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New Records of Echinoderms from the Snares Islands to the South of New Zealand

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Abstract

A collection of 170 echinoderms from the Snares Islands comprises 13 genera and 13 species, of which 11 are new records. Seventeen species of echinoderms are now known from the Snares; the fauna is closely related to that of the New Zealand mainland.

INTRODUCTION

ALTHOUGH the echinoderm faunas of the southern islands of New Zealand (Auckland, Campbell, Bounty and Antipodes Islands) are now regarded as being well known, that of the Snares Islands, lying only 65 miles to the south of Stewart Island, has until recently been neglected. Farquhar (1898) recorded a single species of the asteroid *Henricia* from the Snares, and Fell (1953) reported four additional genera of asteroids, which were collected by Dr C. A. Fleming in 1947. Further, Professor G. A. Knox, of Canterbury University, Christchurch, has advised me (personal communication) that the echinoid *Evechinus chloroticus* occurs there. In January and February of 1961, Professor Knox conducted a thorough investigation of the intertidal zone at the Snares Islands and collected several echinoderms which form the basis of this study. I am grateful to Professor Knox for allowing me to examine the collection.

Class ASTEROIDEA

Calvasterias suteri (de Loriol)

Stichaster suteri de Loriol, 1894, p. 477, Pl. 23, fig 2.

MATERIAL EXAMINED: 1/1/1961, barnacle zone, 1 specimen; 4/1/1961, *Durvillea* holdfast, 3 specimens; 26/1/1961, *Durvillea* holdfasts, 3 specimens; 30/1/1961, in pools, *Durvillea* zone, 2 specimens.

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Remarks: The largest specimen has a radial length (R) of 24mm, and an interradial length (r) of 8mm, while in the smallest, R = 9 mm, r = 3mm (R/r, 3). The colour of these alcohol preserved specimens ranges from light fawn to dark brown, the aboral paxillae lighter in colour, forming a conspicuous lighter coloured band along the middle of each arm.

Range: Known off the New Zealand mainland, from Wellington south to Stewart Island; Fell (1953) records it from Auckland and Campbell Islands, the Snares and (with doubt) the Antipodes Islands.

Asterodon dilatatus (Perrier)

Pentagonaster dilatatus Perrier, 1875, p. 217.

Material Examined: 26/1/1961, *Durvillea* holdfasts, 3 specimens.

Remarks. The largest specimen is R = 55mm, r = 25mm (R/r, 2.2), the smallest R = 30mm, r = 15mm (R/r, 2). Colour when dried, pale fawn. Fell (1953) has given a thorough account of the variation and colour of this species.

Range: It is known from Cook Strait south to Stewart Island, and the Snares, to 90 metres.

Sclerasterias mollis (Hutton)

Asterias mollis Hutton, 1872, p. 4.

Material Examined: 26/1/1961, *Durvillea* holdfasts, 2 specimens; 30/1/1961, in pools, *Durvillea* zone, 1 specimen.

Remarks: Largest specimen, R = 44mm, r = 8mm (R/r, 5.5), smallest specimen R = 28mm, r = 6mm (R/r, 4.6). The colour, when dried, is light orange brown. These are small specimens of a species which reaches an arm-spread up to 330mm.

Range: This is the first record of the species outside the New Zealand mainland. Off the New Zealand coast, it ranges from Cook Strait to Otago, in 22–234 metres.

Coscinasterias calamaria (Gray)

Asterias calamaria Gray, 1840, p. 179.

Material Examined: 26/1/1961, *Durvillea* holdfasts, 5 specimens.

Remarks: All specimens are young, the largest having the dimensions R = 69mm, r = 10mm (R/r, 7). The colour of dried specimens is light brown, oral surface fawn.

Range: This wide-ranging Indo-west-Pacific species is known in the New Zealand region from North Cape to Stewart Island, to 70 metres.

Allostichaster insignis (Farquhar)

Stichaster insignis Farquhar, 1895, p. 203, Pl. 13 fig 1.

Material Examined: 5–6/1/1961, *Lessonia* holdfasts, 9 specimens; 26/1/1961, *Durvillea* holdfasts, 4 specimens; 30/1/1961, in pools, *Durvillea* zone, 9 specimens; 4/2/1961, rock pool, *Durvillea* zone, 1 specimen; 6/2/1961, *Lessonia* holdfasts, 1 specimen.

Remarks: This fissiparous species is apparently common at the Snares, especially in the holdfasts of brown algae.

