

A New Species of the Genus *Paralomis* White, 1856 (Crustacea, Decapoda, Anomura, Lithodidae) from the Andaman Sea

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Abstract A new species of the genus *Paralomis* White, 1856 (Crustacea, Decapoda, Anomura, Lithodidae) is described based on the sole specimen from the Andaman Sea. The species named *P. danida* is comparable with *P. hystrix* (de Haan, 1844) and *P. indica* Alcock & Anderson, 1899 in the general formation of the carapace and ambulatory legs, but distinguished from them by the different shape and armature of the carapace, chelipeds and ambulatory legs.

Key words: New species, *Paralomis*, Decapoda, Anomura, Lithodidae, Andaman Sea.

Under the joint program of the BIOSHELF (Scientific Cooperation Program between the Zoological Museum, Denmark, and the Phuket Marine Biological Center, Thailand), the sampling operation was conducted during five years (1996–2000) at the depths of the Andaman Sea from Myanmar border in the north to Malaysian border in the south (Aungtonya *et al.*, 2000; Bruce *et al.*, 2002). The object of this research is to expand general knowledge of benthic biodiversity of the depth down to 1,000 m, and the program resulted in the collection of a wide variety of crustaceans, as reported by Bussarawit and Aungtonya (2002).

In the following pages, a species of the anomuran crustacean genus *Paralomis* of the family Lithodidae is described as new to science. A sole male specimen, holotype, is deposited at the Phuket Marine Biological Center (PMBC). In the figure legend the breadth and length of the carapace are abbreviated as cb and cl, respectively.

Family Lithodidae

Genus *Paralomis* White, 1856

Paralomis danida sp. nov.

(Figs. 1–4)

Type specimen. Holotype, male (103.5 mm in breadth of carapace excluding lateral tubercles; 97.5 mm in length of carapace excluding rostrum; 15.7 mm in length of rostrum), Phuket Marine Biological Center (PMBC), no. 21036; Andaman Sea (07°21'N, 97°26'E–07°20'N, 97°25'E), 27–I–1999, coll. by S. Bussarawit and C. Aungtonya on board R.V. *Chakratong Tongyai*.

Description. Carapace rounded triangular or rather pentagonal, deep, but evenly convex as a whole for its most part, covered uniformly, but not densely, with small conical, somewhat bulb-shaped tubercles of variable size; each tubercle tipped with short, sharp spine, making somewhat prickly appearance of carapace (Figs. 1, 2A, 3A, 4C). Gastric region prominent, longitudinal and slightly widened toward each posterolateral part, not constricted laterally and dorsally behind ros-



Fig. 1. *Paralomis danida* sp. nov., holotype, male in life (cb 103.5×cl 97.5 mm).

trum; each posterolateral margin of gastric region strongly convergent toward lateral end of gastrocardiac furrow which is smooth, deep and about half as wide as gastric region. Oblique convex region just outside of posterolateral margin of gastric region, obliquely in front of cardiac region, isolated anteriorly and posteriorly by deep furrow. Hepatic region demarcated, but not convex, slightly widened posteriorly from external orbital spine to prominent, smooth swell just like bean just outside of median part of gastric region; hepatic margin very weakly convex, oblique at angle of 45 degrees, armed with four small, equidistant tubercles of subequal size behind spiniform tubercle outside of external orbital spine. Cardiac region widest at anterior one third, then strongly narrowing posteriorly, with both margins closed at rear end. Intestinal region as long as cardiac region, sunken as a whole. Branchial region very prominent, convex toward posterolateral and posterior margins of carapace; branchial margin separated from hepatic margin by shallow depression at level of anterior one fourth of carapace length, directed obliquely outward for anterolateral margin of subequal length with hepatic margin, then nearly longitudinal or

only weakly divergent to make more or less pentagonal appearance of carapace, and regularly convex with posterior margin of carapace in dorsal view; anterior three or four of marginal tubercles tipped with longer spine. Posterior margin of carapace regularly convex in dorsal view, armed with sharp tubercles similar to, but somewhat larger than, those on dorsal surface (Figs. 1, 2A); true posterior margin deeply concave dorsally in posterior view (Fig. 4C).

