

Leptochiton species (Polyplacophora: Leptochitonidae) of the
Musorstom 1 (1976) and 2 (1980) Philippines expeditions

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INTRODUCTION

The Polyplacophora procured by the Musorstom 1-Philippines, 1976, Expedition were treated by the late Dr. Eugène Leloup (Leloup, 1981a). Only members of the genus *Leptochiton* Gray, 1847, were found, of which five species, all new to science, were described and illustrated. Since Leloup's deeply lamented sudden death on July 31, 1981, more chiton specimens of the Musorstom 1 Expedition, as well as many samples of the Musorstom 2 Expedition, were sorted out and kindly entrusted to me by Dr. Philippe Bouchet (Paris), who participated in the 1980 Expedition. At the same time the types of Leloup's new species were sent to me on loan. The results of a thorough study of this material are given here.

Abbreviations. - BMNH = British Museum (Natural History), London; ITZ = Instituut voor Taxonomische Zoologie (Zoologisch Museum), Amsterdam; MNHN = Muséum National d'Histoire Naturelle, Laboratoire de Biologie des Invertébrés Marins et Malacologie, Paris.

SYSTEMATICS

Leptochiton (L.) lineatus (Nierstrasz, 1905)

Lepidopleurus lineatus Nierstrasz, 1905: 8, pl. 1 fig. 4, pl. 2 figs. 48-51; Ferreira, 1979: 163, figs. 23-24.

Lepidopleurus belknapioides Leloup, 1981: 317, fig. 1, pl. 1 figs. 1-3.

Apart from the holotype of *L. belknapioides* and the type series of *L. lineatus*, kindly put at my disposal by Dr. H. E. Coomans (ITZ), the following new material was studied:

Musorstom 2 - Philippines Exp., 1980 (P. Bouchet leg.): Sta. CP 15, 13°55'N 120°29'E, 326-330 m, 1 specimen in alcohol; Sta. CP 26, 13°49'N 120°50'E, 299-320 m, 5 specimens dry, somewhat curled up; Sta. CP 36, 13°31'N 121°24'E, 569-595 m, 2 specimens dry, curled up; Sta. CP 40, 13°08'N 122°40'E, 280-440 m, 2 specimens dry, slightly curled up; Sta. CP 46, 13°26'N 122°17'E, 445-520 m, 1 specimen in alcohol; Sta. CP 74, 13°54'N 120°27'E, 300-370 m, 2 specimens dry, curled up; Sta. CP 75, 13°54'N 120°30'E, 300-330 m, 2 specimens dry, curled up; Sta. CP 78, 13°49'N 120°28'E, 441-550 m, 1 specimen in alcohol; Sta. CP 79, 13°44'N 120°32'E, 682-770 m, 1 specimen in alcohol; Sta. CP 83, 13°55'N 120°30'E, 318-320 m, 17 specimens dry, strongly curled up.

Corindon Exp., 1980: Sta. CH 209, 00°07'S 117°53'E, 490 m, 1 specimen, valves VII, VIII loose, dry.

Leloup compared *L. belknapioides* with *L. belknapi* Dall, 1878, which proved to be conspecific with *L. alveolus* Sars, 1878 (vide Ferreira, 1979: 152, fig. 10), a totally different species. In fact, *L. belknapioides* is in all respects conspecific with *L. lineatus* Nierstrasz, 1905, as I could easily establish from a comparison of the types of both. It is closely allied to *L. diomedea* Berry, 1917, from Japan.

Leptochiton (L.) foresti (Leloup, 1981)

Lepidopleura (sic!) *foresti* Leloup, 1981: 321, fig. 2, pl. 2 figs. 7-10.

New material:

Musorstom 1 - Philippines Exp., 1976: Sta. 12, 14°0.5'N 120°19'E, 187-210 m, 4 specimens dry, curled up; Sta. 26, 14°00'N 120°17'E, 189 m, 4 specimens dry, curled up; Sta. 34, 14°01'N 120°15.8'E, 131-188 m, 1 specimen dry, curled up.

