

***Leptochiton (Leptochiton) deecresswellae*  
(MOLLUSCA: POLYPLACOPHORA),  
a new deep-sea chiton from New Zealand**

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*Leptochiton (Leptochiton) deecresswellae* sp. nov.

**ABSTRACT:** *Leptochiton (Leptochiton) deecresswellae* sp. nov. from New Zealand is hereby described and compared with some closely related species.

**INTRODUCTION:** Fellow collectors, Pete and Denise Cresswell, New Zealand, offered us a small lot of deep-water chitons for further investigation. At first glance, two species could be separated from the lot of Otago Heads. After closer investigation, two specimens were identified as *Leptochiton (Leptochiton) subantarcticus* (Iredale & Hull, 1930), as they could be characterised by their particular tegmental sculpture and high dorsal elevation. The second species showed no resemblance to any known species from the Neo-Zelanic region nor adjacent regions and is hereby proposed as a new species.

**MATERIALS & METHODS:** SEM-photos were made using a SEM JEOL mod. JSM-5200. The systematic in this paper follows the classification given by Kaas & Van Belle (1998).

**ABBREVIATIONS:**

BA	Private Collection <u>B</u> runo <u>A</u> nseeuw, Belgium
KBIN	<u>K</u> oninklijk <u>B</u> elgisch <u>I</u> nstituut voor <u>N</u> atuurwetenschappen, Brussels, Belgium
PLC	Private Collection <u>P</u> ete <u>L.</u> <u>C</u> resswell, New Zealand
YT	Private Collection <u>Y</u> ves <u>T</u> erryn, Belgium

**RESULTS**

**Class POLYPLACOPHORA Gray, 1821**  
**Order NEOLORICATA Bergenhayn, 1955**  
**Suborder LEPIDOPLEURINA Thiele, 1909**  
**Family LEPTOCHITONIDAE Dall, 1889**  
**Subfamily LEPTOCHITONINAE**  
**Genus *Leptochiton* Gray, 1847**  
**Subgenus *Leptochiton* s.s.**

*Leptochiton (Leptochiton) deecresswellae* sp. nov.

**Holotype:** KBIN IG 29611 Type #510, New Zealand, off east Otago Heads, edge of Papanui Canyon, on mud and coarse sand bottom, 600 m, 26.V.1971, R/V *Munida*, leg. PLC, 5.0 x 2.7 mm, preserved dry.

**Paratypes:** **Paratype I:** New Zealand, off east Otago Heads, at edge of Papanui Canyon, on mud and coarse sand bottom, 600 m, 26.V.1971, R/V *Munida*, leg. PLC, coll. BA & YT, 5.1 x 2.5 mm, desarticulated, used for SEM-investigation; **Paratype II:** New Zealand, off east Otago Heads, edge of Papanui Canyon, on mud and coarse sand bottom, 600 m, 26.V.1971, R/V *Munida*, coll. PLC, 3.5 x 2.0 mm, preserved dry, curled.

**Diagnosis:** Animal small, up to 5.1 x 2.5 mm, colour creamish white, more brownish white on the lateral areas, elongate, valves subcarinate, dorsal elevation up to 0.45 (measured over valve V). Intermediate valves very faintly beaked, lateral areas hardly elevated. Tegmentum sculptured with longitudinal chains of granules on central area of intermediate valves and antemucronal area of tail valve, irregularly, quincuncially arranged on head valve, on lateral areas of intermediate valves and on postmucronal area of tail valve. Concentric growth marks on the outer edges of the shell. Girdle narrow.

**Description:** Head valve semicircular with concentric growth bands over the whole valve becoming stronger near the outer front edge; tegmentum irregularly, quincuncially arranged with separated granules (see plate 1 fig. 1). Intermediate valves broadly rectangular, posterior margins slightly convex; lateral areas hardly raised, almost sculptureless and only distinguishable from the central areas by the difference in tegmental sculpture; side slopes convex, growth marks at the outer edges of the valves. Tegmentum of central area covered with about 45 longitudinal chains of small, round granules, sometimes juxtaposed or coalescing on the jugum. Lateral areas covered with irregularly, quincuncially arranged granulation, closer set than on the central area, with faint concentric growth lines, a few strongly pronounced near margin (see plate 1 fig. 2, plate 2 fig. 1).

Tail valve almost as wide as head valve, mucro central to submedian, not prominent, postmucronal slope almost straight, concentric growth bands on the outer edge. Antemucronal area covered with about 35 longitudinal chains of round to slightly oval granules, coalescing or juxtaposed on the central part. Postmucronal area densely covered with small, irregularly shaped granules, arranged in an irregular quincuncial pattern (see plate 1 fig. 3, plate 2 fig. 2).

Each granule with 1 central megal aesthete and 4 micro aesthetes of which 2 aside and 2 in front of the megal aesthete. The difference between a micro- and megal aesthete is hardly discernable (see plate 2 figs 1, 3).