Median rostral spine about one sixth as long as carapace, directed horizontally forward, followed by two stout tubercles side by side at its subdorsal basal part; these subsidiary tubercles weakly directed outward and upward, attaining basal one third of median rostral spine in dorsal view (Figs. 1, 2A, 4A, B). External orbital spine as long as, and parallel with, median rostral spine, exceeding tips of subsidiary tubercles and attaining middle of median rostral spine in dorsal view (Fig. 4B).

Antennal acicle prominent, armed with three sharp spines on inner margin, with two much longer spines and an accessory spine just behind first spine on outer margin (Fig. 4A, B); anterior spine on outer margin subequal to, or rather

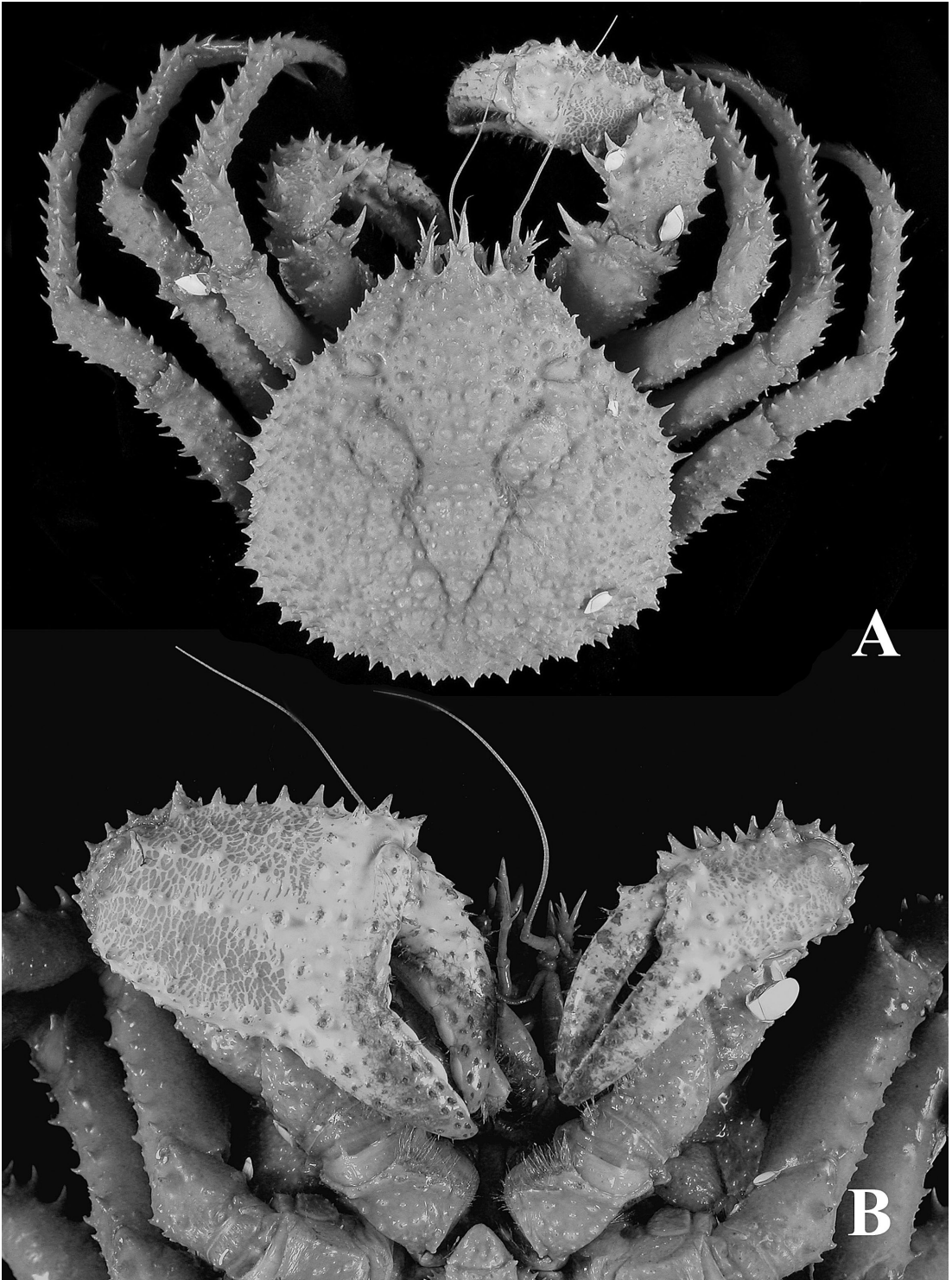


Fig. 2. *Paralomis danida* sp. nov., holotype, male (cb 103.5×cl 97.5 mm). A, dorsal view; B, chelae in ventral view.

