Thorsson Collection, Honolulu; and Arthur Weil Collection, Cincinnati.

Abbreviations for institutions mentioned in the text are as follows: AMNH, American Museum of Natural History, New York; BPBM, Bernice P. Bishop Museum, Honolulu; LACM, Los Angeles County Museum of Natural History; MHNG, Museum d'Histoire Naturelle, Geneva; USNM, United States National Museum, Washington, D.C.

### *Epitonium* Röding, 1798

Type species (subsequent designation Suter, 1913): *Turbo scalaris* Linnaeus, 1758.

Shells are usually colorless, somewhat turreted, sometimes umbilicate, with axial sculpture of slender to heavy, sometimes recurved costae; whorls are numerous, with varying degrees of convexity, coiled either loosely or tightly. Spiral sculpture may be present or absent. The aperture is round to oval, with an operculum that is thin and paucispiral.

*Epitonium* (*s.l.*) *hemmesi* DuShane, sp. nov.

(Figures 1, 2)

**Description:** Shell small, maximum length 10.8 mm, globose, thin; protoconch glassy, dark, of 2-3 whorls; teleo-

conch of 7-8 rapidly expanding whorls, with reddish brown bands of unequal width; suture distinct; costae 11-12 on last whorl, white; 8 unevenly spaced crenulations on each costa; approximately 10 heavy, white spiral cords between costae, sometimes with unevenly spaced, fine, spiral striae between cords; aperture circular, lip slightly reflected, with uneven crenulations on outer edge; umbilicus lacking, operculum unknown.

Dimension of holotype: Length 8.6 mm, width 4.2 mm.

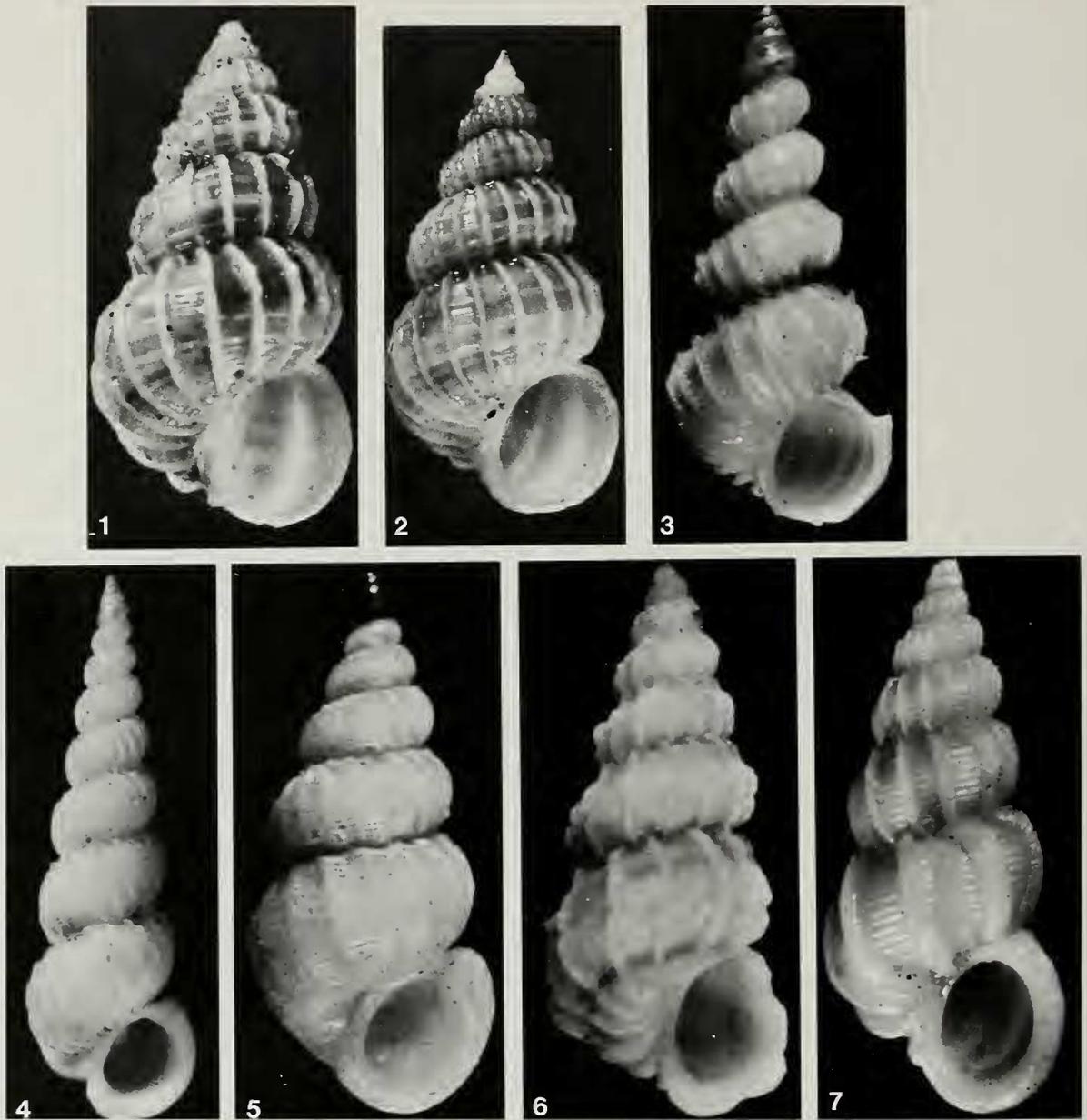
**Type locality:** Lahilahi Point, near Makaha Beach, Oahu, Hawaii (21°28.0'N, 158°14.2'W), 20-27 m, rubble.