Articulamentum white, almost translucent, moderately developed. Apophyses small, widely separated, triangular in valves II to VII, more or less trapezoid in the tail valve. Girdle narrow, light brown, dorsally covered with flattened, elongated, feather-shaped, sharply pointed scales, average size  $60 \times 20 \mu\text{m}$ . The dorsal scales are ornamented with 4 to 6 strongly pronounced, elevated riblets. Ventrally the girdle is paved with smooth, elongated, distally blunt-pointed scales with an average size of  $80 \times 15 \mu\text{m}$  (see plate 3 figs 1, 3). Marginal fringe composed of smooth, slender, sharply pointed spiculi.

Radula measuring about a third of the length of the total animal, with about 36 rows of mature teeth. Major lateral teeth strongly cusped, bicuspid with a curved, sharply pointed main denticle and a smaller interior one, total maximal width about  $25 \mu\text{m}$ . Spatulate teeth, up to  $75 \mu\text{m}$  long, reaching back end of major laterals (see plate 3 figs 2, 4).

Gills merobranchial, adanal without interspace with 5 ctenidia of about equal size on each side, extending from the anus to the posterior end of valve VII.

**Habitat:** The specimens were retrieved among a coarse sand and mud fraction of dredged material. Bathymetrical range of about -600 m.

**Distribution:** Only known from the type locality.

**Remarks:** The concentric growth bands all along the edge of the shell of the holotype and paratype I are less pronounced in the smaller paratype II.

**DISCUSSION:** In the course of the last century, few deep-water material, derived from the muddy bottom off Otago Heads, reached biologists. Two *Leptochiton* s.s. have Otago Heads as type locality i.e. *Leptochiton (Leptochiton) otagoensis* (Iredale & Hull, 1929) and *Leptochiton (Leptochiton) finlayi* (Ashby, 1929). But also *Leptochiton (Leptochiton) subantarcticus* (Iredale & Hull, 1930) is known to occur in that area.

*L. (L.) deecresswellae* sp. nov. can easily be distinguished from the latter by the difference in tegmental sculpture and the difference in dorsal elevation. *L. (L.) subantarcticus* is highly arched (0.71) while *L. (L.) deecresswellae* has a dorsal elevation of 0.45.

It differs from *L. (L.) otagoensis* and *L. (L.) finlayi* mainly by its difference in tegmental sculpture and lateral outline of valve VIII. The sculpture of the latter two consists of radial ribs of granules on the head valve, lateral areas of the intermediate valves and the postmucronal area of the tail valve while these areas in *L. (L.) deecresswellae* are sculptured with quincuncially arranged granules. Due to these clearly separable features, the species is easily distinguished from its close relatives.

**DERIVATIO NOMINIS:** *Leptochiton (Leptochiton) deecresswellae* is here named in honour of Denise Cresswell, the wife of Pete Cresswell, New Zealand, both collectors of worldwide shells, especially from the New Zealand area.

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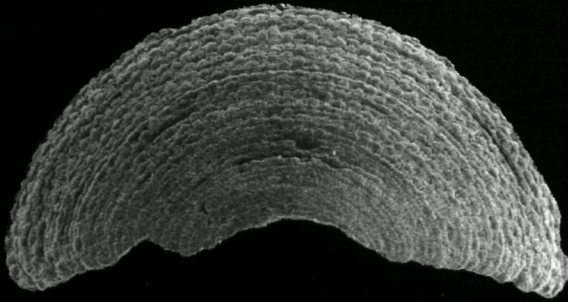
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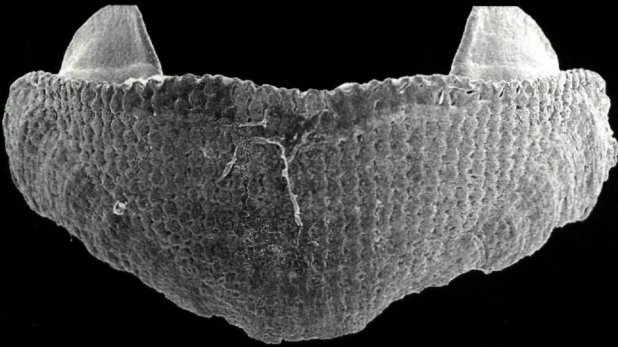
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PLATE 1