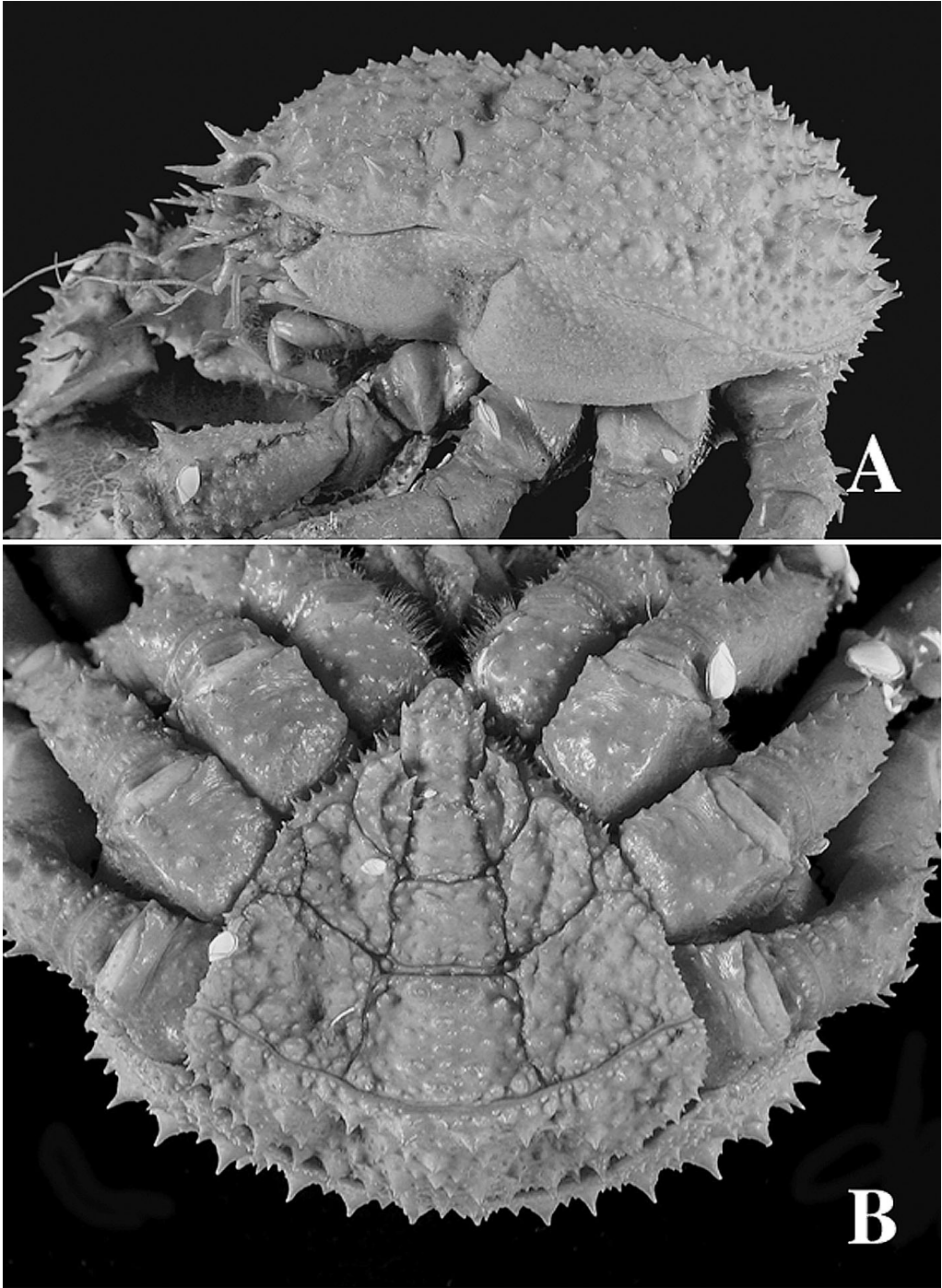


Fig. 3. *Paralomis danida* sp. nov., holotype, male (cb 103.5×cl 97.5 mm). A, carapace in lateral view; B, abdomen.