RANGE: Mortensen (1925) reported the species from the Auckland Islands, while Fell (1953) described further material from the Auckland Islands and the Snares. Along the New Zealand coast, *A. insignis* ranges from Cook Strait south to Stewart Island in 0–225 metres.

Class OPHIUROIDEA

Ophiomyxa brevirima Clark

Ophiomyxa brevirima Clark, 1915, p. 169, Pl. 1, figs. 3-4.

MATERIAL EXAMINED: 26/1/1961, *Durvillea* holdfasts, 1 specimen; 30/1/1961, in pools, *Durvillea* zone, 11 specimens; 6/2/1961, in pool, *Durvillea* zone, 1 specimen; 5–6/1/1961, *Lessonia* holdfasts, 1 specimen.

RANGE: This species ranges along the entire coast of New Zealand at depths of 0–540 metres.

Pectinura gracilis Mortensen

Pectinura gracilis Mortensen, 1924, p. 172, figs. 35, 36.

MATERIAL EXAMINED: 30/1/1961, in pools, *Durvillea* zone, 1 specimen.

RANGE: *P. gracilis* extends from Cook Strait south to the Snares, in depths of 0–180 metres.

Amphipholis squamata (Delle Chiaje)

Asteria squamata Delle Chiaje, 1828, p. 74.

MATERIAL EXAMINED: 30/1/61, in pools, *Durvillea* zone, 5 specimens; 2/2/1961, *Marginariella* holdfasts, 4 specimens; 3/2/1961, in algae from *Durvillea* zone; in sponges, 1 specimen.

RANGE: This is a cosmopolitan species, with a bathymetric range in the New Zealand region of 0–540 metres.

Amphioplus basilicus (Koehler)

Amphiura basilica Koehler, 1907, p. 307, Pl. 11, figs. 17-18.

MATERIAL EXAMINED: 4/1/1961, deep pool, *Durvillea* zone, 1 specimen; 5–6/1/1961, *Lessonia* holdfasts, 19 specimens; 3/2/1961, *Lessonia* and *Marginariella* holdfasts, 5 specimens.

RANGE: *A. basilicus* is known from off East Cape, New Zealand (Koehler, 1907), around the South Island of New Zealand, and from the Auckland, Campbell and Antipodes Islands (Fell, 1953). This species is almost exclusively intertidal, and lacks a pelagic larval stage.

Ophiocoma bollonsi Farquhar

Ophiocoma bollonsi Farquhar, 1908, p. 108.

MATERIAL EXAMINED: 5–6/1/1961, *Lessonia* holdfasts, 1 specimen; 26/1/1961, *Durvillea* holdfasts, 1 specimen.

REMARKS: Colour in alcohol, dark greyish-brown on the aboral surface, light reddish-brown adorally.

RANGE: *O. bollonsi* ranges the entire New Zealand coast in 9–630 metres.

Ophiopteris antipodum Smith

Ophiopteris antipodum Smith, 1877, p. 305, Pl. 15.

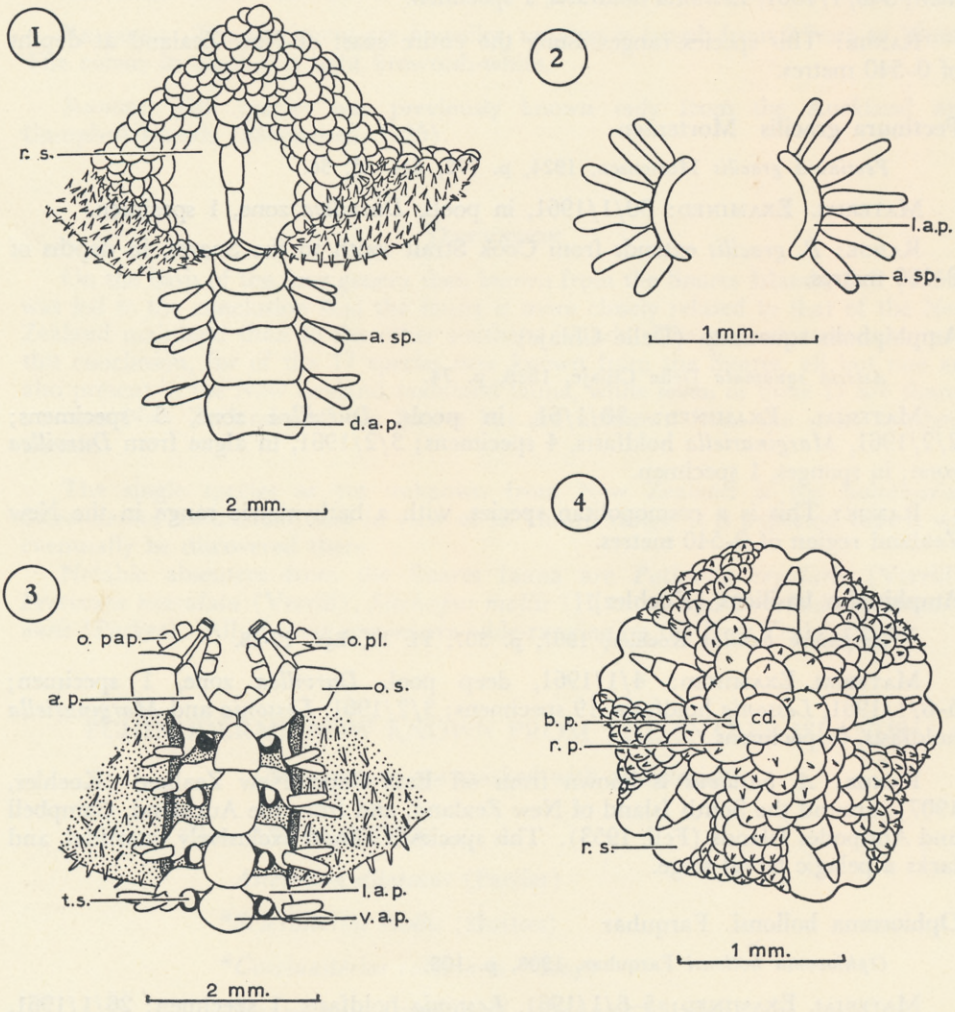
Material Examined: 26/1/1961, *Durvillea* holdfasts, 3 specimens.