**Type material:** Thirteen specimens collected at type locality by D. Hemmes and S. Jazwinski, 1985-1986. Holotype, BPBM 8987; 1 paratype, BPBM 8988 (length 3.8 mm); 2 paratypes, AMNH 225995 (lengths 7.0, 4.0 mm); 2 paratypes, LACM 2306 (lengths 10.8, 3.9 mm); 3 paratypes, DuShane Collection (lengths 9.3, 4.7, 3.3 mm); 2 paratypes, Hemmes Collection (lengths 9.5, 2.1 mm); 1 paratype, Goldsmith Collection (length 4.2 mm); 1 paratype, Jazwinski Collection (length 7.7 mm).

**Referred material:** One specimen, Hemmes Collection, Puhi Bay, Hawaii Island, 5 m.

**Discussion:** No other epitoniid has the distinctive characters of this species: the reddish-brown bands (faded on dead-collected specimens), heavy spiral cords with unevenly spaced fine spiral striae between the costae, and the crenulated, slightly reflected costae. *Epitonium hemmesi* does not fit comfortably into any of the generic or subgeneric taxa in the family. I therefore assign it to the genus in the broad sense.

The name honors Don Hemmes, Division of Natural Sciences, University of Hawaii at Hilo, Hawaii.



Explanation of Figures 1 to 7

Figure 1. *Epitonium hemmesi*, sp. nov. Paratype, DuShane Collection. Lahilahi Point, Makaha Beach, Oahu, Hawaii. Length 9.3 mm.

Figure 2. *Epitonium hemmesi*, sp. nov. Holotype, BPBM 8987. Lahilahi Point, Makaha Beach, Oahu, Hawaii. Length 8.6 mm.

Figure 3. *Asperiscala goldsmithi*, sp. nov. Loosely coiled variant, Burch Collection. Mamala Bay, Oahu, Hawaii. Length 3.0 mm.

Figure 4. *Aperiscala goldsmithi*, sp. nov. Holotype, LACM 2304. Puhi Bay, Hilo, Hawaii. Length 6.4 mm.

Figure 5. *Opalia burchorum*, sp. nov. Holotype, BPBM 8974. Off Kahe Point, Oahu, Hawaii. Length 4.0 mm.

Figure 6. *Epitonium thorssoni*, sp. nov. Holotype, BPBM 8986. Makaha Beach, Oahu, Hawaii. Length 2.8 mm.

Figure 7. *Laeviscala luceo*, sp. nov. Holotype, BPBM 8989. Sand Island, Oahu, Hawaii. Length 3.4 mm.

*Epitonium (s.l.) thorssoni* DuShane, sp. nov.

