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## NOTES ON NEW ZEALAND CHITONS (MOLLUSCA, AMPHINEURA)

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### SUMMARY

A synopsis of the classification of the New Zealand Polyplacophora is presented. The name Lepidochitonidae is replaced by the earlier Callochitonidae, Plaxiphoridae by Mopaliidae, Aulacochitonidae by Schizochitonidae, and Cryptoconchidae by Acanthochitonidae.

*Vaferichiton* Iredale and Hull is treated as a subgenus of *Aerilamma* Hull. *Lorica* H. and A. Adams is used instead of its junior synonym *Aulacochiton* Shuttleworth. *Lorica haurakiensis* Mestayer is recorded from the Nukumaruan (Lower Pleistocene). *Paricoplax profundior* Dell is placed in *Loricella* Pilsbry. *Icoplax chathamensis* Dell is made the type species of a new subgenus of *Anthochiton*. Localities in southern New Zealand for *Notoplax cuneata* (Suter) and *Lorica haurakiensis* are listed.

### INTRODUCTION

All genera and higher taxa of the Polyplacophora have recently been revised by Smith (1960) for the "Treatise on Invertebrate Paleontology". The family names, and in some cases the generic names, used by him are different from those in current use in New Zealand. Investigation of these, the recognition of a few necessary generic changes, and the accumulation of some interesting new records led to the preparation of this note.

Smith used exceedingly broad genera, synonymising or reducing to subgenera most of the genera currently recognised in Australasia. He claimed that his proposed classification would be easier for paleontologists to use than the one used by neontologists. The writer believes there is no reason for the classifications of neontologists and paleontologists to differ in any group and, where appropriate, genera suppressed or reduced in rank by Smith are here reinstated.

The reason for the substantially different family names in the "Treatise" and in earlier New Zealand classifications is that prior to the "Copenhagen Decisions on Zoological Nomenclature" in 1931 the Law of Priority did not apply to family names, and Iredale frequently erected names based on the oldest established genus in the family. These names have become well established in Australasian literature, but there are many cases where they must be replaced by the earliest name for the family. Smith (1960) has returned to the usage of the correct name for each family. A synopsis of that part of Smith's classification relevant to the New Zealand fauna follows.

## SYNOPSIS OF CLASSIFICATION OF NEW ZEALAND POLYPLACOPHORA

Class **AMPHINEURA** Ihering, 1876Subclass **POLYPLACOPHORA** Blainville, 1816Order **NEOLORICATA** Bergenhayn, 1955Suborder **LEPIDOPLEURINA** Theile, 1910Family **LEPIDOPLEURIDAE** Pilsbry, 1893**Terenochiton** Iredale, 1914; **Parachiton** Theile, 1909Family **HANLEYIDAE** Bergenhayn, 1955**Hemiarthrum** Dall, 1876Suborder **ISCHNOCHITONINA** Bergenhayn, 1955Family **ISCHNOCHITONIDAE** Dall, 1889**Ischnochiton** Gray, 1847Family **CALLOCHITONIDAE** Plate, 1889(= **LEPIDOCHITONIDAE** of Australasian authors)**Icoplax** Theile, 1893; **Paricoplax** Iredale and Hull, 1929; **Eudoxochiton** Shuttleworth, 1853.Family **MOPALIIDAE** Dall, 1889(= **PLAXIPHORIDAE** of Australasian authors)**Plaxiphora** Gray, 1847; **Diaphoraplax** Iredale, 1914; **Guildingia** Pilsbry, 1893; **Maorichiton** Iredale, 1914; **Aerilamma** Hull, 1924 (Subgenus **Vaferichiton** Iredale and Hull, 1952); **Fremblya** H. Adams, 1866.Family **SCHIZOCHITONIDAE** Dall, 1889(= **AULACOCHITONIDAE** of Australasian authors)**Lorica** H. & A. Adams, 1852 (= **Aulacochiton** Shuttleworth, 1853); **Loricella** Pilsbry, 1893.Family **CHITONIDAE** Rafinesque, 1815**Anthochiton** Theile, 1893 (**Nodiplax**, n. sub-gen); **Amaurochiton** Theile, 1893; **Onithochiton** Gray, 1847; **Sypharochiton** Theile, 1893.Suborder **ACANTHOCHITONINA** Bergenhayn, 1930Family **ACANTHOCHITONIDAE** Pilsbry, 1893(= **CRYPTOCONCHIDAE** of Australasian authors)**Acanthochitona** Gray, 1821 (= **Acanthochiton**, incorrect subsequent spelling); **Craspedochiton** Shuttleworth, 1853; **Cryptoconchus** Burrow, 1815; **Notoplax** H. Adams, 1862.

## TAXONOMY

## Family MOPALIIDAE

Genus *Aerilamma* Hull, 1924

1924. *Aerilamma* Hull, Proc. R. Soc. Queensland 36: 113.

Type species (by original designation): *Aerilamma primordia* Hull, 1924, Recent, Queensland.

Subgenus *Vaferichiton* Iredale and Hull, 1932

1932. *Vaferichiton* Iredale and Hull, Australian Zoologist 7 (2): 131.