Musorstom 2 - Philippines Exp., 1980, P. Bouchet leg.: Sta. CP 11, 14°00'N 120°19'E, 194-196 m, 1 specimen dry, rolled up; Sta. CP 18, 14°00'N 120°18'E, 188-195 m, 1 specimen dry, damaged; Sta. CP 68, 14°01'N 120°18'E, 195-199 m, 1 specimen dry, rolled up; Sta. CP 70, 14°00'N 120°18'E, 191 m, 1 specimen, rolled up; Sta. CP 71, 14°00'N, 120°18'E, 189-197 m, 2 specimens dry, slightly rolled up.

I fail to understand why Leloup compared this species with *L. pergranatus* Dall, 1889 (not Kaas, 1972!) from the Caribbean region, and with the Mediterranean *L. africanus* Nierstrasz, 1906, a species of the subgenus *Parachiton* Thiele, 1909 (vide Kaas, 1977: 81, figs. 1-6). In fact it is, though distantly, related to such species as *L. hakodatensis* (Thiele, 1909), from which it differs, however, in its carinated back, spiculate girdle and the tridentate head of the major lateral radula teeth. *L. hakodatensis* is round-backed, has a scaly girdle, and a bidentate major lateral tooth.

Leptochiton juvenis (Leloup, 1981)

Lepidopleurus juvenis Leloup, 1981: 321, fig. 3, pl. 1 figs. 4-7.

New material:

Musorstom 1 - Philippines Exp., 1976: Sta. 26, 14°00'N 120°17'E, 189 m, 4 specimens dry, curled up, + 2 smashed ones.

Musorstom 2 - Philippines Exp., 1980, P. Bouchet leg: Sta. CP 1, 14°00'N 120°19'E, 188-198 m, 2 specimens dry, curled up; Sta. CP 51, 14°00'N 120°17'E, 1 specimen dry; Sta. DG 27, 13°41'N 120°50'E, 95-100 m, 1 specimen dry.

Leloup compared *L. juvenis* with the European *L. scabridus* (Jeffreys, 1880) from the Channel Is., and with *L. (Pilsbryella) setigera* (Nierstrasz, 1905) from the Bali Sea and Makassar Straits, both totally different species. Its nearest relative appears to be *L. rissoi* (Nierstrasz, 1905) from eastern Indonesian seas. *L. juvenis* differs from it in being less elevated, the side slopes rounded (straight in *L. rissoi*), in the valves being not beaked, in the perinotum elements, and in the tridentate head of the major lateral radula teeth (unidentate in *L. rissoi*).

The new material contains many adult specimens, up to 12 mm long, whereas Leloup's types were juveniles, the holotype being only 4.5 mm long.

Leptochiton (L.) philippinus (Leloup, 1981)

Lepidopleurus philippinus Leloup, 1981: 322, fig. 4, pl. 2 figs. 1-3.

Lepidopleurus porosus Leloup, 1981: 322, figs. 5-6, pl. 2 figs. 4-6.

New material:

Musorstom 2 - Philippines Exp., 1980, P. Bouchet leg.: Sta. CP 38, 12°53'N 122°27'E, 1650-1660 m, 3 specimens dry, somewhat rolled up; Sta. CP 39, 13°03'N 122°36'E, 1030-1190 m, 4 specimens dry, slightly to strongly rolled up; Sta. CP 42, 13°05'N 122°25'E, 1580-1610 m, 1 specimen with a thick, tar-like crust, dry, now disarticulated; Sta. CP 44, 13°23'N 122°22'E, 700-820 m, 2 specimens dry, curled up; Sta. CP 78, 13°49'N 120°28'E, 441-550 m, 1 specimen in alcohol.