(Figure 6)

**Description:** Shell minute, maximum length 3.5 mm; protoconch whorls 3, glassy; teleoconch whorls 5, white, shining, distinctly angled, with 2 diffused brown bands on each whorl between costae, one on base and one on upper half of last whorl, brown bands becoming fainter on early whorls; costae 13, heavy, continuing into aperture, each with 5-7 scallops; 5 heavy spiral cords between costae on last whorl, each recurved at base of last whorl, almost forming a basal ridge; suture deep; aperture large; reflected lip heavy, with 7 scallops; operculum unknown.

Dimensions of holotype: Length 2.8 mm, width 1.6 mm.

**Type locality:** Off S side Oahu Island, Hawaii (21°15.8'N, 157°50'W), 62-80 m, silty sand.

**Type material:** Four specimens from type locality, dredged by Wesley Thorsson, 1980, 1981, 1985. Holotype, BPBM 8986; 2 paratypes, LACM 2302 (lengths 2.6, 1.6 mm); 1 paratype, DuShane Collection (length 3.5 mm).

**Referred material:** Hemmes Collection, Puhi Bay, Hawaii Island, 6 m; LACM 74-67, NW end Lanai Island, Hawaii, 18 m; LACM 77-13, Apra Harbor, Guam, Mariana Islands, 2 m; LACM 84-161, Ani Lao, Batangas Province, Luzon, Philippines, 25 m; LACM 85-112, Sinai Peninsula, Egypt, northern Red Sea, 25 m.

**Discussion:** There are no epitoniids that are directly comparable to this species. As with the preceding species, it is assigned to *Epitonium* in the broad sense. The distinctive characters are the brown banding, which becomes stronger on later whorls, and the scalloped costae. It is vaguely reminiscent of *Cirsotrema zekebori* (Dunker, 1886), from New Zealand (POWELL, 1979:252, pl. 48, fig. 17), but it has a much smaller shell and does not have the well-defined basal ridge of that species. *Epitonium thorssoni* has remained undescribed until now probably because of its small size.

The name honors Wesley M. Thorsson of Honolulu, who has collected extensively in the Hawaiian Islands.

*Asperiscala* deBoury, 1909

Type species (original designation): *Scalaria bellastrata* Carpenter, 1864.

Shell white or pink to dark gray or brown; costae usually recurved, sometimes with a spine on whorl shoulder; sculpture of heavy spiral cords to fine striations, sometimes obsolete on later whorls.

*Asperiscala* has been used as a subgenus of *Epitonium* and as a full genus by DUSHANE (1979).

*Asperiscala goldsmithi* DuShane, sp. nov.

(Figures 3, 4)

**Description:** Shell small, maximum length 7.5 mm, white, thin, elongate; protoconch whorls 5, glassy, dark, the 5th

whorl extremely bulbous and skewed to make entire protoconch tilted with respect to the shell axis; teleoconch whorls 6-8, angulate below suture; costae 18-24, oblique, thin, reflected, angulate near suture and with scattered heavier costae; small sharp spines on shoulder whorl; interspaces spirally striate, striae easily seen without magnification, 20-22 between costae on last whorl; suture deep; aperture oval; lip slightly reflected, with small spine on inner base of aperture.

Dimensions of holotype: Length 6.4 mm, width 1.8 mm.

**Type locality:** Puhi Bay, Hilo, Hawaii (19°44'N, 155°03'W), intertidal.

**Type material:** Ten specimens from type locality collected by M. Goldsmith, 1983. Holotype, LACM 2304; 2 paratypes, LACM 2305 (lengths 7.4, 5.2 mm); 2 paratypes, AMNH 225994 (lengths 6.1, 4.4 mm); 5 paratypes, DuShane Collection (lengths 7.5, 4.7, 3.8, 4.1, 4.0 mm, all but the largest broken at either or both ends).