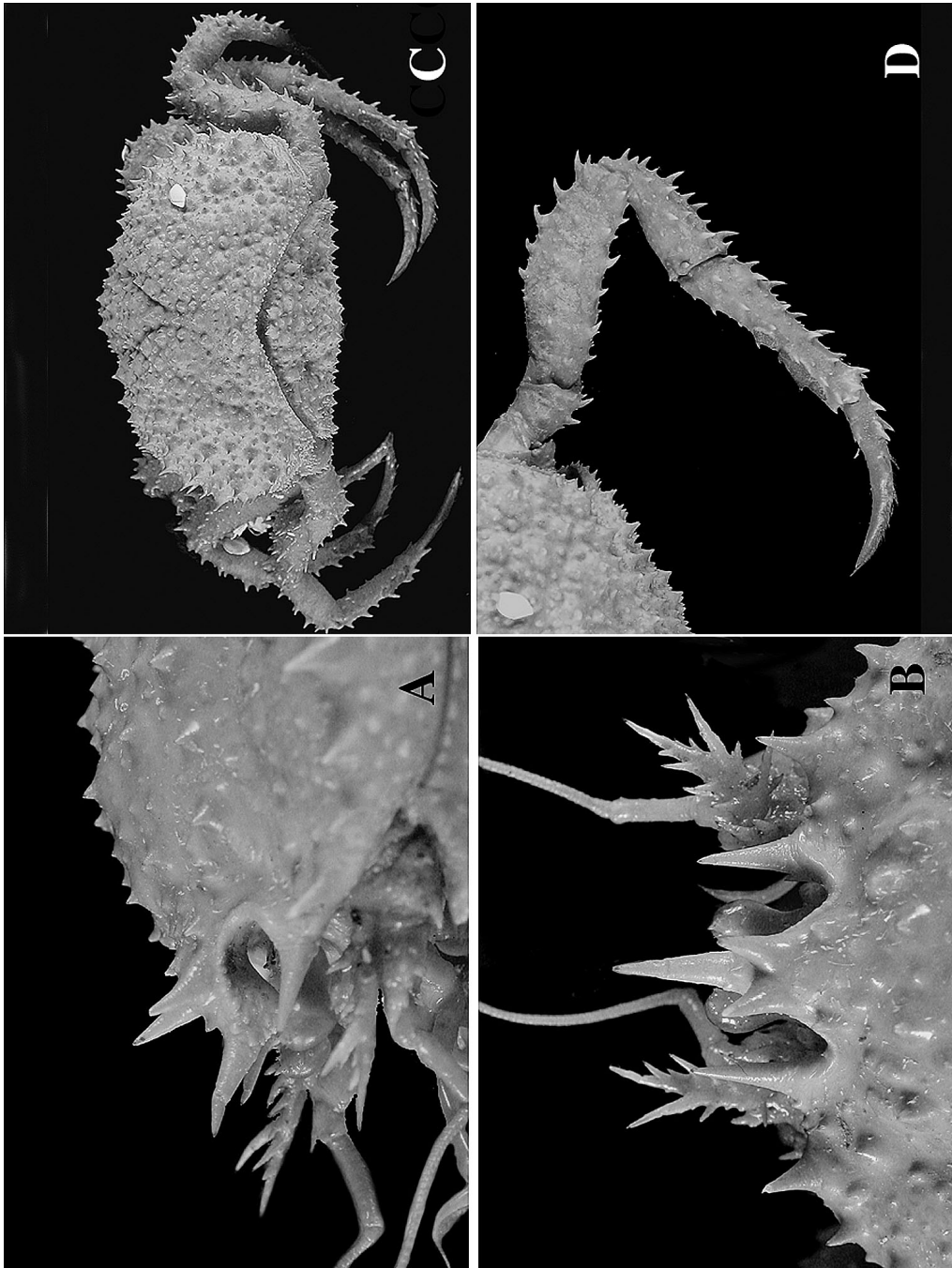


Fig. 4. *Paralomis danida* sp. nov., holotype, male (cb 103.5 × cl 97.5 mm). A, B, front-orbital region in lateral and dorsal views, respectively; C, posterior view of carapace and ambulatory legs; D, dorsal view of right third ambulatory leg.

longer, than distal main spine of antennal acicle.

Both chelipeds not slender; right cheliped heavy, remarkably larger than the left as usual, armature being basically same in both chelipeds (Figs. 1, 2). Merus short, armed with small tubercles on outer surface and with some prominent tubercles on and along distal margin; spine at antero-inner part strong, weakly curved upward together with spine close to it at inner part. Carpus also armed with tubercles of variable sizes, with single series of five tubercles along its inner margin, of which the median is the strongest and as long as that of antero-inner part of the merus. Right (larger) palm about two times as high as left (smaller) palm, with outer surface finely reticulated for its basal two thirds (Fig. 2B); both palms armed each with three or four sharp tubercles on upper margin and with some smaller tubercles on outer surface arranged into two rows; right palm slightly widened distally, but left palm not widened, with upper and lower margins parallel to each other; lower margin of each palm weakly concave near base of immovable finger. Movable and immovable fingers of both fingers incurved, excavated along inner surfaces, being covered with series of bundles of setae; both fingers of right chela thick, about half as long as palm; in right chela, lower margin of immovable finger weakly convex, prehensile edges of both fingers with some worn-out molar teeth; in left chela, both fingers about two thirds as long as palm, without distinct teeth on prehensile edges, leaving narrow gape throughout whole length.

Ambulatory legs comparatively stout, not slender (Figs. 1, 2A, 4D); each segment armed with rather short, sparse spines of variable lengths on dorsal surface and both margins; each propodus

with longitudinal, corneous scab on its basal part of posterior margin.

Second abdominal segment armed with sharp tubercles of various sizes like those on carapace surface, provided with two pairs of dimples; other segments densely covered and heavily roughened with vesiculate granules of various sizes and irregular furrows; lateral margins armed with small sharp tubercles for distal one third.

Remarks. The genus *Paralomis* is composed of 57 species living in the ocean depths worldwide from the Arctic to the Subantarctic Seas. Most of the species are medium-sized in the family Lithodidae, but much smaller than the *Lithodes* and *Paralithodes* species, with insignificant commercial value. However, they wonderfully diversify in the shape and armature of the carapace, arousing biological interest.

