

One more new species of the genus *Acanthochitona* (Mollusca: Polyplacophora) from the Spratly Islands

Еще один новый вид рода *Acanthochitona* (Mollusca: Polyplacophora) с островов Спратли

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Abstract. We describe a new species of the genus *Acanthochitona* Bergenhayn, 1930 from a group of small chitons inhabiting shallow waters of the South China Sea and near the Ryukyu Islands. The new species differs from others in this group in the presence of slightly flattened dorsal corpuscles with a narrow crest apically.

Резюме. Описывается новый вид из группы мелких хитонов рода *Acanthochitona* Bergenhayn, 1930, распространенных на мелководьях в Южно-Китайском море и у островов Рюкю. Новый вид отличается от остальных видов группы наличием слегка уплощенных дорсальных корпускул с узким гребнем на вершине.

Key words: chitons, South China Sea, Spratly Islands, Acanthochitonidae, new species

Ключевые слова: хитоны, Южно-Китайское море, острова Спратли, Acanthochitonidae, новый вид

Zoobank Article LSID: [urn:lsid:zoobank.org/pub:E37C4C09-6610-4396-B7D4-330B515C7D21](https://zoobank.org/pub:E37C4C09-6610-4396-B7D4-330B515C7D21)

Introduction

In 2012, two first smallest species of the genus *Acanthochitona* Bergenhayn, 1930, namely *A. saitoi* Sirenko, 2012 and *A. savinkini* Sirenko, 2012, were described from Vietnam (Sirenko, 2012). They differ from the other species of this genus not only in their size, but also in the absence of a clear boundary between the jugal and pleuro-lateral areas, as well as the tendency to merge pustules in the jugal area. Later, Sirenko & Saito (2017) added two more species from Vietnam to this group: *A. nigra* Sirenko et Saito, 2017 and *A. ostreaphila* Sirenko et Saito, 2017. In the last year, members of this group (*A. saitoi* and

A. spratlyenses Sirenko et Nguyen Tai, 2021) were discovered in the southeastern part of the South China Sea near the Spratly Islands (Sirenko & Nguyen Tai, 2021). Herein, one more new species of these small chitons from these islands is described, gained by a more thorough examination of the material collected in 2020.

Material and methods

The holotype and two paratypes were collected by Nguyen Tai-Tu during the expedition of the Joint Russian-Vietnamese Tropical Centre to the Spratly Islands in 2020. The material was collect-

ed using the method described by Sirenko (2012). The holotype was boiled for 5–7 min in a 7% KOH solution to remove all soft tissues. Afterwards the valves I, IV, V, and VIII and half of the girdle cuticle and half of the radula were examined with a FEI SEM Quanta 250, while the remaining half of the girdle and radula were put in Canada Balsam to be examined under a light microscope. The type specimens are deposited in the Zoological Institute of the Russian Academy of Sciences, St Petersburg.

The following abbreviations are used: BL – body length; SCUBA – self-contained underwater breathing apparatus; ZIN – Zoological Institute, Russian Academy of Sciences, St Petersburg, Russia.

Taxonomy

Class **Polyplacophora** Gray, 1821

Subclass **Neoloricata** Bergenhayn, 1955

Order **Chitonida** Thiele, 1909

Suborder **Acanthochitonina** Bergenhayn, 1930

Superfamily **Cryptoplacoidea** H. et A. Adams, 1858

Family **Acanthochitonidae** Pilsbry, 1893

Genus ***Acanthochitona*** Gray, 1821

***Acanthochitona nana* sp. nov.**

(Figs 1–4)

Holotype. South China Sea, Spratly Is., Toc Tan Island, 8°49'38"N, 113°55'38"E, depth 15 m, on dead corals, SCUBA, 17.X.2020, Nguyen Tai-Tu leg. (ZIN, No. 2441).

Paratypes. South China Sea, Spratly Is.: 1 specimen, same data as for holotype (ZIN, No. 2442); 1 specimen; Toc Tan I., 08°49'24.4"N, 113°58'46.9"E, depth 18 m, on dead coral, SCUBA, 13.X.2020, Nguyen Tai-Tu leg. (ZIN, No. 2443).

Note. The holotype and paratypes are now disarticulated and consist of the following parts: SEM stubs of the valves I, II, V, IV, VIII, a part of the perinotum and the radula, slide-mounted parts of the perinotum and the radula, and a vial with other valves.

Measurements. BL 3.6 mm (holotype), 3.5 mm (paratype; ZIN, No. 2441), 3.4 mm (paratype; ZIN, No. 2443).