**Referred material:** Hawaiian Islands: Burch Collection, 11 specimens from Burch stations 76064, 77017, 78001, 78020, 79024, 79072, 79073, 80093, Mamala Bay, Oahu, 18-468 m, and Burch station 80069, Kailua Bay, Oahu, 69-37 m; Goldsmith Collection, 1 specimen, Puako, W side Hawaii Island, intertidal; Hemmes Collection, 4 specimens, Kapoho, E side, Hawaii Island, intertidal; Hemmes Collection, 9 specimens, Sand Island, Oahu, 75 m; LACM 74-63, 1 specimen, off Koko Head, Oahu, 56 m; LACM 59-16, 1 specimen, off Molokini Island, S side Maui, 54 m; LACM 75-112, 2 specimens, Maalaea Bay, Maui, 18 m.

Other localities: LACM 80-12, 1 specimen, Astrolabe Bay, Papua New Guinea, 4 m; LACM 79-40, 1 specimen, Suva, Viti Levu, Fiji, 1 m; LACM 85-8, 1 specimen, Mai Thon Island, Phuket Island, Thailand, 3-15 m; LACM 85-14, 1 specimen, Pee-Pee Island, off Phuket Island, Thailand, 15 m; LACM 83-7, 1 specimen, South Male Atoll, Maldive Islands, 16 m.

**Discussion:** The distinctive characters of *Asperiscala goldsmithi* are its small size (length 6 mm, width 2 mm), skewed protoconch, large number of costae with scattered heavier costae, sharp shoulder spine, and the oblique orientation of costae. Sometimes the whorls are partially disjunct, but this is not considered to be taxonomically significant, as there are a number of epitoniid species with this trait.

This small species is somewhat similar in outline to *Epitonium eusculptum* (Sowerby, 1903) from Japan (see KURODA *et al.*, 1971:256, pl. 63, fig. 13), although that species has a much larger shell (20 mm in length) and is umbilicate. It is surprising that a species as common as this should have been overlooked, but again this is most likely because of its small size.

The name honors Merton Goldsmith of Hilo, Hawaii.

*Opalia* Adams & Adams, 1853

Type species (subsequent designation of deBoury, 1886):  
*Scalaria australis* Lamarck, 1822.

Shell white or light gray to brown, solid, imperforate; axial sculpture of strong ribs that may sometimes be angulated, with or without basal ridge and with spiral sculpture of fine threads and rows of small pits; chalky outer layer (intritacalx) over entire shell easily abraded; oval aperture oblique; lip thickened by final axial rib; operculum paucispiral.

*Opalia* (*s.l.*) *burchorum* DuShane, sp. nov.

(Figure 5)

**Description:** Shell small, maximum length 4.1 mm, bulbous, solid; protoconch dark, glassy, whorls 4; teleoconch whorls 6; strongly convex at periphery; costae 11, extending from whorl to whorl, continuous but indistinct on base; ribs and intervals sculptured with small punctations, 19 rows on last whorl, between minute, rounded, spiral cords; suture distinct, crenulated by crests of costae; base defined by rounded cord; aperture oval, oblique; peristome thick, with 15 rows of small punctations; operculum unknown.

Dimensions of holotype: Length 4.1 mm, width 2.0 mm.

**Type locality:** Off Kahe Point, Oahu, Hawaii (21°21.2'N, 158°09.1'W), 540 m, fine sand.

**Type material:** Five specimens from the type locality, Burch station 78019, dredged by T. & B. Burch, March 1978. Holotype, BPBM 8974; 1 paratype, USNM 859310 (length 3.1 mm); 1 paratype, LACM 2303 (length 4.1 mm); 1 paratype, Burch Collection (length 3.8 mm); 1 paratype, DuShane Collection (length 3.7 mm).

**Discussion:** *Opalia burchorum* differs from *Nodiscala mormulaeformis* Masahito, Kuroda & Habe, 1971, from Sagami Bay, Japan (KURODA *et al.*, 1971:248, pl. 63, fig. 1) in its more bulbous outline and smaller size. *Opalia* (*Opalia*) *abbotti* CLENCH & TURNER, 1952 (p. 348) resembles *O. burchorum*, but the former, from Puerto Tanamo, Cuba, 540 m, has a more elongate shell, with more numerous whorls. *Scala* (*Cirsotrema*) *mammosa* Melvill & Standen, 1903, from the Gulf of Oman, is similar, but has a mammilate protoconch, fewer costae, and no basal disk.

The limits of the subgenera of *Opalia* are not clear and I choose to place this species in *Opalia* in the broad sense. *Opalia burchorum* occurs at greater depths than other species of *Opalia* in the Indo-Pacific.

