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Fossil and Recent molluscan types in the Auckland War Memorial Museum.

Part 2: Polyplacophora and Scaphopoda

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Abstract

The Marine Department of Auckland War Memorial Museum has nearly 1800 primary types and a further 1811 paratypes and paralectotypes types in its collections. The majority are molluscan and this second part of a catalogue of these collections reviews the types for 14 chiton and two scaphopod species. It deals with seven primary types and 12 secondary type lots, which are split between 12 Recent taxa and four fossil taxa. All of the holotypes reviewed here have been illustrated.

KEYWORDS

Auckland Museum, name-bearing types, Mollusca, Polyplacophora, Scaphopoda.

INTRODUCTION

The Marine Department of Auckland War Memorial Museum (AWMM) holds nearly 1800 lots of name-bearing primary types, in the form of holotypes, neotypes, syntypes and lectotypes, and a further 1811 iconotypes, paratypes and paralectotypes. These are spread across several phyla, but the great majority are Mollusca. They include terrestrial as well as marine species, and fossil as well as extant taxa.

Auckland Museum's first list of biological primary types, which included the molluscs, was published by Powell (1941) and he followed this with a supplement in 1949 (Powell 1949). The present publication is Part 2 of an updated and expanded catalogue and covers the Polyplacophora and Scaphopoda. See Blom (2016) for Part 1, which deals with the Bivalvia.

Part 2 deals with seven primary types and 12 secondary type lots representing 14 chiton species and two scaphopod species. They are split between Recent (12) and fossil (4) taxa. The majority are from New Zealand (13), but there are also three from Australia.

All but one of the species (*Acanthochites (Loboplax) mariae* Webster, 1908) dealt with in this paper were described between 1923 and 1937. In those days the scientific community in New Zealand was still small and dispersed, but even then it was part of an extensive network both nationally and internationally. Published papers and correspondence of the period held in the Auckland Museum's archives shows that the seven authors of the chiton species mentioned would all have known of each other through collaboration on field work, research and/or exchange of specimens (e.g.

Iredale & Mestayer 1908; Webster 1908; Ashby 1926; Finlay 1926; Laws 1932). Each would have drawn on the expertise of the others despite living widely apart.

As chance would have it, four of the seven – Ashby, Iredale, Mestayer and Webster – were born in England before moving to Australia or New Zealand, or both.

E. (Edwin) Ashby (1861–1941) was born in England and for health reasons moved to South Australia as a young man, where he became an estate agent and naturalist. He collected flowering plants, birds, and insects, but was particularly interested in Recent and fossil chitons on which he published 60 papers (Winckworth 1942). He sent material to M.K. (Marjorie) Mestayer and borrowed New Zealand material from her; H.H. (Henry) Suter; W.R.B. (Brook) Oliver (for the use of the name Brook rather than Walter, see Iredale 1908a & b, pp. 389 and 404 respectively); the Reverend W.H. (William) Webster (Ashby 1926); A.E. (Albert) Brookes (Ashby 1929a) and H.J. (Harold) Finlay (Ashby 1929b). From this material he described and named several fossil and Recent New Zealand species, some of which are still valid today.

T. (Tom) Iredale (1880–1972) was a polymath who was born in England in 1880, and like Ashby, left England for health reasons and moved to Christchurch, New Zealand, as a young man (Ponder & Whitley 1973). Here he met W.R.B. Oliver, who introduced him to mollusc collecting. In 1908 he and Oliver joined an 11-month expedition to the Kermadec Islands, but Iredale returned to England in 1909 where he worked freelance at the British Museum. Here he further developed his life-long interest in ornithology. He immigrated to Sydney in 1923, where, in 1924, he took up the position

of Conchologist at the Australian Museum and together with A. F.B. (Bassett) Hull published extensively on Australian chitons (Ponder & Whitley 1973).

M.K. (Marjorie) Mestayer (1880–1955) was born in England and at the age of two immigrated to Australia with her parents. When she was 12 they moved to Wellington, New Zealand (Hayward & Morley 2011) where her engineer father had sole charge of the drainage system of Wellington. He was an amateur naturalist and also a member of the Wellington Philosophical Society, and it is presumably through her father's membership that Mestayer was also able to foster her connections with Australasian conchologists. However, she credited Sir James Hector, the first director of the Colonial Museum (now Te Papa Tongarewa, Museum of New Zealand) as starting her on shell collecting (Anon. 1928). Apparently never on permanent staff, Mestayer was contracted as the Conchologist at the same museum, which was by then called the Dominion Museum, from 1919–1932 (Hayward & Morley 2011).