Diagnosis. Small chitons with beaked, low intermediate valves. Jugum wide, wedge-shaped, covered with pustules like in pleurolateral areas. Tail valve triangular, with posterior mucro. Pustules on tegmentum oval, quincuncially arranged in all areas. Apex of pustule flat, with single megal aesthete pore and 6–12 micraesthete pores. Tegmental plain without aesthete pores. Girdle dorsally covered with minute, slightly flattened, smooth corpuscles with low flat ridge apically. Sutural tufts prominent, consisting of thin straight smooth needles. Marginal needles smooth. Central tooth of radula with expanded apex and sharply pointed base, major lateral tooth with tridentate cusp.

Description. Animal small, elongate oval, low in profile. Holotype with BL 3.6 mm. Valves rounded, with small beak, moderately elevated (dorsal elevation of valve V 0.33 mm). Tegmentum ivory with rare brown spots.

Head valve more than semicircular, with posterior margin almost straight and anterior slope slightly convex (Fig. 1A). Intermediate valves rather wide, widely trapezoidal, low, beaked; anterior margin convex in valve II, concave in other intermediate valves, posterior margins slightly concave on both sides of beak (Fig. 1B, C, F), tail valve triangular, with posterior mucro, antemucronal area twice as long as postmucronal area, and posterior slope slightly convex (Fig. 1D, G).

Pustules densely covering tegmentum, arranged in quincunx all over. Each pustule flat apically, with a single megal aesthete pore and 6–12 micraesthete pores (Figs 1E, 4J, K). Tegmental plain without micraesthete pores.

Articulamentum moderately developed, translucent, with transverse callus in middle of valves and several small pores under anterior margin of jugum. Apophyses strongly protruding anteriorly, triangular, widely separated from each other in intermediate valves, truncated in tail valve. Insertion plate short, with short narrow slits. Slit formula 5/1/2.

Girdle of same colour as tegmentum, with regular brown stripes, rather wide (its width near valve V about 600 µm), dorsally densely covered with small, slightly flattened, smooth corpuscles 20 × 8 µm with rudiments of small riblets and

