

**A NEW SPECIES OF *HALIEUTAEA* (TELEOSTEI:
LOPHIIFORMES: OGCOEPHALIDAE) WITH A REVISED
IDENTIFICATION KEY FOR THE GENUS**

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ABSTRACT: A new batfish species, *Halieutaea xenoderma*, is described from the northern part of the Tasman Sea. It is unique within the genus in possessing of the multicuspid spinules on the whole dorsal and ventral surface of the disc and on the tail. The new species is further characterized by the slender erect thorn-like spines restricted to the margins of the illicial cavity, to the sides and posterior margin of the disc and to the dorsal surface of the tail; by the short tail (30.8 % SL) and long caudal fin (46.15 % SL), and by the rostrum overhanging mouth. Some diagnostic characters of the recently described species *H. dromedaria* are corrected, and a revised identification key for all known species of the genus is provided.

KEY WORDS: Batfishes, new species, eastern Australia, key to species

The batfishes of the genus *Halieutaea* Valenciennes, 1837 are known from the tropical and subtropical Indo-West-Pacific from South Africa to Japan, Hawaii, Australia, New Zealand and New Caledonia. Eighteen nominal species were described of which ten species are recognized as valid at present (Bradbury, 2003; Prokofiev, 2019). An unusual batfish collected during the 16th cruise of R/V *Dmitry Mendeleev* off the eastern Australian coast represents a member of this genus which cannot be allocated to any known species. Although it is presently known by a single juvenile specimen, the peculiar squamation leaves no doubts for the separation of this species. The present description brings total number of species known in the genus to eleven.

Methods and terminology follow Bradbury (1980), Lindberg et al. (1997) and Prokofiev (2019). Specimens used for comparison were listed by Prokofiev (2019). The holotype of the new species is housed in the Institute of Oceanology, Russian Academy of Sciences, Moscow (IOM). Abbreviations: SL, standard length; R/V, research vessel.

***Halieutaea xenoderma* sp. nov.**

(Figs. 1-3)

Material examined: IOM nr. 03618, holotype, 26 mm SL (Figs. 1, 2), 32° 30.7' – 32° 02' 9.1" S, 155° 27.1' – 155° 36.2' E, R/V *Dmitry Mendeleev*, cruise 16, station 1242, Isaacs-Kidd mid-water trawl, 500–0 m, 27.12.1975.

Diagnosis: A species of *Halieutaea* with dorsal and ventral surface of disc and tail uniformly covered with small multicuspid spinules, with slender erect thorn-like spines restricted to the margins of illicial cavity, sides and posterior margin of

disc and dorsal surface of tail, with short tail (30.8 % SL) and long caudal fin (46.15 % SL), with rostrum produced forward.

Description: Dorsal-fin rays 4; anal-fin rays 4; pectoral-fin rays 14; pelvic-fin rays 3/5 (left pelvic fin poorly developed); caudal-fin rays 9 (3 + 3 branched). Disc rounded, $\times 1.1$ wider than long; tail short, 2.25 times in disc length, 3.25 times in SL. Dorsal contour smoothly arched. Dorsal and anal fins well developed. Tip of depressed anal fin passing slightly behind caudal-fin base. Caudal fin $\times 1.5$ longer than tail. Pectoral elbow well separated. Rostrum produced forward, overhanging mouth. Illicial cavity deeper than wide; esca trilobed; lower lobes bearing marginal fringe. Jaw teeth sharply pointed, arranged in bands; those on fifth ceratobranchials somewhat larger than on jaws, those on roof of mouth minute villiform; tooth patches on fifth ceratobranchials bearing short inner posterior extensions.

Skin rather soft, forming large folds along dorsal and ventral margins of disc. Squamation of dorsal surface of disc consists of small multicuspid spinules covering whole surface, and long sharp erect thorn-like spines arranged in a transverse row along posterior margin of disc, encircled illicial cavity, and distributed above the marginal row of bucklers (Fig. 1). Two pairs of similar thorns situated on head at level of posterior margin of eye, and in central part of disc behind the head. A mid-dorsal row of four blunt thorns present in posterior half of disc. Bucklers along side margins of disc large, truncated and multicuspid (Fig. 3). Ventral surface of disc completely covered by small multicuspid spinules (Fig. 2). Tail possessing a lateral row of bi- or tricuspid bucklers and a paired dorsal row of slender, sharply pointed thorns; whole surface of tail covered by small multicuspid spinules. Fin rays lacking spinulose plates. Dermal cirri associated with lateral row of bucklers on disc and tail.

Pigmentation absent.

Measurements (in % of SL): length of disc 69.2, maximum width of disc 73.1, length of tail 30.8, neurocranium length 34.6, length of pectoral fin 46.2, ditto, pelvic fin (right side) 19.2, ditto, caudal fin 46.2, height of dorsal fin 21.2, ditto, anal fin 25.0, snout length 11.5, horizontal eye diameter 9.6, bony interorbital width 11.5, mouth width 26.9.