The Rev. W.H. (William) Webster (1864–1931) was also born in England (Anon. 1902) and came to New Zealand via Launceston, Tasmania. There is little biographical detail for him, but correspondence in Auckland Museum's archives shows he was active as an Auckland shell collector as early as 1901. In 1929 he donated his considerable collection of New Zealand and foreign Mollusca to Auckland Museum (Powell *et al.* 1967). The timing of the gift suggests he did so in order to help grow the Museum's collections when in 1929 it moved from its smaller Princes Street premises to the much larger new building in Auckland Domain. Webster's collection contained a number of type specimens, including that of *Acanthochites (Loboplax) mariae* Webster, 1908, which he had named after his wife who was also 'an enthusiastic collector' (Webster 1908).

See Blom (2016) for biographical notes on the authors (Finlay and Marwick) of the two scaphopod species.

For specimen registration of Auckland Museum's molluscan collections and their organization also see Blom (2016).

Methods

Within the currently accepted family placement, taxa are here listed alphabetically under their original name first by genus and then by species.

For most of the Recent New Zealand species Spencer *et al.* (2016) was used for the taxonomic order, family placements and current names. For Recent Australian species the WoRMS Editorial Board (2017) was the major reference. Taxonomic placement, current names and ages for New Zealand Cenozoic fossil taxa are almost exclusively taken from Maxwell (in Spencer *et al.* 2009), Beu & Maxwell (1990) and Beu & Raine (2009).

All specimens listed here were sighted and cross-checked against original publications. Fossil taxa are indicated by a dagger (†) and their ages have been included as international periods followed by the equivalent New Zealand stage in parentheses. Geochronological subdivisions used in original papers have in many cases been superseded by new nomenclature and their

boundaries revised. For the currently accepted New Zealand timescale and formats see Raine *et al.* (2015).

Type definitions are those used by the International Code of Zoological Nomenclature (ICZN 2017).

Paratypes have been included in this catalogue because in some instances the name-bearing type is not readily available (e.g., because it is missing, affected by glass disease, or held outside New Zealand). It is therefore useful to know that some of the type series is available within New Zealand.

All of the primary types in this paper were re-imaged with automontage focus stacking techniques, and these high resolution images are provided here (Fig. 1). Similar high resolution images for many of the other primary types are available through the Museum's Collections Online (<http://www.aucklandmuseum.com/collections-research/collections>).

Class POLYPLACOPHORA Order LEPIDOPLEURIDA LEPTOCHITONIDAE

†*Lepidopleurus clifdenensis* Ashby, 1929

Ashby, E., 1929. New Zealand fossil Polyplacophora (Chitons). *Transactions and Proceedings of the New Zealand Institute* 60: 366–369 [367, 368], pl. 32, figs 8a and b (holotype).

Holotype: MA70394, Figure 1a, b, a single incomplete median valve collected from Middle Miocene (Clifdenian) Slip Point Siltstone [Finlay's bed 6C (for correlation see Fleming *et al.*, 1969)] at Clifden, Southland, New Zealand.

Remarks: Ashby (1929) published the locality as 'Clifden (Band 6A)', but the two Finlay labels accompanying the specimen have the locality recorded as Clifden 6C.

Current name: *Leptochiton clifdenensis* (Ashby, 1929) – Maxwell in: Spencer *et al.* (2009): 233.

Parachiton textilis Powell, 1937

Powell, A.W.B., 1937. New species of marine Mollusca from New Zealand. *Discovery Reports* 15: 153–222 [219, 220], pl. 48, fig. 6 (holotype), figs 4, 5 (paratype).

Paratypes: MA71946, anterior valve, two median valves and a posterior valve, collected by A.W.B. Powell in 1932 from the type locality, station 934, R.R.S. Discovery II cruise, in 92m off Three Kings Islands, New Zealand.

Current name: *Parachiton textilis* Powell, 1937 – Spencer *et al.* (2016).

Order CHITONIDA ISCHNOCHITONIDAE

†*Callochiton chattonensis* Ashby, 1929

Ashby, E., 1929. New Zealand fossil Polyplacophora (Chitons). *Transactions and Proceedings of the New Zealand Institute* 60: 366–369 [368], pl. 32, figs 13a and b (holotype).

Holotype: MA70131, Figure 1c, d, one minute median valve, from Late Oligocene (Duntroonian) Chatton Formation, Chatton, Southland, New Zealand.

