



New species and a new record of sea cucumbers from deep waters of the South African temperate region (Echinodermata: Holothuroidea)

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Abstract

Two new species, *Pseudostichopus langeae* and *Psolus griffithsi*, and a new South African record, *Molpadia musculus* Risso, are described from some deep-sea material collected off the South African west and south coasts. This material also contains the well known *Pseudocnella insolens* (Théel), *Ocnus capensis* (Théel), *Rhopalodinospis capensis* Heding and an indeterminate *Thyone* sp.

Key words: Holothuroidea, Synallactidae, Molpadiidae, Phylloporidae, Psolidae, South Africa, new species, new records

Introduction

Subsequent to the writer's last paper on "Additions to the holothuroid fauna of the southern African temperate faunistic provinces, with descriptions of new species" (Thandar 2008), a few more species from deep waters of the South African temperate region have come to light from material sent to the writer by Prof. Charles Griffiths and Ms. Louise Lange of the University of Cape Town, South Africa. The material, trawled between 84–407 m, off the South African south and west coasts, although scant, reveals the presence of two new species, a new record of *Molpadia musculus* Risso, an indeterminate *Thyone* sp and the well known *Pseudocnella insolens* (Théel), *Ocnus capensis* (Théel) and *Rhopalodinospis capensis* Heding. The two new species are described as *Pseudostichopus langeae* and *Psolus griffithsi*. In addition, this paper also describes the new *Molpadia musculus* record and the indeterminate *Thyone* sp.

Order Aspidochirotida Grube, 1840

Family Synallactidae Haeckel, 1896

Genus *Pseudostichopus* Théel, 1886

Pseudostichopus langeae n. sp.

Figures 1 & 2

Diagnosis. Length up to 60 mm; colour off-white. Mouth ventral, tentacles about 20; anus sub-ventral. Encrustations include sand grains, broken shells, coral debris, echinoid spines and foraminifera but no pteropod shells or sponge spicules. Podia thin, mostly on dorso-lateral radii. Polian vesicle single. Ossicles only in tentacles, podia, respiratory trees and gonad. Tentacle and podial ossicles as slender, curved rods with

mostly spinulated, rarely branched, sometimes perforated ends. Gonad and respiratory tree ossicles mostly as x- or y-shaped rods with central thickening and tapering branches, sometimes straight, c- or s-shaped bodies, sometimes irregularly branched. Pygal lobes without deposits.

Etymology. This species is named after its collector Louise Lange of the University of Cape Town for making the material available to me.