Etymology: The species epithet from the Greek “xenos” (alien) and “derma” (skin) refers to the unique squamation not occurring in the other members of the genus.

Comparison: The new species differs strikingly from all other known species of the genus except *H. hancocki* Regan, 1908 by the absence of the large thorn-like spines on most of the dorsal surface of the disc. It can be easily distinguished from *H. hancocki* by the presence of the slender thorns above the marginal bucklers of the disc, in a transverse row along the posterior margin of the disc and on the dorsal surface of the tail (vs. thorns are present along the illicial cavity and supraorbital crest only in *H. hancocki*), by the prominent lateral bucklers on the disc and tail (vs. poorly expressed in *H. hancocki*), by the multicuspid (vs. simple) spinules on the dorsal and ventral surface, by the much shorter tail (2.25 times shorter than disc vs. 1.5 times in *H. hancocki*) and longer caudal fin (46 % SL vs. 25 % in *H. hancocki*), and by the rostrum produced forward (vs. not produced in *H. hancocki*).

Comments on *Halieutaea dromedaria* Prokofiev, 2019

This species was based on a single specimen characterized by the peculiarly arched postcranial portion of the disc with a transverse hollow behind the neurocranium, which were concluded as the diagnostic features of *H. dromedaria* (Prokofiev, 2019). However, after a publication, I found a series of specimens of *H. fumosa* Alcock, 1894 (IOM uncatalogued, Nha Trang Bay, trawl no. 1, 26.06.2006) showing the similar appearance. All these specimens were fixed with open mouths and variously curved bodies. Although the mouth of the holotype of *H. dromedaria* is closed, the hyoid bar is also moved forward and down from the default position. By these reasons, I conclude that the peculiar body shape of the holotype of *H. dromedaria* is actually an artifact of preservation. A degree of development of the dermal cirri in this species falls within the range of variations in *H. fumosa*. The corrected diagnostic characters of *H. dromedaria* are presented in the key given below.

Key for the identification of the species of the genus *Halieutaea* known to date

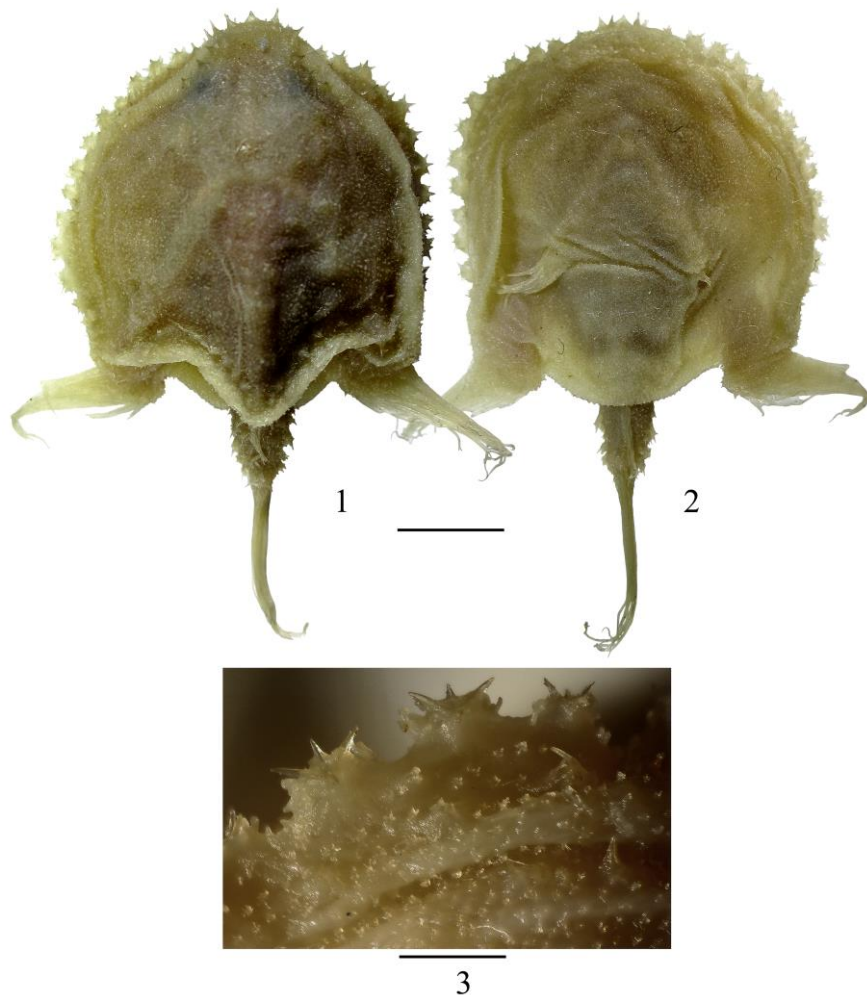
- 1a.** Underside of disc wholly smooth (sparse minute villiform spinules may observed in specimens less than 50 mm SL) **2**
1b. Underside of disc partly or wholly covered by spinules and/or small bucklers **4**
- 2a.** Upper surface of disc with dark reticulate pattern, pectoral fins unpigmented [dorsal surface of disc bearing small spinules distributed between the larger spines]; restricted to Hawaiian Islands ***H. retifera* Gilbert, 1905**
2b. Pattern on dorsal surface of disc different or absent; pectoral fins with or without pigmentation; Indo-West-Pacific eastward to Japan and New Caledonia, not in Hawaiian Islands **3**
- 3a.** Dorsal surface of disc with dark ring-like pattern; squamation of dorsal disc represented by sharp erect broad-based thorn-like spines, interspaces between spines smooth; pectoral fins dark-edged or unpatterned; tooth patches on ceratobranchials-5 with small outer posterior extension ***H. fitzsimensi* (Gilchrist et Thompson, 1916)**
3b. Dorsal surface of disc without distinct pattern; squamation of dorsal disc represented by smaller spinules distributed between larger thorn-like spines; pectoral fins with broad medial bands; tooth patches on ceratobranchials-5 with small inner posterior extension ***H. fumosa* Alcock, 1894**
- 4a.** Underside of disc densely covered by small simple or multicuspid spinules, or by small wart-like tubercles with spinules but not by broad-based thorns (bucklers) **5**
4b. Underside of disc sparsely covered by small bucklers **8**
- 5a.** Underside of disc covered by small wart-like tubercles bearing 1–3 villiform spinules; dorsal surface of disc with depressed and diversely orientated thorn-like spines interspersed by small wart-like tubercles bearing 1–3 villiform spinules; pectoral fins with broad dark medial band and light distal margin ***H. dromedaria* Prokofiev, 2019**
5b. Dorsal and ventral surface of disc wholly covered by simple or multicuspid spinules not embedded into soft wart-like tubercles; large thorn-like spines on dorsal surface of disc, when present, erect; pectoral fins dark-margined or unpigmented **6**
- 6a.** Dorsal and ventral surface of disc and tail wholly covered by multicuspid spinules; erect thorn-like spines restricted mainly to the margins of dorsal disc and absent from most of its central surface; tail shorter than caudal fin; rostrum produced before mouth
..... ***H. xenoderma* sp. nov.**