Figure 1. *a, b*, *Lepidopleurus clifdenensis* Ashby, 1926, holotype, incomplete median valve exterior and interior views; *c, d*, *Callochiton chattonensis* Ashby, 1929, holotype, median valve exterior and interior views; *e*, *Acanthochiton brookesi* Ashby, 1926, holotype, anterior, median and posterior valves exterior view; *f, g*, *Acanthochites (Loboplax) mariae* Webster, 1908, holotype, complete, dried specimen dorsal and left lateral views; *h*, *Notoplax (Amblyplax) mariae haurakiensis* Ashby, 1926, holotype, anterior, median and posterior valves exterior view; *i*, *Loboplax ashbyi* Laws, 1932, holotype, median valve exterior view; *j*, *Cadulus teliger* Finlay, 1926, holotype, lateral view. Specimens *e* and *h* oriented with posterior at the top; all others with anterior at the top. Scale bar 1 mm unless otherwise indicated.

Current name: *Callochiton chattonensis* Ashby, 1929 – Maxwell in: Spencer *et al.* (2009): 233.

***Ichnochiton luticolens* Hull, 1923**

Hull, A.F.B., 1923. New Australian Polyplacophora, and notes on the distribution of certain species. Part 1. *Australian Zoologist* 3: 157–166 [159, 160], pl. 24, figs 10–13.

Paratypes: MA73238, two whole dried individuals, collected by A.F.B. Hull in July 1921, from the type locality Barney Point, Port Curtis, Queensland, Australia.

Current name: *Ichnochiton luticolens* Hull, 1923 – Marshall *et al.* (2015).

CHITONIDAE

***Lucilina rainfordiana* Hull, 1924**

Hull, A.F.B., 1924. New Queensland Loricates. *Proceedings of the Royal Society of Queensland* 36: 109–116 [115, 116], pl. 21, fig. 3.

Paratypes: MA28563, one whole dried individual and one individual with intact valves and girdle but without soft parts, collected by A.F.B. Hull and E.H. Rainford on 17 September, 1923 from the type locality North Head, Port Denison, Queensland, Australia.

Current name: *Lucilina fortilarata* (Reeve, 1847) – Schwabe (2009a).

ACANTHOCHITONIDAE

***Acanthochiton brookesi* Ashby, 1926**

Ashby, E., 1926. The acanthoid chitons of New Zealand, with descriptions and figures, including several new species. *Proceedings of the Malacological Society of London* 17: 5–35 [14, 15], pl. 1, figs 3a–c (holotype), pl. 2, fig. 7 (holotype).

Holotype: MA70002, Figure 1e, anterior valve, median valve 4, posterior valve, collected by H. Suter from Waitemata Harbour (?), Auckland, New Zealand.

Paratype: MA72422, anterior valve, five median valves and posterior valve, from the type (?) locality.

Remarks: There is some doubt about the locality. Ashby (1926) reported that he was given the specimens by Suter some 20 years before they were described. However, ‘mice found their way into the cabinet, destroyed many, damaged and mixed the rest; as result the localities are unreliable, but one of the three specimens of the form under description remained attached to a tablet labelled “Auckland Harbour”.’

Ashby named the species after “my friend Mr Albert E. Brookes, who so generously supplied material for this investigation”. A.E. Brookes was a keen entomologist and conchologist, who was a life member of the Conchology Section of the Auckland Institute and Museum (aka Auckland Shell Club) and its president from 1948–1950.

Current name: *Acanthochitona zelandica* (Quoy & Gaimard, 1835) – Powell (1979): 30; Spencer *et al.* (2016).

***Acanthochiton foveauxensis* Mestayer, 1926**

Mestayer, M.K., 1926. New Zealand Mollusca: No. 3. *Transactions and Proceedings of the New Zealand Institute* 56: 583–587 [585, 586], pl. 100, fig. 9 (holotype), figs 10–12.

Paratypes: MA71624, four complete, dried specimens, collected from 27–36m (15–20 fathoms) from oyster beds, Foveaux Strait, New Zealand.

Current name: *Notoplax rubiginosa* (Hutton, 1872) – Powell (1979): 31; Spencer *et al.* (2016).

***Acanthochiton foveauxensis kirki* Mestayer, 1926**

Mestayer, M.K., 1926. New Zealand Mollusca: No. 3. *Transactions and Proceedings of the New Zealand Institute* 56: 583–587 [586], pl. 101, fig. 1 (holotype), figs 2–4.

Paratypes: MA71623, two complete, dried specimens, collected from oyster beds, Foveaux Strait, New Zealand.

Remarks: Named after Professor Harry Borrer Kirk, who was the foundation professor of biology at Victoria College, now the University of Victoria of Wellington. Kirk held the Chair of Biology from 1903–1944 and Mestayer named “this particularly pretty form, in grateful recognition of his unfailing kindness”.

Current name: *Notoplax rubiginosa* (Hutton, 1872) – Powell (1979): 31; Spencer *et al.* (2016).