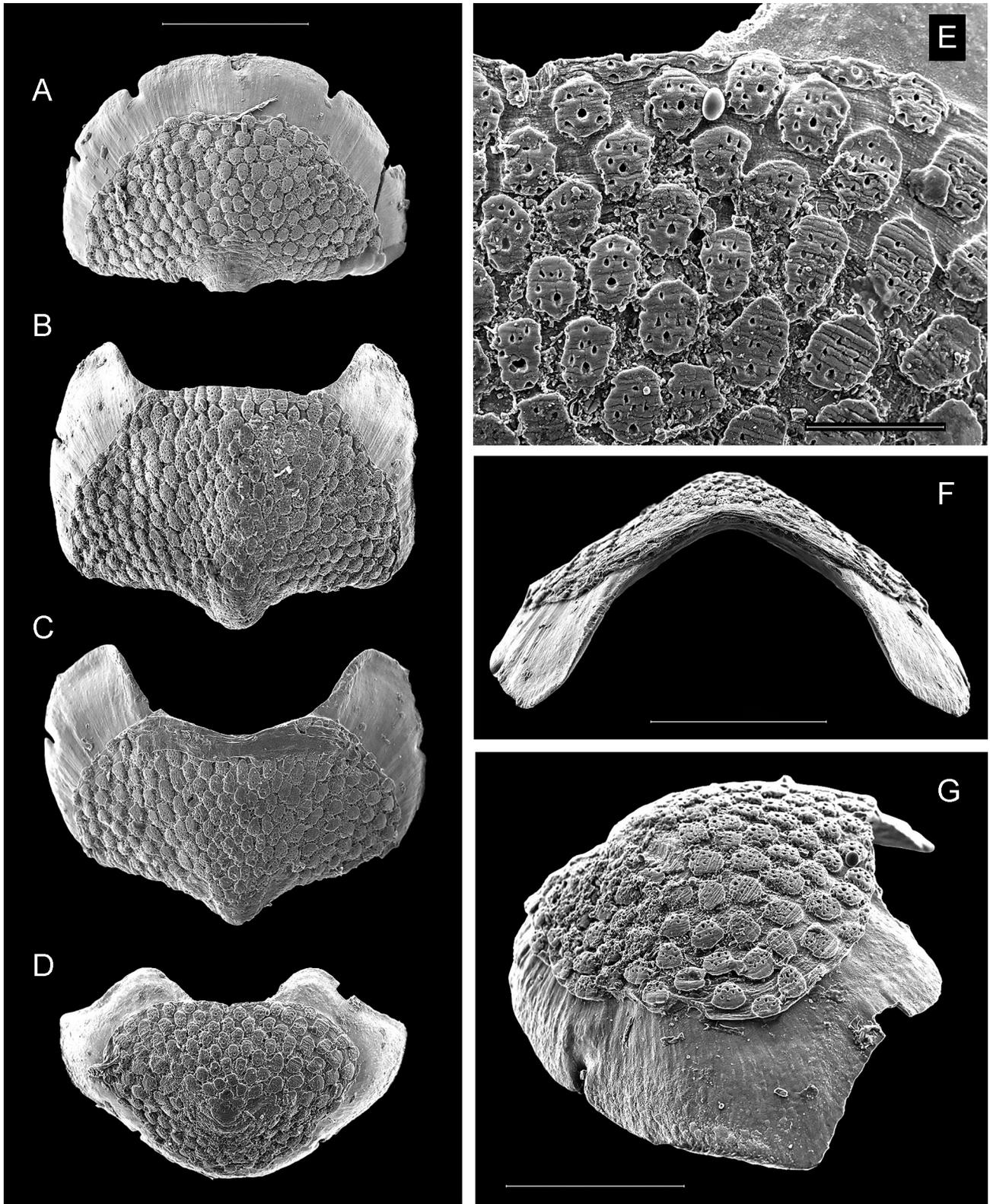


Fig. 1. *Acanthochitona nana* sp. nov., holotype. **A**, valve I; **B**, valve II; **C**, valve V; **D**, valve VIII; **E**, valve VIII, sculpture of tegmentum in jugal and pleurolateral areas; **F**, valve V; **G**, valve VIII. Dorsal (A–D), rostral (F) and lateral (G) view. Scale bars: 500 μ m (A–D, F), 100 μ m (E), 300 μ m (G).