Type species (by original designation): *Plaxiphora murdochi* Suter, 1905, Recent, New Zealand.

Smith (1960) synonymised *Vaferichiton* with *Aerilamma*. The description and figures given by Iredale and Hull (1926: 168) show that *Aerilamma primordia* resembles *Vaferichiton murdochi* very closely in almost all features, but has a sculpture of many small, rounded nodules as in the Acanthochitonidae. *Vaferichiton murdochi* has a sculpture of weak radiating ridges. *Aerilamma* is restricted to the tropics, apart from *murdochi*, and it seems best to recognise *Vaferichiton* as a monotypic subgenus of *Aerilamma*.

## Family SCHIZOCHITONIDAE

Genus *Lorica* H. and A. Adams, 1852

1852. *Lorica* H. and A. Adams, Ann. Mag. Nat. Hist. (2) 9: 355.

Type species (by monotypy): *Chiton cimolius* Reeve, 1847, Recent, south-eastern Australia.

1853. *Aulacochiton* Shuttleworth, Mittheil. naturf. Gessell. Berne: 68.

Type species (by monotypy): *Chiton volvox* Reeve, 1847, Recent, south-eastern Australia.

1927. *Zelorica* Finlay, Trans. N.Z. Inst. 57: 334.

Type species (by original designation): *Lorica haurakiensis* Mestayer, 1921, Lower Pleistocene to Recent, New Zealand.

In recent years the name *Aulacochiton* Shuttleworth has generally been used in Australia and New Zealand. MacPherson and Gabriel (1962: 22) stated that *Lorica* was preoccupied, but did not give details. Sherborn (1927: 3673) listed under *Lorica*: "err. typ. pro *Loricula*; teste Bronn, Ind. Pal. 1848, 669". Reference to Bronn (1848: 669) showed that the earlier *Lorica* is an error for *Loricula* Sowerby, 1843 (Cirripedia). As such it is an incorrect subsequent spelling and does not enter into homonymy (International Commission on Zoological Nomenclature 1961: Art. 33b). *Lorica* is thus available for this genus of chitons, and was used by Smith (1960: 163).

*Lorica haurakiensis* Mestayer, 1921

1907. *Lorica volvox* Suter, Proc. malac. Soc. London 3: 297 (not of Reeve, 1847).

1913. *Lorica volvox*: Suter, Man. N.Z. Moll. p. 46, pl. 2, fig. 22, pl. 5, figs. 3a, 3b.  
 1915. *Lorica volvox*: Iredale, Trans. N.Z. Inst. 47: 425.  
 1921. *Lorica haurakiensis* Mestayer, Trans. N.Z. Inst. 53: 177, pl. 38, figs. 1-3.  
 1924. *Lorica haurakiensis*: Finlay, Trans. N.Z. Inst. 55: 517.  
 1926. *Lorica haurakiensis*: Mestayer, Trans. N.Z. Inst. 56: 587, pl. 101, fig. 10.  
 1927. *Zelorica haurakiensis*: Finlay, Trans. N.Z. Inst. 57: 334.  
 1929. *Lorica haurakiensis*: Iredale and Hull, Australian Zoologist 6 (2): 159, pl. 16, fig. 1.  
 1961. *Aulacochiton haurakiensis*: Powell, Shells of New Zealand ed. 4, p. 75.

A single median valve of *Lorica haurakiensis* was collected by the writer from the siltstone in Mangatahi River near the junction with Okauawa Stream, on the Maraekakaho-Kereru Road, central Hawke's Bay (Nukumaruan, Lower Pleistocene). It is indistinguishable from Recent specimens, and is the first known fossil occurrence of the species. The specimen is in the collection of the Geology Department of Victoria University of Wellington (VM.276).

The species is much more widespread than published records would suggest, and has occasionally been taken intertidally. The writer examined specimens from the following localities, in the Dominion Museum:

Whale Rock, Bay of Islands, in 26 fm, J. A. Bollons, two paratypes; Bowen-town, north end of Tauranga Harbour, under intertidal boulder, A. G. Beu, March 1967, one specimen; B.S. 149, 39°7'S, 177°10.5'E, Hawke Bay, in 20 fm, gravel and shell, *Kotuku* exped., J. A. F. Garrick, 21/5/52, one specimen; B.S. 159, 39°36'S, 177°03'E, Hawke Bay, in 6 fm, *Kotuku* exped., J.A.F.G., 22/5/52, three specimens; B.S. 160, 39°36'S, 177°05'E, Hawke Bay, in 7 fm, *Kotuku* exped., J.A.F.G., 22/5/52, one specimen; under stones at low tide, Worsler Bay, Wellington, W. R. B. Oliver, 13/10/23, one specimen; off Chetwode Is, Cook Strait, in 55 fm, J. A. Bollons, 29/4/14, 1 valve; stomach of blue cod, Jackson's Head, Queen Charlotte Sound, in 25 fm, M.V. *Alert*, 25/6/50, one valve; Timaru Breakwater, under large boulders, A. E. Brookes, 1941, two specimens.

