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A New Genus and Species of Asteroid from New Zealand

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Abstract

Pseudechinaster rubens gen. nov., sp. nov. is recorded on the basis of nine specimens from Cook Strait, New Zealand, and it appears most closely related to the South African genus *Perissasterias* H. L. Clark.

Order FORCIPULATIDA

Family ASTERIIDAE

Genus PSEUDECHINASTER gen. nov.

Abactinal skeleton a close knit irregular reticulum, the plates bearing short rigid spines, straight and crossed pedicellariae scattered, not forming wreaths round the spines; 2 to 4 adambulacral spines; an adoral carina present.

TYPE SPECIES. *Pseudechinaster rubens* sp. nov.

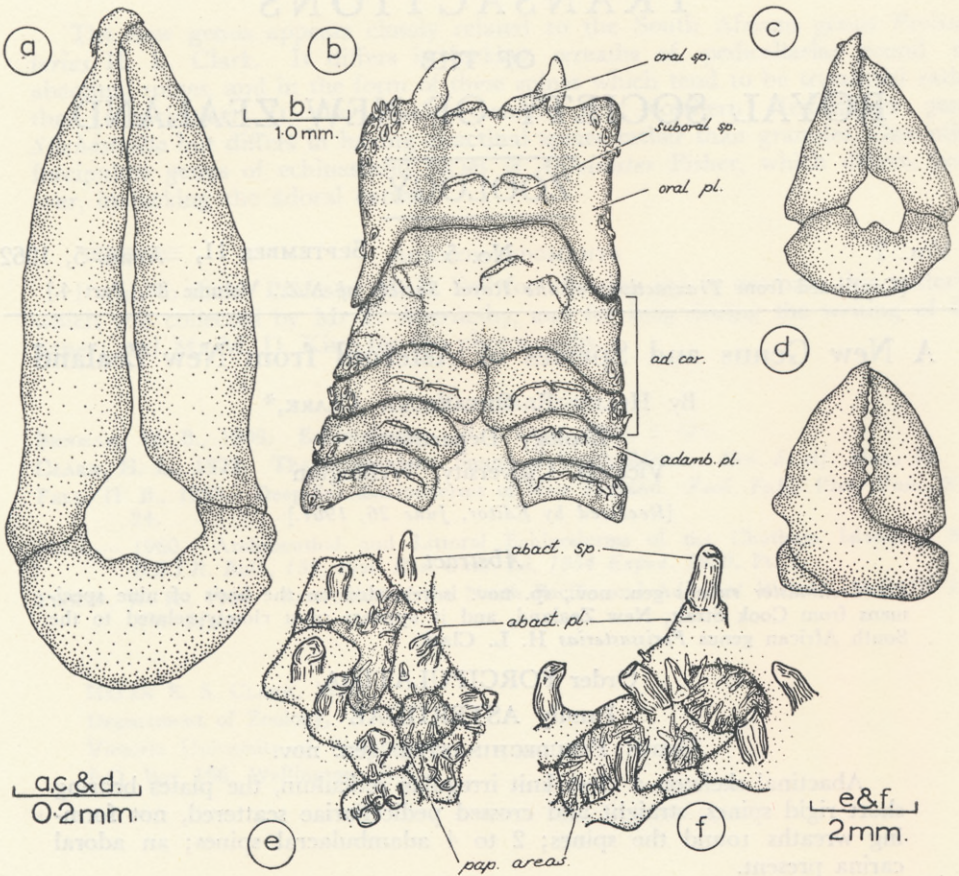
Pseudechinaster rubens sp. nov.

DESCRIPTION

The general facies is that of *Echinaster*, with a small disc and five long, flexible arms each tapering to a blunt tip. An interradial septum is present devoid of spines.

The aboral skeleton is formed by an irregular network of small trilobate and cruciform plates joined in most cases by oblong connecting ossicles and obscured by a skin; there is an irregular carinal series, and these plates are short with 4 lobes. Both the superomarginal and inferomarginal series of plates are developed, the former being slightly larger. Each arm tip is protected by a crescent-shaped terminal plate. In the proximal region of the arms the actinal series of plates are in three distinct rows; distally, however, these merge together towards the groove, and near the arm tip only the outer rows are distinct; papular areas between these plates are small.