***Acanthochites (Loboplax) mariae* Webster, 1908**

Webster, W.H., 1908. Additions to the New Zealand molluscan fauna. *Transactions and Proceedings of the New Zealand Institute* 40: 254–259 [254], pl. 20, figs 1–11.

Holotype: MA70001, Figure 1f, g, complete, dried specimen, collected from rocks at low tide, Orua Bay, Manukau Harbour, Auckland, New Zealand.

Paratypes: MA71594, 16 valves representing two complete individuals, from the type locality.

Current name: *Notoplax mariae* (Webster, 1908) – Powell (1979): 30, 31; Spencer *et al.* (2016).

†*Loboplax ashbyi* Laws, 1932

Laws, C.R., 1932. New Tertiary Mollusca from New Zealand. No. 2. *Transactions and Proceedings of the New Zealand Institute* 62: 183–199 [184, 185], pl. 32, fig. 45 (holotype).

Holotype: MA70422, Figure 1i, a median valve, collected by C.R. Laws from Late Oligocene (Duntroonian) Chatton Formation, Shell Gully, Chatton, Southland, New Zealand.

Remarks: Named after Edwin Ashby, “who has already described *Callochiton chattonensis* from these beds”.

Current name: *Notoplax ashbyi* (Laws, 1932) – Beu & Raine (2009).

***Notoplax aupouria* Powell, 1937**

Powell, A.W.B., 1937. New species of marine Mollusca from New Zealand. *Discovery Reports* 15: 153–222 [220], pl. 48, fig. 1 (holotype).

Paratypes: MA72312, four unrelated, worn median valves, collected by A.W.B. Powell in 1932 from the type locality, station 934, R.R.S. Discovery II cruise, in 92m off the Three Kings Islands, New Zealand.

Current name: *Notoplax aupouria* Powell, 1937 – Spencer *et al.* (2016).

***Notoplax websteri* Powell, 1937**

Powell, A.W.B., 1937. New species of marine Mollusca from New Zealand. *Discovery Reports* 15: 153–222 [220, 221], pl. 48, fig. 2 (holotype), fig. 3.

Paratypes: MA72313, three median valves, collected by A.W.B. Powell in 1932 from the type locality, station 934, R.R.S. Discovery II cruise, in 92m off the Three Kings Islands, New Zealand.

Current name: *Notoplax websteri* Powell, 1937 – Spencer *et al.* (2016).

***Notoplax (Amblyplax) mariae haurakiensis* Ashby, 1926**

Ashby, E., 1926, The acanthoid chitons of New Zealand. *Proceedings of the Malacological Society of London* 17: 5–35 [26, 27], pl. 2, figs 3a–c.

Holotype: MA70535, Figure 1h, anterior valve, one median and a posterior valve, on an *Atrina* shell dredged from 37m (20 fathoms) by A.E. Brookes, prior to late 1922, from Hauraki Gulf, New Zealand.

Current name: *Notoplax mariae* (Webster, 1908) – Spencer *et al.* (2016).

SCHIZOCHITONIDAE

***Schizochiton polyops* Iredale & Hull, 1926**

Iredale, T & Hull, A.F.B. A monograph of the Australian loricates (Phylum Mollusca – Order Loricata). VII. *Australian Zoologist* 4: 256–276 [271], pl. 38, figs 16, 17, 19–21.

Paratype: MA72835, complete, dried specimen, from Howick Island, North Queensland, Australia.

Current name: *Schizochiton incisus* (G. B. Sowerby II, 1841) – Schwabe (2009b).

Class SCAPHOPODA

Order DENTALIIDA

DENTALIIDAE

†*Laevidentalium multistrictum* Finlay & Marwick, 1937

Finlay, H.J. and J. Marwick, 1937. The Whangaloan and associated molluscan faunas of Kaitangata-Green Island Subdivision. *New Zealand Geological Survey, Palaeontological Bulletin* 15, 140 pp. [93], pl. 13, fig. 3 (holotype).

Paratype: MA72865, single specimen from the Early Paleocene (Lower Teurian) of Boulder Hill, near Dunedin, Otago, New Zealand.

Current name: *Graptacme multistricta* (Finlay & Marwick, 1937) – Maxwell in: Spencer *et al.* (2009): 239.

Order GADILIDA

Gadilidae

***Cadulus teliger* Finlay, 1926**

Transactions and Proceedings of the New Zealand Institute 57: 444, pl. 19, figs 52, 54 (holotype).

Holotype: MA70127, Figure 1j, from 174 m (95 fathoms) off the Auckland Islands, New Zealand.

Paratypes: MA72539, 98 specimens, from the type locality.

Current name: *Cadulus teliger* Finlay, 1926 – Spencer *et al.* (2016).

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