Range: While this species is nowhere common, it ranges from Auckland to Otago in 0–70 metres.

Ophiactis resiliens Lyman, Figs. 1–4

Ophiactis resiliens Lyman, 1882, p. 115, Pl. 20, figs. 7–9.

Material Examined: 5–6/1/1961, *Lessonia* holdfasts, 32 specimens; 26/1/1961, *Durvillea* holdfasts, 5 specimens; 30/1/1961, 9 specimens.



Figs. 1–4.—*Ophiactis resiliens* Lyman. Fig. 1.—Aboral surface, portion of disc and arm; Fig. 2.—Lateral armplates with armspines; Fig. 3.—Oral surface, jaws and base of arm; Fig. 4.—Aboral surface of juvenile disc, showing embryonic primary plates. Abbreviations: a.p., adoral plate; a.sp., armspine; b.p., basal plate; cd., centrodorsal plate; d.a.p., dorsal armplate; l.a.p., lateral armplate; o.pap., oral papilla; o.pl., oral plate; o.s., oral shield; r.p., radial plate; r.s., radial shield; t.s., tentacle scale; v.a.p., ventral armplate.

DESCRIPTION: Largest specimen with disc diameter 9mm, arm length 52mm; smallest 3mm in disc diameter, arms 11mm in length. Central portion of disc in large specimens covered by small circular overlapping plates (Fig. 1). Toward edge of disc plates numerous, bearing small spines which tend to obscure them. At edge of disc, plates disappear and spines borne on leathery dark brown skin. Radial shields conspicuous, members of each pair separated by as many as eight polygonal platelets, which are not overlapping.

In a juvenile specimen with disc diameter of 2mm, primary embryonic plates observable in their original positions (Fig. 4). Centrodorsal and radial plates approximately of equal size, basals much smaller, appearing to have arisen later than centrodorsal and radials, becoming interpolated between them.

Ventral surface of disc with spines in interradii (Fig. 3); no plates present in ventral interradii. Ventral spines slightly larger and more scattered than dorsal spines.

Oral shields approximately rectangular in shape, broader than long. Adoral plates large, carrying lateral wings which meet in midline of each radius. Two oral papillae to each oral plate, and a single terminal infradental papilla which resembles a tooth. Oral papillae approximately rectangular, with outer edges irregular, but not serrate.

Arms widest some distance from nodes (Fig. 1). A single broad rectangular dorsal arm-plate, often fragmented into smaller pieces. Lateral armplates each carrying four to six short, stout and blunt arm-spines, uppermost and lowermost spines being smaller than the rest (Fig. 2). Ventral armplates elongate, rounded at their free edges (Fig. 3). Tentacle-pores large, each with a single large tentacle scale.

Colour when dried variable. Upper side of disc orange-brown to greenish-grey, mottled with darker and lighter shades. Near ambitus and below it, where scales are lacking, skin light to dark brown. Arms greenish-grey above, often with a longitudinal light orange band along each lateral margin of dorsal armplates, yellowish-white to light brown below.