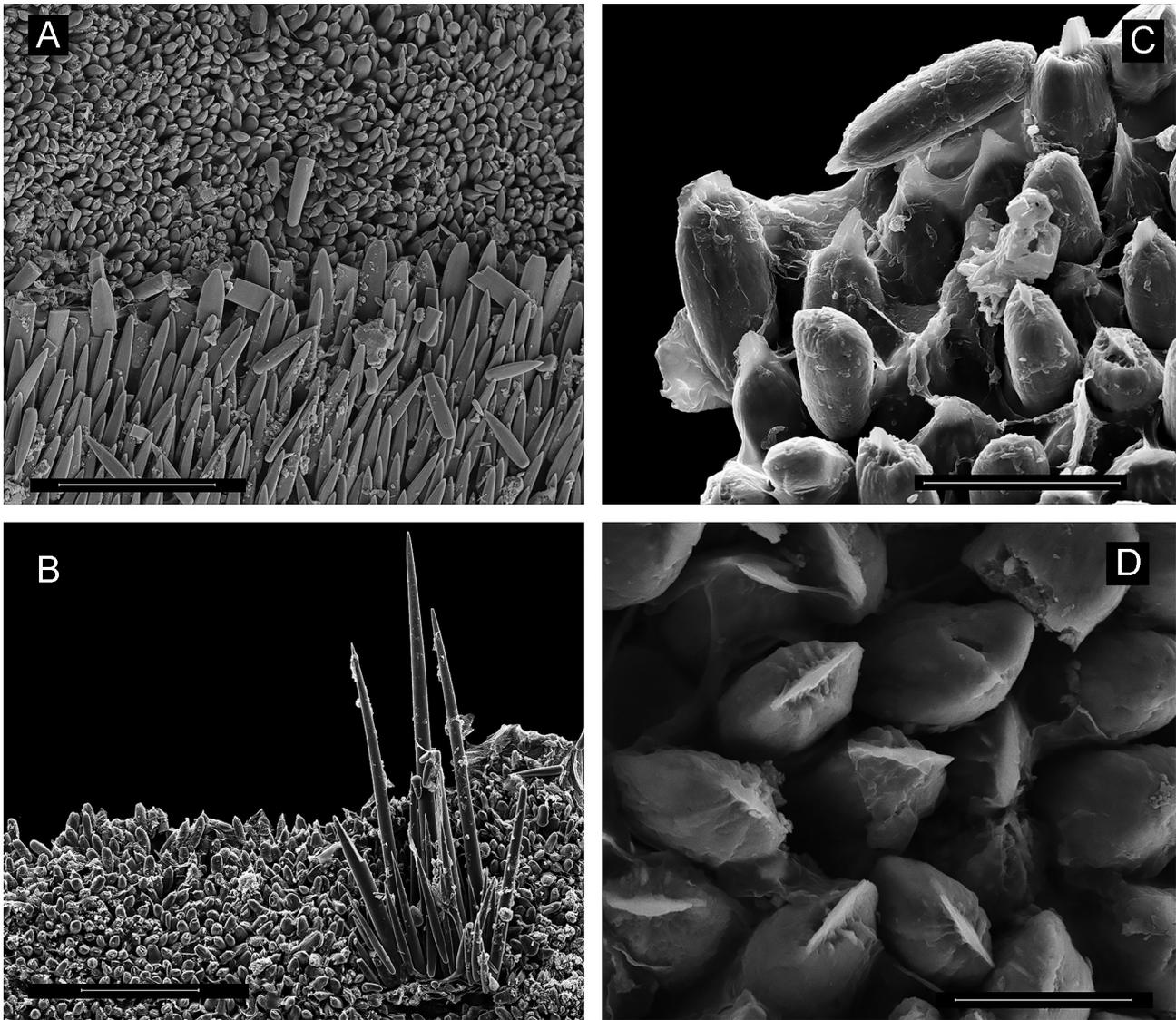


Fig. 2. *Acanthochitona nana* sp. nov., holotype. **A**, dorsal corpuscles, marginal needles and ventral scales; **B**, tuft of needles and dorsal corpuscles; **C**, **D**, dorsal corpuscles. Scale bars: 100 μ m (**A**, **B**), 20 μ m (**C**), 10 μ m (**D**).

a low flat crest apically (Figs 2A, C, D, 4C). Sparse sutural tufts consisting of smooth, sharply pointed, straight needles about $20\text{--}400 \times 12\text{--}17 \mu\text{m}$ (Figs 2B, 4A, B). Margins armed with numerous long smooth, sharply pointed needles up to $200\text{--}300 \times 13 \mu\text{m}$ (Figs 3A, 4E) and sparse, sharply pointed spicules $40 \times 10 \mu\text{m}$ with one longitudinal rib (Figs 3A, 4D). Ventrally, girdle clothed with one row of wide, obtusely pointed scales ($50 \times 17 \mu\text{m}$) near margin (Figs 3A, 4F) and elongate smooth, sharply pointed scales ($50 \times 11 \mu\text{m}$) in other parts (Figs 3A, 4G).

Radula of holotype 2.5 mm long, with 22 transverse rows of mature teeth. Central tooth elongated tulip-shaped, with thick blade and keel at basal half. First lateral tooth with thick nodulous in antero-dorsal angle. Major lateral tooth with tricuspid head; central cusp longest; cusps pointed, somewhat flattened near tips (Figs 3B–D, 4H, I).

Holotype with six gills on each side, extending from valve V to valve VII.

Comparison. The new species differs from the other related species of the group (see above) in the absence of fusion of pustules in the anterior