The name honors Thomas and Beatrice Burch, of Kia-lua, Oahu, Hawaii.

*Laeviscala* deBoury, 1909

Type species: *Scalaria subauriculata* Souverbie, in Souverbie & Montrouzier, 1886.

Suture imperforate, umbilicus closed; axial ribs few, thick, reflexed, intervals with dense spirals.

*Laeviscala* has been treated as a full genus by COTTON (1959) and KURODA *et al.*, (1971).

*Laeviscala luceo* DuShane, sp. nov.

(Figure 7)

**Description:** Shell small, maximum length 3.7 mm, solid, broadly pyramidal, glistening; protoconch bulbous, whorls 2-3; teleoconch whorls 6-7; suture not deep; costae 9-10, thick, moderately recurved, unevenly spaced, dipping into suture; interspaces spirally striate, easily seen without magnification, 16-18 on last whorl; peritreme heavy, thick; aperture oval; operculum unknown.

Dimension of holotype: Length 3.4 mm, width 1.5 mm.

**Type locality:** Off Sand Island, S side Oahu, Hawaii (21°16.3'N, 157°50.7'W), 17 m, sand.

**Type material:** Five specimens from type locality dredged by S. Jazwinski, from Hemmes Collection. Holotype, BPBM 8989; 1 paratype, LACM 2325 (length 3.3 mm); 1 paratype, Hemmes Collection (length 3.2 mm); 2 paratypes, DuShane Collection (lengths 3.7, 3.7 mm).

**Referred material:** Three specimens, Burch Collection, Mamala Bay, Oahu, stations 75025, 79072, 43 m, sand and *Pinna* beds; 1 specimen Burch Collection, Kealaikahiki Channel, Hawaii Island, station 79065, 61 m, sand and *Pinna* beds.

**Discussion:** Compared to *Laeviscala subauriculatum*, the type species of the genus, *L. luceo* has a more sturdy, broader shell, with a well-defined suture, thicker, more numerous costae, and coarser spiral striations that are not microscopically decussated as in the type species. This epitoniid differs from all others in the Hawaiian fauna by its glistening appearance. The name *luceo* is Latin, meaning "glistening."

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## LITERATURE CITED

- CLENCH, W. J. & R. D. TURNER. 1952. The genera *Epitonium* (Part II), *Depressiscala*, *Cylindriscala*, *Nystiella*, and *Solutiscala* in the western Atlantic. *Johnsonia* 2(31):289-386.  
COTTON, B. C. 1959. South Australian Mollusca, Archaeogastropoda. Government Printer: Adelaide. 449 pp.

- DUSHANE, H. 1979. The family Epitoniidae (Mollusca: Gastropoda) in the northeastern Pacific. *Veliger* 22(2):91-134.
- DUSHANE, H. 1987a. Classification of three species of Epitoniidae found in Hawaiian waters. *Hawaiian Shell News* 35(6):1, 4.
- DUSHANE, H. 1987b. The many synonymic names of *Gyroscala lamellosa* (Lamarck, 1822). *Hawaiian Shell News* 35(11):12.
- DUSHANE, H. 1988a. Hawaiian Epitoniidae [Part 1]. *Hawaiian Shell News* 36(2):3-4.
- DUSHANE, H. 1988b. Hawaiian Epitoniidae [Part 2]. *Hawaiian Shell News* 36(4):1, 7.
- DUSHANE, H. 1988c. Hawaiian Epitoniidae [Part 3]. *Hawaiian Shell News* 36(5):9-10.
- KURODA, T., T. HABA & K. OYAMA. 1971. The seashells of Sagami Bay. Maruzen: Tokyo. xvi + 741 + 489 pp., 121 pls.
- MELVILL, J. C. & R. STANDEN. 1903. The genus *Scala* (Klein) as represented in the Persian Gulf, Gulf of Oman, and North Arabian Sea, with descriptions of new species. *Jour. Conch.* 10(12):345-351, pl. 7.
- POWELL, A. W. B. 1979. *New Zealand Mollusca; marine, land, and freshwater shells*. Collins: Auckland. xiv + 500 pp.