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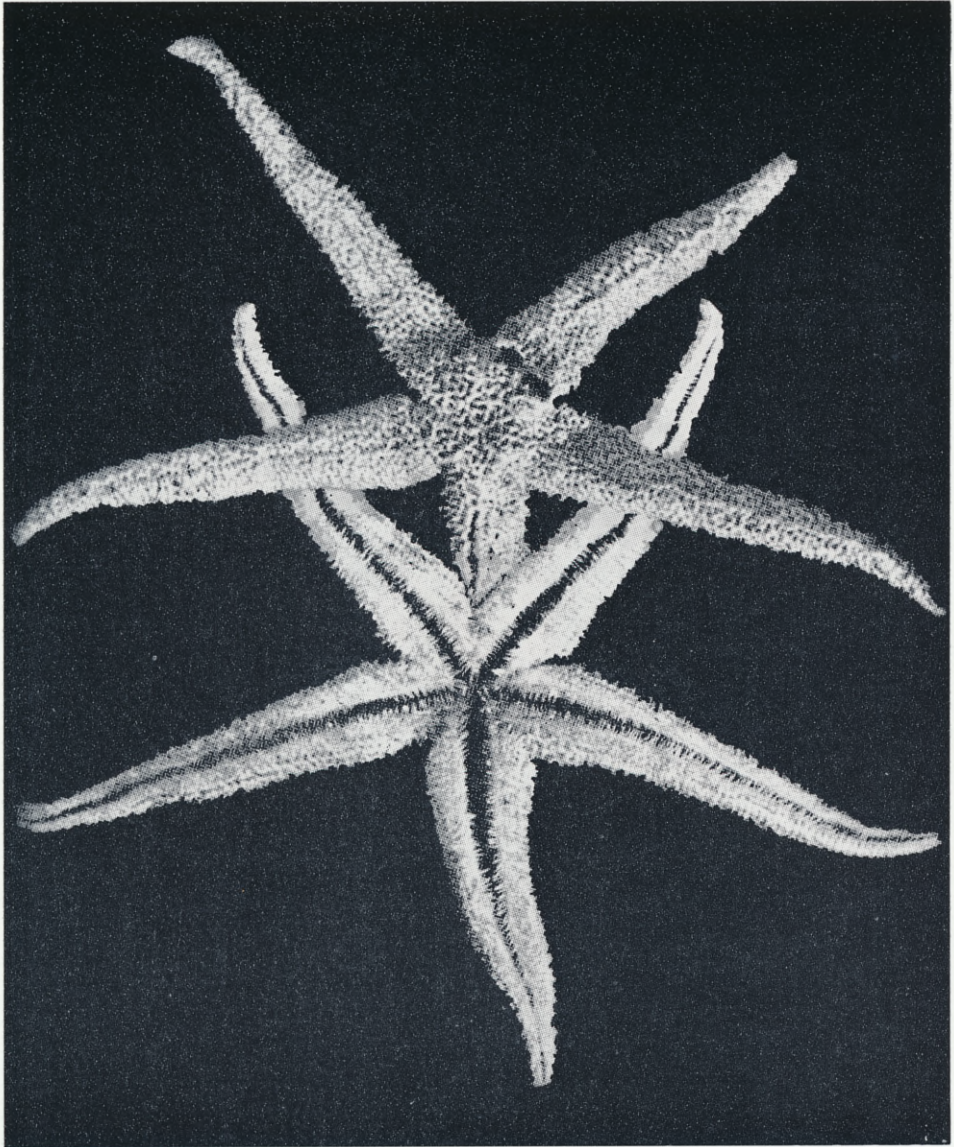
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Both abactinal and actinal plates bear at least one short spine, on the arms these measure between .75 and 1.5 mm long and terminate either in a rounded, smooth head or appear truncated; on the disc the spines are shorter, barely 1 mm high, with a globose and thorny head. In general, there is only one spine to a plate, though, especially on the disc, 3 or even 4 spines may occur close together (Fig. e).

Pedicellariae of two kinds, crossed and straight, occur scattered rather irregularly on the plates of the disc, arms and margin, and in general surround the papular areas. The straight pedicellariae are of two sizes, the larger being slender and lanceolate; the crossed pedicellariae have small terminal teeth.

The papular areas are irregular in size, and often appear confluent; the 12 to 25 papulae within an area are most obvious around the margin; distally the areas are smaller with fewer papulae. Each papula emerges from a distinct "collar" of membrane and is slender, pointed and translucent. The papulae are most obvious in the channel between the supero- and inferomarginal plates.