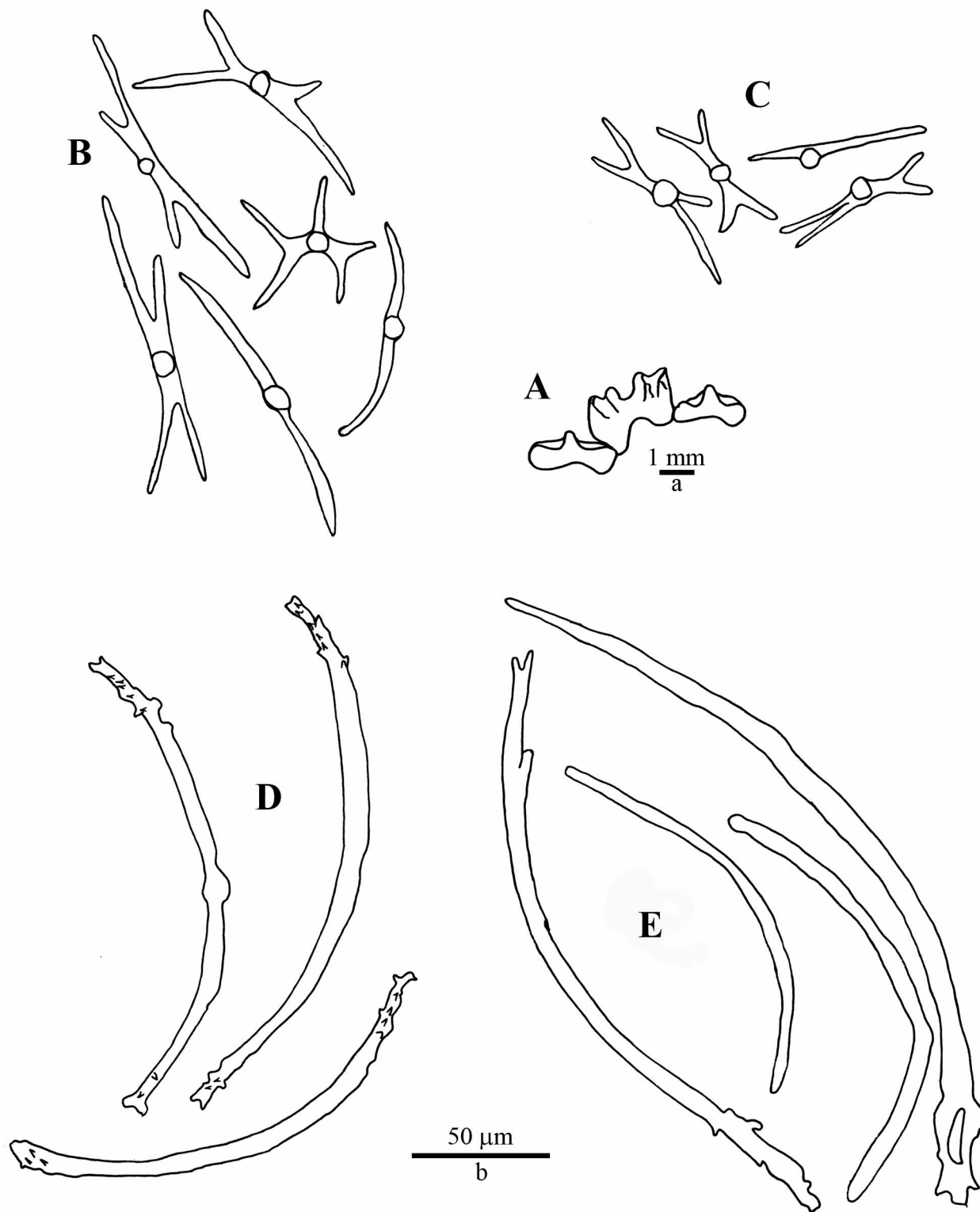


FIGURE 1. *Pseudostichopus langeae* n. sp. A. part of calcareous ring ; B branched and unbranched rods from gonad; C. same from respiratory tree; D. rods from podia; E. rods from tentacle. A. scale a; rest scale b.