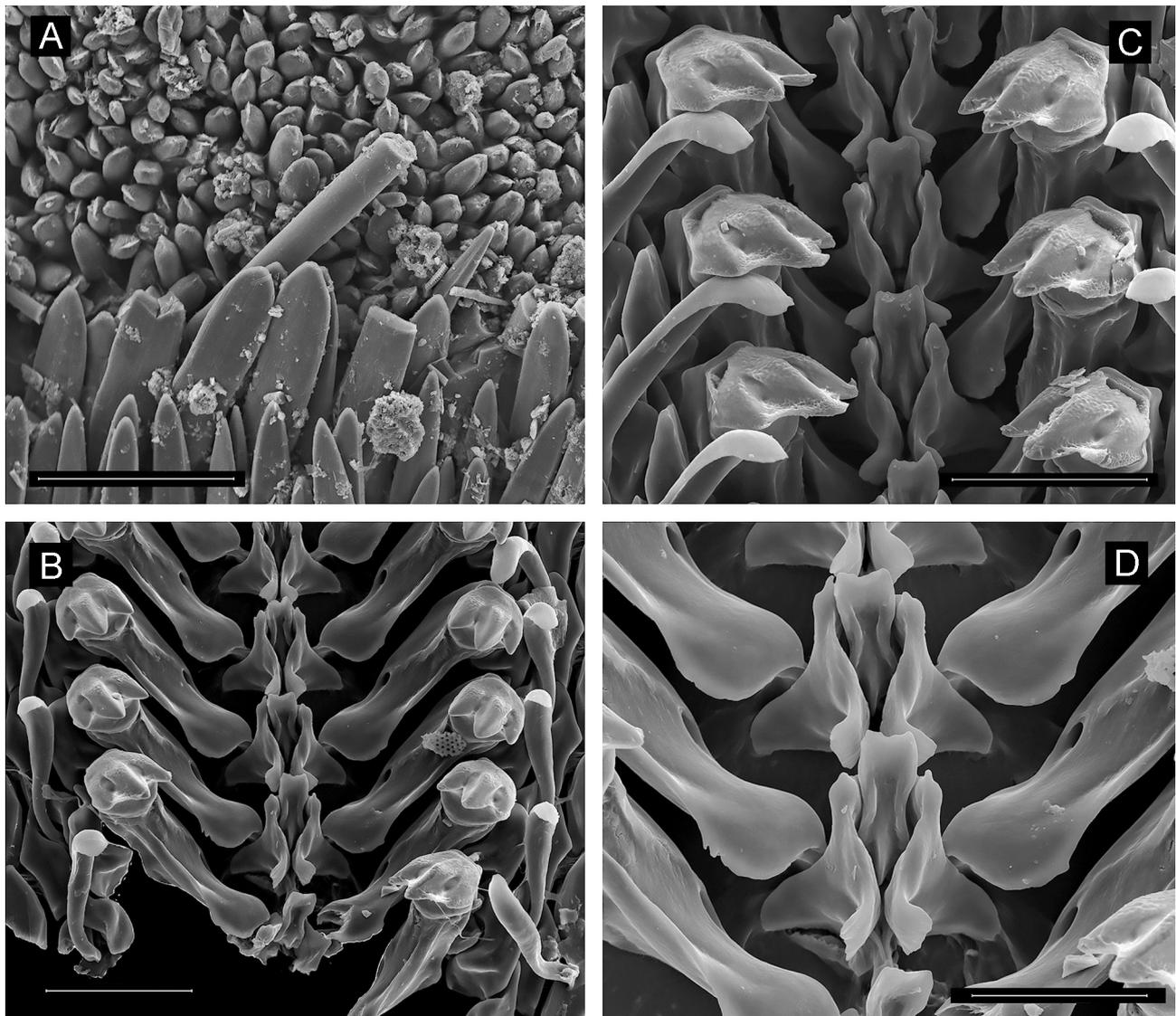


Fig. 3. *Acanthochitona nana* sp. nov., holotype. **A**, dorsal corpuscles, marginal needle and spicules and ventral scales; **B**, **C**, radula, middle portion; **D**, central and first lateral teeth of radula. Scale bars: 50 μ m (**A**, **B**), 40 μ m (**C**), 30 μ m (**D**).

part of the jugal area and in dorsal corpuscles with a narrow distal crest.

The new species is closest to *A. saitoi* and *A. savinkini*, from which it differs in the features noted above, as well as in the presence of 7–13 pores of aesthetes on one pustule (*vs.* more than 20 pores in both latter species). *Acanthochitona nana* sp. nov. differs from *A. nigra* in having the posterior mucro (*vs.* the anterior mucro), narrow marginal spicules with one longitudinal rib (*vs.* wide marginal scales with five longitudinal ribs). It

differs from *A. ostreaphila* in having longer insertion plates of valve VIII (*vs.* very short insertion plates), pustules located close together (*vs.* pustules sparsely located), and the posterior mucro (*vs.* the central mucro). *Acanthochitona nana* sp. nov. differs from *A. spratlyenses* in having small dorsal perinotum corpuscles with a narrow crest apically (*vs.* long, sharply pointed dorsal needles), and the short apophyses in the tail valve (*vs.* the long apophyses).

Distribution. Known only from the type locality.