The madreporite is interradial in position, and it lies nearer the edge than the centre of the disc and immediately above the interradial septum. It is finely striated and oval, measuring 3.5 mm by 2 mm, approximately 12 spines surround it.



Pseudechinaster rubens gen. nov., sp. nov.

Abactinal surface (upper photograph) and actinal surface (lower photograph) of holotype.
 TEXT-FIG. 1.—*Pseudechinaster rubens* gen. nov., sp. nov. a and c, straight pedicellariae; b, oral plates, adoral carina and adambulacral plates, the spines have been removed. d, crossed pedicellaria; e and f, portion of abactinal surface; e, on the disc; f, midway along the arm. (a, c, d, e, f—from holotype; b—from paratype.) Abact. pl., abactinal plate; abact., sp. abactinal spine; adamb. pl., adambulacral plate; ad. car., adoral carina; oral pl., oral plate; oral sp., oral spine; pap. areas, papular areas; suboral sp., suboral spine.

The anus is central and the region is devoid of papulae and crowded with small granules and pedicellariae.

There are 4 longitudinal rows of actinal plates, each bearing at least 1 and sometimes 2 or 3 spines, which measure between 2 and 3 mm in length. The spines may be somewhat flattened and truncated distally and are often thorny. Both straight and crossed pedicellariae and small papulae are present.

There is a short adoral carina composed of 2 postoral adambulacral plates which are in contact by their interradial margins. The adambulacral plates immediately distal to the oral plate are large, with 2 subambulacral spines disposed irregularly (Fig. b). The adambulacral plates, which extend well into the furrow, bear a transverse row of 2 to 4 spines. In the proximal region generally only 2 spines are present, and they measure 4 mm in length and 1 mm broad; they may be somewhat flattened, expanded and divided towards the tip; distally the spines are smaller, generally 3 in number, and they seldom exceed 3 mm. The innermost spine generally projects over the furrow. On the furrow margin of each adambulacral plate both small and large straight pedicellariae occur; crossed pedicellariae are absent.

The adambulacral furrows are wide proximally and become narrow in the distal regions. The slender tube feet, each with a distinct sucking disc, are quadriserial.

Each oral plate bears 6 spines. Of these 4 are similar to, though longer than, the adambulacral spines, 2 at the proximal margin and 2 suboral. On the proximal margin of the oral plate, within the mouth, there are also 2 smaller spines. The actinostomial ring is sunken. The gonads appear to open ventrolaterally.

HOLOTYPE. Zoology Museum, Victoria University of Wellington, New Zealand. $R = 130$ mm, $r = 18$ mm, $R/r = 7.22$. Breadth of arm at base 30 mm.

PARATYPES $R/r = 5.36$ to 7.50 mm; mean for 8 specimens 6.5 mm; breadth of arm at base 24 to 32 mm; mean for 8 specimens 26 mm.

MATERIAL EXAMINED. Nine specimens collected by Mr F. Abernethy, from the vicinity of Cape Campbell, Cook Strait, March, 1957. Depth, 55 to 63 fathoms (102 to 116 metres).

COLOUR. "Bright salmon red all over." Straw coloured when dried, ex. formalin.

VARIATIONS. Among the nine specimens examined there are no meristic variants: in one specimen, however, the arms vary in length. The carinal series is variously developed, being most apparent in the larger specimens.

DISCUSSION

This species has been confused for many years with *Echinaster farquhari* which Benham described in 1909. In his description Benham stated (p. 98), "I see no pedicellariae anywhere," and as distinct straight and crossed pedicellariae occur in *Pseudechinaster rubens* it is obvious that it must be referred to the Forcipulatida. Although Benham's type material cannot now be traced, we must assume that his statement regarding the pedicellariae is correct. Therefore the present specimens represent a new species. Of the two Forcipulate genera which have the facies of *Echinaster*, none can accommodate the species, which requires, therefore, a new genus.

The new genus appears closely related to the South African genus *Perissasterias* H. L. Clark. It differs in lacking wreaths of pedicellariae round the abactinal spines, and in the form of these spines which tend to be truncated rather than subacicular. It also closely resembles the Northern Hemisphere genus *Stichastrella* but differs in having abactinal spines rather than granules. One other forcipulate genus of echinasterid facies is *Anteliaster* Fisher, which differs, however, in lacking the adoral carina.

ACKNOWLEDGMENTS

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