- 6b.** Dorsal and ventral surface of disc and tail wholly covered by simple spinules; thorn-like spines distributed throughout the dorsal surface of disc or fully absent; tail longer than caudal fin; rostrum not produced before mouth 7
- 7a.** Large broad-based thorn-like spines distributed throughout the dorsal surface of disc; marginal bucklers of disc and tail prominent; throughout the Indo-West-Pacific ***H. stellata* (Vahl, 1797)**
- 7b.** Short spines present along margins of illicial cavity and on supraorbital ridge only, fully absent on disc and tail; marginal bucklers very short and poorly delimited; restricted to the western Indian Ocean ***H. hancocki* Regan, 1908**
- 8a.** Dorsal surface with slender erect densely distributed narrow-based spines; all caudal-fin rays unbranched; pectoral elbow weakly separated; rostrum produced before mouth [dark pigmentation absent] ***H. coccinea* Alcock, 1889**
- 8b.** Dorsal surface with broad-based (thorn-like) spines not very densely arranged; six branched caudal-fin rays; pectoral elbow well separated; rostrum not produced before mouth **9**
- 9a.** Dorsal surface of disc with conspicuous narrow wavy dark lines [spines on dorsal surface of disc widely spaced, of different sizes, spines of tail as large as many spines on disc; tooth patches on ceratobranchials-5 with short outer posterior extension; pectoral fins hyaline] ***H. nigra* Alcock, 1891**
- 9b.** Dorsal surface of disc with irregular patches of pigment or without pattern **10**
- 10a.** Spines on dorsal surface of disc long, closely-spaced, nearly uniform in size; those on tail as long as on disc; tooth patches on ceratobranchials-5 with long and pointed inner posterior extension; pectoral fin unpigmented ... ***H. indica* Annandale et Jenkins, 1910**
- 10b.** Spines on dorsal surface of disc widely spaced, of different size, with most of them distinctly smaller than spines on tail; tooth patches on ceratobranchials-5 with short outer posterior extension; pectoral fin with dark band ***H. brevicauda* Ogilby, 1910**

N.B.: One specimen of *H. brevicauda* examined by me (IOM uncatalogued, 65 mm SL, Coral Sea, 16°27.4' S, 149°11.3' E, 870 m) is fully discoloured, but in squamation, dentition and proportions is very similar (if not identical) to *H. nigra* known to me by numerous specimens collected in the north-western Indian Ocean during the 17th cruise of R/V *Vityaz-II*. Further study of these species is required for elucidation of their distinctness.

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Figures 1–3. *Halieutaea xenoderma*, new species, holotype: (1) dorsal view; (2) ventral view; (3) bucklers of disc margin. Scale bars: 5 mm (1, 2, common bar), 1 mm (3).