REMARKS: These specimens differ slightly from those described by Farquhar (1907) and Mortensen (1924). In his description of *O. nomentis* (= *O. resiliens*) Farquhar (1907, p. 125) noted the presence of four armspines, and his description was based on ". . . a number of specimens". In the present material the arm-spine numbers vary considerably, there being four to six on each lateral armplate, at least half of the specimens having four armspines. This character is therefore not diagnostic. The adoral plates described by Farquhar and those in the present material have their inner edges bent at an obtuse angle (Fig. 3), but Mortensen's (1924) figure shows the oral plates to have an almost straight inner edge. It is doubtful whether much importance can be attached to this feature, for some of the present specimens show variation in the shape of the adoral valves. Mortensen (1924) has also described some variation in the structures on the oral side, and it seems evident that this species, though distinct from all other *Ophiactis* species, is highly variable. Variation in colour is also evident.

The radial oral plates are conspicuous in this species (Fig. 3). Fell (1963, p. 410) has commented upon the significance of these plates, suggesting that they must function as valvate structures helping to close the jaw; these plates evidently develop " as the first sign of a mid-ventral gradient. . . . "

RANGE: *Ophiactis resiliens* is known in the New Zealand region from near Cape Maria van Diemen in the extreme north of the North Island to the Snares, between the shore and 120 metres. The species is also reported from Australia, where it is ". . . a characteristic member of the temperate fauna of southern Australia" (Clark, 1946, p. 212), and from Lord Howe Island.

Class ECHINOIDEA

Pseudechinus novaezealandiae (Mortensen)

Notechinus novaezelandiae Mortensen, 1921, p. 153, figs. 6-8, Pl. 6, figs. 7-10, Pl. 8, figs. 4–5, 7–11.

MATERIAL EXAMINED: 4/2/1961, rock pool, *Durvillea* zone, 1 specimen.

Remarks: The single specimen is 25mm in horizontal diameter. The radioles are light green in colour, with white or light red tips.

Range: This species is now known to range from Cook Strait south to the Snares, with a bathymetric range 0–100 metres.

Class HOLOTHUROIDEA

Stereoderma leoninoides (Mortensen)

Cucumaria leoninoides Mortensen, 1925, p. 338, figs. 27a, b, 28.

Material Examined: 25/1/1961, rock pool, *Durvillea* holdfasts, 5 specimens.

Remarks: The specimens are juveniles, ranging in length from 2.5mm to 10mm. The colour in alcohol is light brownish-white.

Range: This species was previously known only from the Auckland and Campbell Islands (Mortensen, 1925).

Discussion

On the basis of the four genera then known from the Snares Islands, Fell (1953) was led to the conclusion that the fauna is more closely related to that of the New Zealand mainland than to the other southern islands. The present records support this conclusion, for of the 17 species now known from the Snares, all but one are also present in the New Zealand mainland fauna, while seven of these 17 are shared between New Zealand and the Snares but are unknown from the other southern islands.

The single species as yet unknown from New Zealand is the holothurian *Stereoderma leoninoides,* and in view of its known range, it is expected that it will eventually be discovered there.

Notable absentees from the Snares fauna are *Patiriella regularis* (Verrill), *Pectinura maculata* (Verrill), *Stichopus mollis* (Hutton) and *Trochodota dunedinensis* (Parker). All of these species are wide-ranging on the New Zealand coast.

ECHINODERMS NOW KNOWN FROM THE SNARES ISLANDS

(New records are marked with an asterisk)

Class ASTEROIDEA

Asterodon dilatatus (Perrier)

**Sclerasterias mollis* (Hutton)

**Coscinasterias calamaria* (Gray)

Henricia sp. (possibly *H. compacta* (Sladen))

Stichaster australis (Verrill)

Allostichaster insignis (Farquhar)

Calvasterias suteri (de Loriol)

Class OPHIUROIDEA

**Ophiomyxa brevirima* Clark

**Ophiocoma bollonsi* Farquhar

**Ophiopteris antipodum* Smith

**Ophiactis resiliens* Lyman

**Amphioplus basilicus* (Koehler)

**Amphipholis squamata* (Delle Chiaje)

**Pectinura gracilis* Mortensen

Class ECHINOIDEA

**Pseudechinus novaezealandiae* (Mortensen)

Evechinus chloroticus (Valenciennes)

Class HOLOTHUROIDEA

**Stereoderma leoninoides* (Mortensen)

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