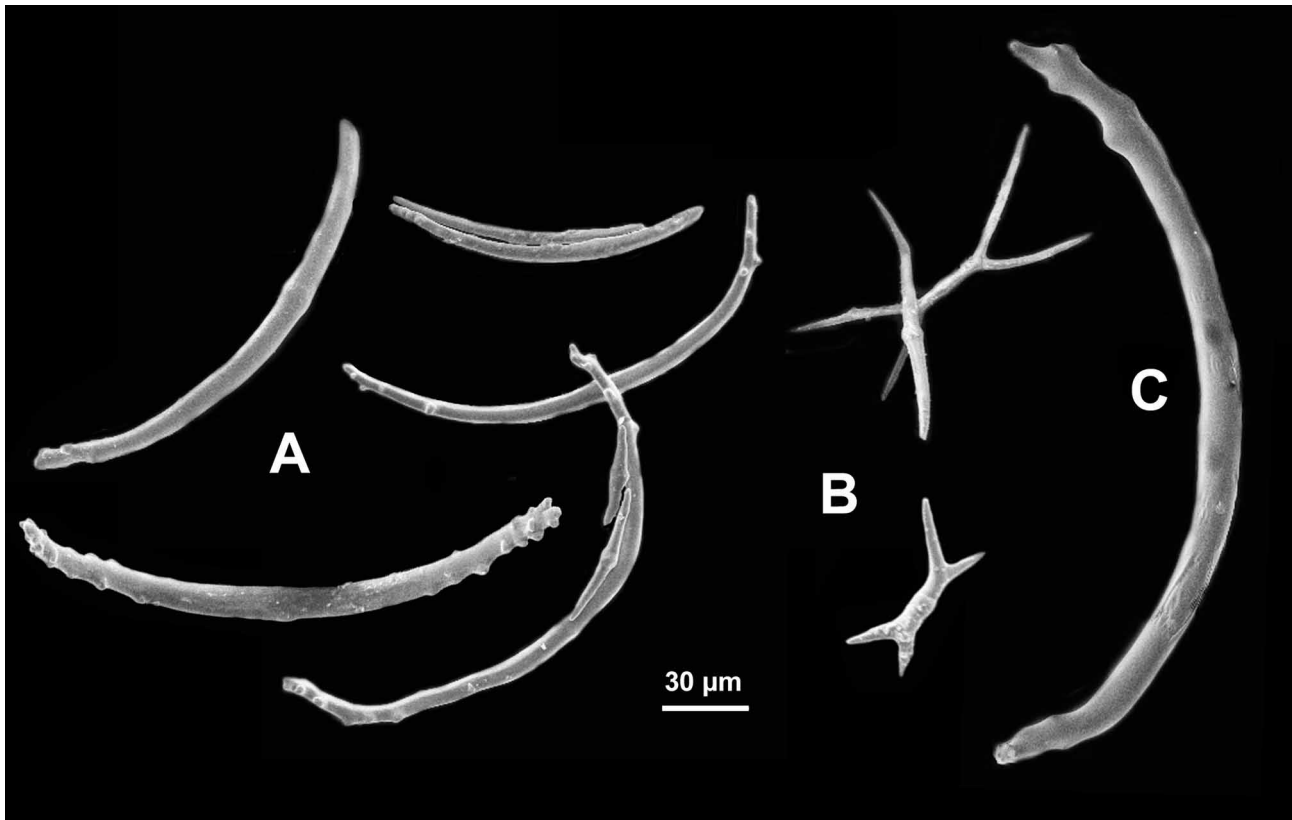


FIGURE 2. *Pseudostichopus langeae* n. sp. SE micrograph. A. Rods from tentacle; B. rods from gonad (above), respiratory tree (below); C. rod from podium. All to same scale.

Material examined. Holotype, SAM-A28041, 'Africana 232', Trawl 11, St. 27333, south coast (36° 18'S, 20° 10'E), 186 m, 05.iv.2007, Louise Lange; Paratype, SAM-A28042, same data as holotype; paratypes, SAM-A28043, 'Nansen 401', Trawl T025, St. 1311, west coast (34° 28'S, 59.1° 34'E), 333 m, 15.i.2007, Louise Lange, 2 spec.

Description of holotype. Specimen partially eviscerated, one respiratory tree and part of another projecting out from anus. Length 42 mm, breadth in mid-body 6 mm, anterior and posterior ends of approximately same diameter. Colour, in alcohol, uniformly off-white. Body form sub-cylindrical but ventral surface only slightly flattened and dorsal only slightly arched, with longitudinal ridges and depressions throughout length, perhaps due to preservation. Mouth ventral, encircled by a narrow collar, tentacles approximately 20, distinctly peltate, protruding through mouth, each tentacle about 1 mm long and disc about 1 mm in diameter. Anus sub-ventral, pygal furrow conspicuous from both dorsal and ventral surfaces. Body wall encrusted with sand grains, small stones, broken shells, coral debris, echinoid spines, foraminifera, all easily rubbed off; pteropod shells and sponge spicules absent. Body wall thick, leathery.

Podia thin, non-retractile, microscopic, numerous, mostly developed in the paired radii, especially dorso-laterally, none in ventral radius. Each podium slightly expanded terminally but sucker and end-plate absent, largest podium 2 mm long.

Calcareous ring (Figure 1 A) delicate, radial plates sculptured, each with an anterior notch and a concave posterior margin; interradial plates also slightly sculptured with a shallow posterior concavity and an anterior tooth-like projection with the tooth lying in the middle of paired ridges. Polian vesicle single, sac-like; stone canal not detected. Gonad (testis) as tuft of unbranched tubules arranged serially along entire length of stolon. Longitudinal muscles thick, partially paired, folded, appearing cylindrical. Respiratory trees well branched, yellowish, one longer than the other, but reaching only anterior third of body. Stomach filled with foraminifera, sand grains, coral debris, etc.