### Genus *Loricella* Pilsbry, 1893

1893. *Loricella* Pilsbry, Man. Conch. (1) 14: 238.

Type species (by original designation): *Lorica angasi* H. Adams, 1864, Recent, south-eastern Australia.

### *Loricella profundior* (Dell, 1956)

1956. *Paricoplax profundior* Dell, Bull. Dom. Mus., Wellington, 18: 157, pl. 21, figs. 213-19.

The important generic features are the large head valve, the small tail valve, and the girdle narrowing posteriorly to a small sinus. The slitting of the articulamentum and the sculpture of the exterior appear to be very similar to those of *L. angasi* (figured by Smith 1960: 164; MacPherson and Gabriel 1962: fig. 34), but *profundior* is much smaller than *angasi*.

## Family CHITONIDAE

Genus **Anthochiton** Theile, 1893

1893. *Anthochiton* Theile, Das Gebiss der Schnecken 2: 377.

1893. *Rhyssoplax* Theile, Das Gebiss der Schnecken 2: 368.

An application is to be made to the International Commission on Zoological Nomenclature to designate a type species for *Rhyssoplax*. Until the results are known, the usage of *Anthochiton* is continued.

Subgenus **Nodiplax** n. subgen.

Type species: *Icoplax chathamensis* Dell, 1960, Recent, Chatham Islands.

Sculpture of large, rather flattened nodules, similar to the sculpture of certain members of *Anthochiton* s. str. Anterior valve with eight slits, posterior valve unslit.

Dell (1960: 153) placed *chathamensis* in *Icoplax*, but that genus has spicules on the girdle, not scales (Iredale and Hull 1929: 82), does not have coarse nodular sculpture, and has 14 to 23 slits in the anterior valve and 10 to 14 in the posterior valve. The shallow longitudinal grooves decreasing in strength towards the crest of the valves in *chathamensis* are similar to those of *Icoplax* and presumably influenced Dell, but similar grooves are also present on some species of *Anthochiton*, such as the rare *A. clavatus* (Suter). The nodules are similar to those of coarsely sculptured species of *Anthochiton* s. str. such as *A. clavatus* (Suter).

*Anthochiton* s. str. resembles *Nodiplax* in having eight slits in the anterior valve but differs in having about 10 slits in the posterior valve (Iredale and Hull 1931: 140). *Anthochiton* (*Nodiplax*) *chathamensis* seems to resemble *Anthochiton clavatus* (Suter) in most features, but differs in the unslit tail valve.

## Family ACANTHOCHITONIDAE

Genus **Notoplax** H. Adams, 1892

1892. *Notoplax* H. Adams, Proc. zool. Soc. London 1861: 385.

Type species (by monotypy): *Cryptoplax* (*Notoplax*) *speciosa* H. Adams, 1862, Recent, south-eastern Australia.

Synonyms of *Notoplax* were listed by Iredale and Hull (1931: 59).

**Notoplax cuneata** (Suter, 1908)

1908. *Tonicia cuneata* Suter, Trans. N.Z. Inst. 40: 360, pl. 28, figs. 1, 2.

1913. *Tonicia cuneata*: Suter, Man. N.Z. Moll. 42: 1081, pl. 5, fig. 1.

1914. *Craspedochiton cuneatus*: Iredale, Proc. malac. Soc. London 15: 130.

1915. *Craspedochiton cuneatus*: Iredale, Trans. N.Z. Inst. 47: 422.

1928. *Pseudotonicia cuneata*: Bucknill, Trans. N.Z. Inst. 59: 626, figs. 3, 4.

1931. *Notoplax cuneata*: Iredale and Hull, Australian Zoologist 7 (1): 66, pl. 3, figs. 2, 9-12.

1961. *Notoplax cuneata*: Powell, Shells of New Zealand, ed. 4, p. 76.

*Notoplax cuneata* was once regarded as one of the rarest of New Zealand chitons. Suter's original specimen was from the Bay of Islands. Further specimens were collected at Mount Maunganui by Bucknill, and were reported on by Ashby (1927). Later the species was found to be common in Tauranga Harbour, and several specimens were dredged there by Powell (Dr C. A. Fleming, pers. comm.). It is now regarded as uncommon rather than rare, and has been collected on several occasions as far south as Tahuna Beach, Nelson. The Dominion Museum has specimens from the following localities:

In sand at low tide, Whangateau Harbour, Leigh, T. P. Warren, Oct. 1952; Pilot Bay, Tauranga, A. W. B. Powell; Mount Maunganui; Day's Bay, Wellington Harbour; Stephens Island, Cook Strait; Tahuna Beach, Nelson, Dell Colln.

The writer collected a large specimen from a boulder bank half way along the beach facing Plimmerton, on the north side of the entrance to Porirua Harbour, near Wellington in 1965. The specimen was attached to a boulder at the base of a clump of *Ulva*, and was exposed at about half tide. The valves are exactly comparable with those of other specimens seen. In life the girdle was cream speckled with medium green and pale fawn, and very broad, the proportions of shell and girdle being very similar to those of the common *N. violacea* (Quoy and Gaimard). The specimen has been presented to the Dominion Museum, Wellington.

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