A close comparison of the types of *L. philippinus* and *L. porosus* reveals that there are no relevant differences which might justify specific separation. *L. porosus* is only an extraordinary large, higher elevated, aberrant form of *philippinus*. The unique type of *porosus* had been injured, as a juvenile, after which growth became irregular, the broken right half of valve VI being repaired by abnormal anterior growth of the corresponding part of VII, filling up the gap. In sculpture, girdle elements and characters of the radula the two are perfectly alike, so I do not hesitate to declare them conspecific.

To what extent *L. philippinus* differs from *L. andamanicus* (Smith, 1906) I am not able to decide. Thanks to Mrs. S. Morris (London) I could study the type set of the latter (BMNH, no. 1906. 10.12.86-89). In shape, sculpture and girdle elements the two are quite closely related, but for the fact that all specimens of *L. philippinus* are strongly marked with a series of concentric growth marks in all valves, whilst in *L. andamanicus* at best one growth mark is present, quite close to the outer margin. As the radula of *L. andamanicus* could not be examined, I provisionally prefer to regard the two as different species.

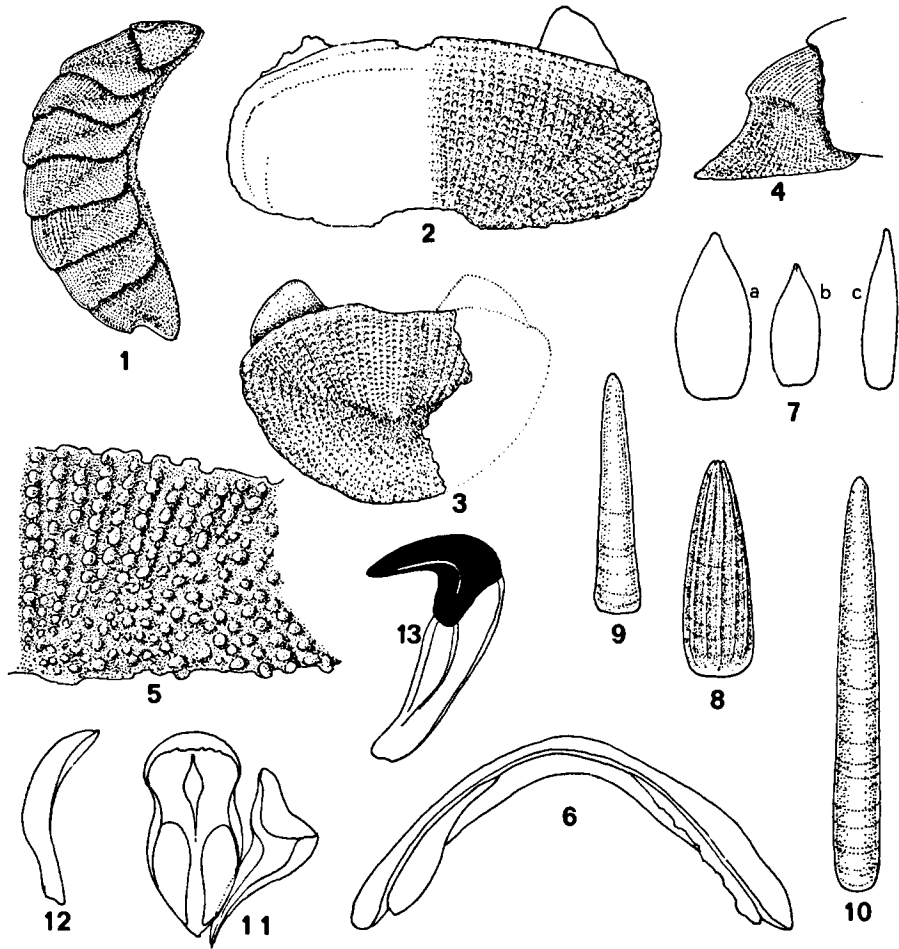
Leptochiton (L.) cancelloides sp. nov.