Ossicles present only in tentacles, podia, respiratory trees and gonad. Tentacle ossicles as slender curved rods (up to 300 μm long), ends rarely branched, mostly spinulated, sometimes perforated once or twice (Figures 1E, 2A). Podial ossicles of same form (up to 200 μm) (Figures 1D, 2C), arranged concentrically along length of podium, end-plates absent. Gonad ossicles (up to 120 μm) (Figures 1B, 2B) mostly branched, in the form of smooth x- or y-shaped rods with a central thickening, with each branch always tapering to a point, rods rarely branched more than once or not at all, then appearing as straight or as c- or s-shaped bodies, always with central thickening. Respiratory trees with similar but smaller and sparser deposits (up to 70 μm) (Figures 1C, 2B). Pygal lobes and longitudinal muscles without deposits.

Description of paratypes (SAM-A28043). Body form as in holotype but one specimen with longitudinal folds forming ridges and furrows all along length, perhaps an artefact of preservation. Colour dull-greyish to creamish-white, length 50–60 mm, width in mid-body 8–10 mm. Tentacles 17–19. Encrustations as in holotype, but scarce in one individual. Podia mostly in the ventro-lateral radii, in double rows, none dorsally or mid-ventrally, filiform, 1.5–2.0 mm in length, suckers and end-plates absent. Both dissected specimens without most of the internal organs except for some remains of the gut, part of the respiratory trees and in one specimen, a small portion of the gonad. Ossicles as in holotype.

SAM-A28043 (spec 1): tentacle rods 100–360 μm (mean 192 μm , SD \pm 78.4, n = 25), podial rods 50–150 μm (mean 117 μm , SD \pm 19.5, n = 25).

SAM-A28043 (spec 2): tentacle rods 120–450 μm (mean 251 μm , SD \pm 93.3, n = 25), podial rods 120–200 μm (mean 152 μm , SD \pm 17.9, n = 25).

Distribution. South and west coasts of South Africa, 186–333 m.

Remarks. The pygal-furrowed synallactids were recently reviewed by O’Loughlin and Ahearn (2005). Although their synonymies appear far too sweeping, they were the first to critically look at this rather difficult taxon, examining numerous type and other materials from various institutions. They describe some new species, present several new combinations and provide a well-constructed key to the group. In fact, their revision is the most comprehensive yet done on a group which offers so few diagnostic features. The southern African material does not appear to be referable to any of the nominal species. It keys down close to *P. occultatus* Marenzeller, 1893 from the Mediterranean Sea and the North-East Atlantic Ocean and to the virtually cosmopolitan *P. peripatus* (Sluiter, 1901) with its numerous synonyms. However, it does not appear to be identical to any one of these two species. It differs from the former in the absence of a lateral brim, presence of gonad ossicles, the absence of pygal lobe ossicles and podial end-plates and from the latter in the absence of a dorso-ventrally depressed body, absence of serrated ventro-lateral margins and the type of gonad ossicles. The distinguishing features of the new species are the presence of characteristically branched x- and y-shaped rods with central thickening and tapering branches in the gonad and respiratory trees, the absence of sponge spicules and pteropod shells in its encrustations, and the absence of papillae or tuberosities on the body wall, ossicles in the pygal lobes and end-plates in the podia.

Order Molpadida Haeckel, 1896

Family Molpadiidae Müller, 1850

Genus *Molpadia* Risso, 1826

Molpadia musculus Risso, 1826

Figure 3

Molpadia musculus Risso, 1826: 293; H.L. Clark, 1907: 165, Pl. 11; Pawson, 1977: 100, text-figs: 1, 2, 3, 4a–c, e, Map 1 (synonymy).

Material examined. SAM-A28044, ‘Nansen 404’, Trawl TO16, west coast of South Africa (33° 53.7’S, 17°