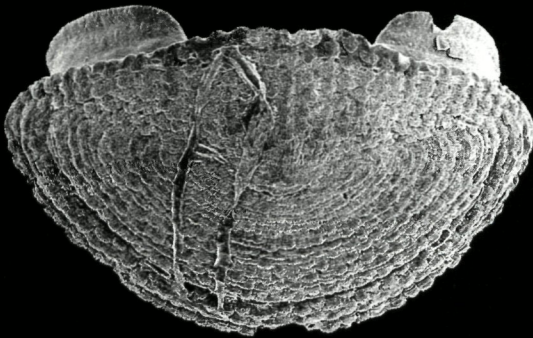
1



2



3



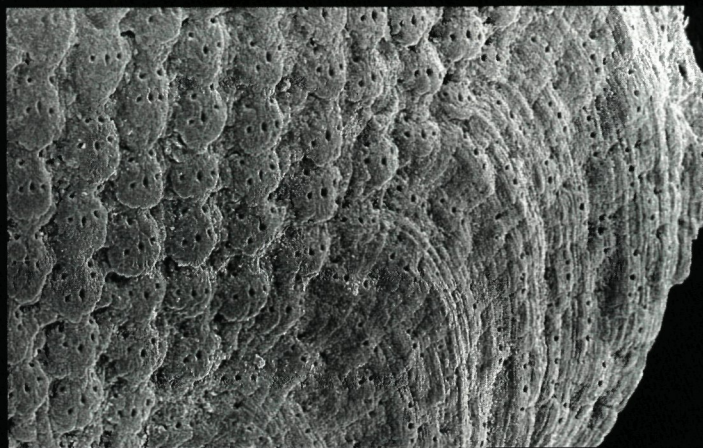
25kV X50

500µm

000290

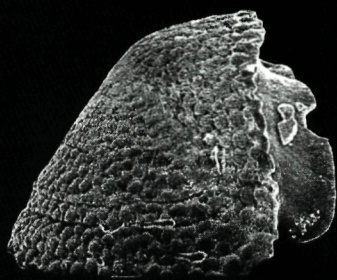
## PLATE 2

1



X200

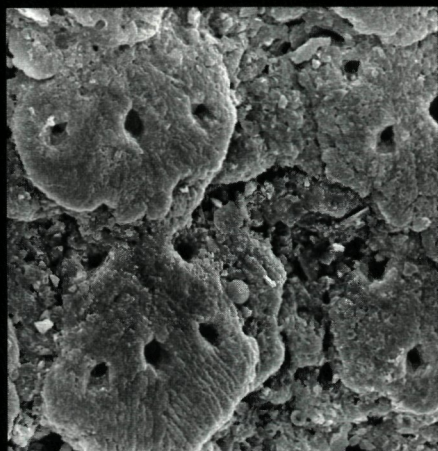
100 μm



X50

500 μm

2



X750

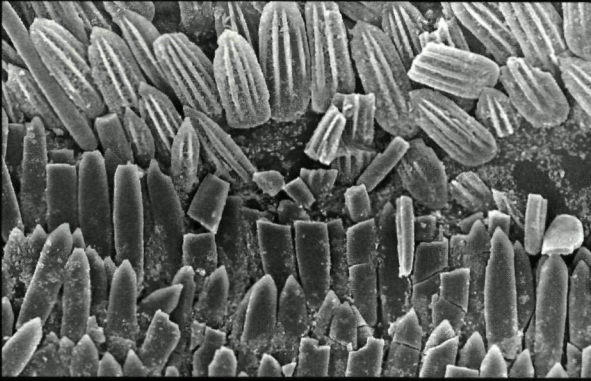
10 μm

3

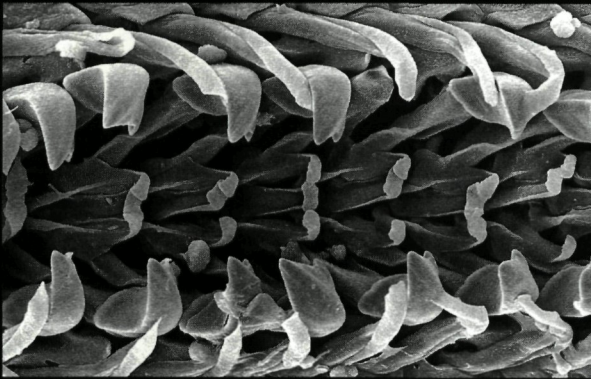


PLATE 3

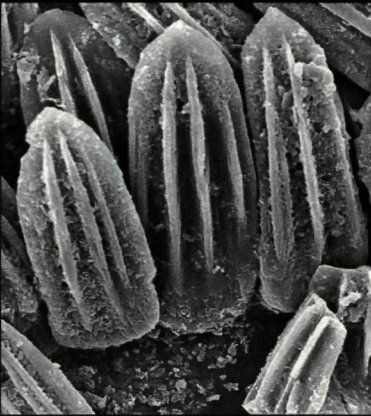
1



2



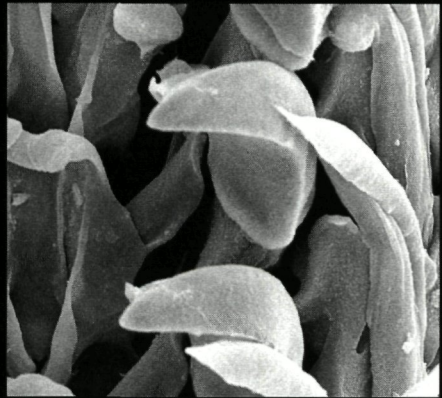
3



X750

10 μm

4



X1,000

10 μm