Table 1 shows that two thirds of the known species were just described during the last three decades, with rise and fall of taxonomical study affected by the trend in the world. Recent increase of the discovery of new species may be due to the improvement of efficient and large-scale gear to collect the deep-sea benthic animals, with special interest in fishery and biology. After the 1970's, in addition to 17 species described by Macpherson (1982, 1988a–c, 1989, 1992, 1994, 2001, 2003, 2004), 22 species were described by Dawson and Yaldwyn (1971), Birstein and Vinogradov (1972), Haig (1974), Takeda (1974), Eldredge (1976), Sakai (1978), Takeda and Ohta (1979), Andrade (1980), Sakai (1980), Takeda and Miyake (1980), Kensley (1981), Takeda in Takeda and Hatanaka (1984), Takeda (1985), Wilson (1990), Takeda and

Table 1. The number of *Paralomis* species described in each decade.

| Year | Species | Year | Species | Year | Species |
|-----------|---------|-----------|---------|-----------|---------|
| 1840–1849 | 2 | 1900–1909 | 2 | 1960–1969 | — |
| 1850–1859 | — | 1910–1919 | 2 | 1970–1979 | 9 |
| 1860–1869 | — | 1920–1929 | — | 1980–1989 | 19 |
| 1870–1879 | — | 1930–1939 | 1 | 1990–1999 | 5 |
| 1880–1889 | 3 | 1940–1949 | — | 2000– | 6 |
| 1890–1899 | 8 | 1950–1959 | — | | |

Hashimoto (1990), de Saint Laurent and Macpherson (1997), Williams *et al.* (2000), Spiridonov *et al.* (2005), and Ahyong and Dawson (2006).

Most of the known species are geographically restricted, but rather well characterized except for some variable or closely related species. The new species is close to the full-grown individual of *P. hystrix* (de Haan, 1844) from Japan and New Zealand in the pear-shaped carapace armed with tubercles and the deep body convex dorsally as a whole. In *P. hystrix*, however, the branchial regions of both sides are more strongly convex as well as the posterior border of the carapace, and somewhat different from the subparallel branchial margins of both sides in the new species. In *P. hystrix*, the dorsal surface of the carapace is armed with densely spaced larger tubercles. *Paralomis hystrix* is well known that the spines covering the dorsal surface in the smaller individuals become to spiniform tubercles in the larger individuals. In *P. hystrix*, however, the armature of the ambulatory legs are very strong even in the larger specimens, differing apparently from the short and sparse marginal spines in the new species.

Another species close to the new species is *P. indica* Alcock & Anderson, 1899 from off Travancore coast at 430 fms deep. This species described based on four specimens is known only by the original description and figures (Alcock and Anderson, 1899a, b, pp. 15–16, pl. 43 fig. 2, 2a), with the largest specimen which has the carapace 39.5 mm long and 37 mm broad. In *P. indica*, 1) the carapace is much smaller, 2) the dorsal surface of the carapace is covered with smaller tubercles despite its small size, but the marginal tubercles of the carapace are apparently stronger, 3) the gastric region is strongly constricted at its posterior part, making a gastro-cardiac furrow narrow, 4) the posterior margin of the carapace is almost transverse and the branchial margins of both sides are longitudinal, both making the general contour of the carapace distinctly pentagonal, 5) the rostrum is evenly trifid, and 6) the male abdomen is somewhat creased and not

tuberculous. It is noted at present that, in the original description of *P. indica*, the dorsal surface of the carapace is described as “studded with vesiculous, pustulous, and conical tubercles of various sizes”, and that the original figure shows no prickly appearance.

Etymology. The new species is named after the Danish International Development Agency (DANIDA), which has long contributed to marine biodiversity research in the Andaman Sea together with the Phuket Marine Biological Centre since 1968. The specific name is attributed to noun in apposition.

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