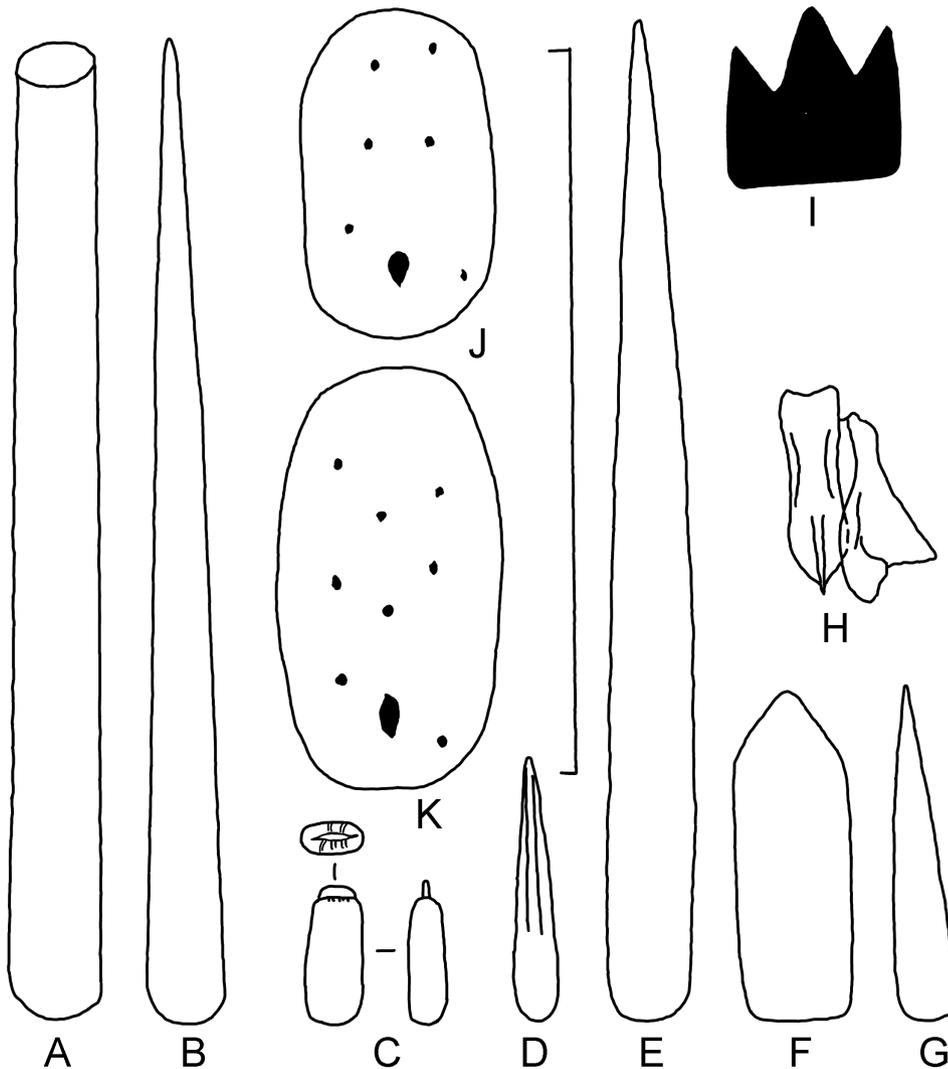


Fig. 4. *Acanthochitona nana* sp. nov., holotype. **A, B**, needles of tufts; **C**, dorsal corpuscles, dorsal, lateral and apical views; **D**, marginal spicule; **E**, marginal needle; **F**, ventral scale near margin; **G**, ventral scale; **H**, central and first lateral teeth of radula; **I**, head of major lateral tooth of radula; **J**, pustule of jugal area; **K**, pustule of pleurolateral area. Scale bar: 100 μ m.

Etymology. The specific name is the Latin noun *nana* (dwaft) reflecting the small body length of the new species.

Acknowledgements

We would like to thank the administration of the Joint Russian-Vietnamese Tropical Research and Technological Centre for organising the expeditions to the Spratly Islands, in particular Hoang Thuy Duong for her caring management. We are also grateful to Enrico Schwabe (Zoologische Staatssammlung München, Germany), Jaime Jardim (Museo de Zoologia Universidade de São Paulo, Brasil) and Irina Ekimova (M.V. Lomonosov Moscow State University, Russia) for their corrections and suggestions that helped us to improve the manuscript, Mihael Blik-

shteyn (Portland, Oregon, USA) for polishing the English, Alexey Miroļubov (ZIN) for his technical assistance with SEM procedures, and Evgenia Goncharova (ZIN) for preparing the plates of illustrations. This research was performed using equipment of the Research Resource Centre “Taxon” of ZIN. This work is based on the taxonomic collection of ZIN and was supported by the State Research Assignment of Russian Federation “Taxonomy, biodiversity and ecology of invertebrates from Russian and adjacent waters of World Ocean, continental water bodies and damped areas”, No. 1021051402797-9.

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Received 18 April 2022 / Accepted 8 August 2022. Editorial responsibility: I.A. Ekimova