(figs. 1-13)

Material:

Musorstom 2 - Philippines Exp., 1980, P. Bouchet leg.: Sta. DR 33, 13°32'N 121°07'E, 130-137 m, 2 specimens dry, curled up, the paratype disarticulated. Types in MNHN, Paris.

Diagnosis. - Animal small, up to 6 x 3 mm, elongate oval, rather elevated (dorsal elevation 0.45), back evenly rounded, side slopes convex; lateral areas of intermediate valves little elevated; tegmentum granulated all over, in longitudinal series on central areas of intermediate valves and on antemucronal area of tail valve, quincuncially on head valve, on lateral areas of intermediate valves, and on postmucronal area of tail valve; mucro of



Figs. 1-13. *Leptochiton (L.) cancelloides* sp. nov. (1, 4, 7-10, holotype; 2-3, 5-6, 11-13, paratype). 1, whole animal, lateral view, x 9.6; 2, valve II, dorsal view, x 20; 3, valve VIII, dorsal view, x 20; 4, do., lateral view, x 20; 5, tegmental sculpture on right half of valve III, x 40; 6, valve III, anterior view, x 20; 7, ventral girdle scales, x 400; a, c, near outer margin, ventral and lateral view respectively, b near inner margin; 8, dorsal girdle spicule, x 400; 9, marginal spicule, x 400; 10, intrasegmental spicule, x 400; 11, central and first lateral radula teeth, x 400; 12, spatulate uncincl tooth, x 400; 13, major lateral tooth, x 200.

tail valve more or less central, posterior slope deeply concave; girdle narrow, spiculate; major lateral radula tooth with a unicuspid head. Colour white.

Description. - Head valve semicircular, posterior margin widely V-shaped, anterior slope straight, tegmentum granulate, granules roundish, arranged in quincunx, at the same time in more or less radial rows, with many intercalations; intermediate valves little more than twice as wide as long, anterior margin convex in valve II, concave in the jugal part of

III-VIII, posterior margin straight, apex hardly indicated, mostly worn away, lateral areas little raised, central areas with ca. 50 longitudinal rows of roundish, well raised pustules, the interstices almost as wide, on the lateral areas the granules are arranged in curved series, about perpendicular to the diagonal lines and at the same time parallel to these; tail valve semicircular, the mucro central to slightly posterior when viewed from above, somewhat swollen, inclining, the posterior slope deeply concave directly behind it; ante-mucronal area highly vaulted, with 40 or more longitudinal series of granules, anterior margin convex towards the sides, concave in the middle, postmucronal area sculptured like the head valve.

Articulamentum well developed, white; apophyses wide apart and narrowly triangular in the intermediate valves, with a wide, slightly concave sinus (convex in valve II), wider and more trapezoid in valve VIII, the sinus narrower, concave.

Girdle dorsally clothed with outwardly directed, bluntly pointed, longitudinally ribbed spicules, $72 \times 24 \mu\text{m}$, with 4-5 riblets on the visible half; there is a marginal fringe of smooth, bluntly pointed spicules, $80 \times 18 \mu\text{m}$; on the perinotum tongues small groups of longer, smooth spicules are found, $140 \times 16 \mu\text{m}$. Ventral side of the girdle paved with concentric rows of flat, imbricating, lanceolate scales, $40 \times 16 \mu\text{m}$ near the inner margin, becoming gradually larger towards the outer margin, the largest $56 \times 25 \mu\text{m}$.

Radula with a short and wide central tooth, pinched in the anterior half, with a narrow, rounded blade; first laterals short, triangular, without a blade; major laterals with a strong, unidentate cusp.

Distribution. - Only known from the type locality: Philippines, Verde Island Passage, between the Lubang Is. and Luzon, depth 130-137 m.

Observations. - This new species bears a superficial resemblance to the European *L. cancellatus* (Sowerby II, 1840), from which it differs, however, in sculpture, and especially in the girdle covering and the radula.

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