




PHYLUM: ECHINODERMATA

Authors

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Citation

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Phylum: ECHINODERMATA

Starfish, basket stars, brittle stars, sea urchins, feather stars and sea cucumbers

Echinoderms, meaning 'spiny skin', are easily recognised by their distinctive adult radial symmetry (five-point or multiples of five), calcareous projections (spiny or warty) and the absence of a clear anterior end or head, except in the sea cucumbers which have become secondarily bilaterally symmetrical. They occur exclusively in marine environments and are found at all known depths and in all habitats. Echinoderm larvae are free-living, with growth generally occurring on the left side of the body at the expense of the right side, arranging itself into five parts either in a simple contour, rounded to cylindrical or star-like with arms radiating from a central disc. Some classes include specialised skeletal elements such as sea urchins, which make use of an "Aristotle's lantern" for grinding food, and sea cucumbers, which have a "calcareous ring" for tentacle and muscle attachment.

Many echinoderms have significant regeneration powers which are used for regular replacement of damaged limbs, spines or internal organs that may be released in response to predation and/or rejuvenation. Regeneration can also occur during asexual reproduction in all classes except Crinoidea (feather stars). All echinoderms also reproduce sexually and release sperm and egg cells into the water column where fertilisation takes place. This event is often synchronised according to lunar cycles and some species will often aggregate during this time.

The primary form of locomotion in echinoderms involves the use of tube feet whose ends are shaped like suction pads, often with some stickiness caused by mucus secreted to aid adhesion. This locomotion is assisted by a water vascular system. Feeding modes vary within the echinoderm classes, ranging from filter and deposit feeding and grazing to active hunters and scavengers. Echinoderms are often preyed upon by crabs, sharks, sea birds and even other echinoderms. They employ several defensive strategies including the presence of spines and toxins to protect themselves.

Globally approximately 7 550 living echinoderms are recognised with recent efforts in South Africa increasing the known numbers of species from 410 in 2010 to 497 in 2018.

Class Asteroidea (Starfish)

Class Asteroidea includes all starfish or sea star species which are easily identified as star-shaped organisms, with five arms (sometimes more) which join to a central disc. Starfish should not be confused with brittle stars (Class Ophiuroidea). On the ventral side of the body of the Asteroidea, the arms and body cavity are open with tube feet protruding, while in the brittle stars, these are closed. Tube feet tips can be pointed or have solid round surfaces. Although they may superficially resemble suckers, the 'footprints' they leave show otherwise. Asteroidea may be smooth, granular or spiny and can be covered with overlapping plates. Skeletal support is provided by the ossicles of the body wall that often combine with those of the central disc, providing the starfish arms with a broad attachment area to the disc. These organisms are mostly opportunistic feeders preying on other benthic invertebrates. Starfish are predators and feed by expelling their stomach and digesting prey externally. Some starfish species feed on coral, sea fans or other anthozoa species and have been known to cause extensive damage to coral reefs and commercial oyster beds.

Class Crinoidea (Feather stars)

Crinoidea, also known as feather stars or sea lilies, are characterised by the mouth being located on the top surface surrounded by several (often more than five) feeding arms. Crinoids often have claw-like limbs (cirri) that allow them to attach and detach themselves from a substrate. Crinoids feed by filtering seawater using their feather-like arms, which are covered with sticky tube feet that trap food particles and carry them to the mouth area. Feather stars are preyed upon by sea urchins and some fish species.

Class Echinoidea (Sea urchins)

Echinoidea, commonly called sea urchins, are superficially categorised into 'regular' and 'irregular' forms. 'Regular' sea urchins have a globular test, with their mouth (having a set of teeth known as Aristotle's lantern) situated on the ventral side of the animal. Most 'regular' sea urchins are grazers thus evolution of a ventral mouth ensures successful feeding. 'Irregular' sea urchin forms generally have a more flattened test and tend to burrow in soft

sediments. Many sea urchins cling onto rocks, however, some species live in sandy habitats and are known as burrowing urchins. Echinoids are preyed on by several species including lobsters, crabs, starfish, certain linefish and octopus. The eggs and larvae of sea urchins are preyed upon by zooplankton and suspension-feeding invertebrates like hydroids, anemones, and bivalves. Echinoids have developed defensive mechanisms such as spines and toxins to prevent extensive damage to individuals. Echinoids contribute ecological value to benthic ecosystems as grazing by sea urchins maintains algal populations, which allow reef ecosystems to thrive, while the burrowing species facilitate the release of nutrients from benthic sediments.

Class Holothuroidea (Sea cucumbers)

The class Holothuroidea includes all sea cucumbers, identified by their reduced endoskeleton and bilateral symmetry. Sea cucumbers are often slow-moving animals, only able to move by burrowing through the sand, creeping along the surface with short tube feet, or "swimming" via rhythmically contracting and flexing their body. Most sea cucumbers are suspension or deposit feeders, the latter consume large amounts of sediment, absorbing the organic matter, while the rest is excreted. Many sea cucumbers spend most of their lives in cracks, hollows and burrows and will often not move far after settling. Holothuroidea have several predators such as crabs, fish, crustaceans, sea turtles and sea stars. As a defence and/or rejuvenation mechanism some sea cucumbers expel their gut (evisceration) and a few other organs, only to rejuvenate them later. Many tropical-subtropical forms expel sticky Cuvierian tubules which can extend considerably to entangle their prey or any species tampering with them.

Class Ophiuroidea (Basket and brittle stars)

Brittle and basket stars are closely related to starfish and can be identified by their five or more long, simple or branching arms which are sharply marked off from the central body disc. They are highly mobile and crawl across the seabed by means of their supple arms, unlike starfish that use tube feet. Brittle and basket stars have various modes of feeding, with most being scavengers, detritus feeders or filter feeders. The mouth is located on the underside of the disc, which has a complex toothed-jaw formed from skeletal plates. Ophiuroids play an important role within the marine ecosystem, often forming symbiotic relationships with other marine species such as corals, gorgonians and algae.

Collection and preservation

Specimens should be preserved in 80-90% ethanol and 96% ethanol for molecular studies. If the climate is not excessively humid, specimens can be preserved in 96% ethanol and later dried for storage.

Although not always necessary, but if possible, specimens can be relaxed before preservation by placing them in a mixture of seawater and magnesium chloride or menthol crystals, for a few hours. Caution should be taken when handling these animals as they readily detach their arms as a defence mechanism, thus damaging the specimen. Holothuroidea specimens should be relaxed by placing the specimen in a mixture of seawater and magnesium chloride. The solution must have a weak concentration of magnesium chloride to prevent the organisms from eviscerating their organs. The solution can be made stronger over time, which will ultimately kill the animal. Specimens can be stored and preserved wet or dry. Specimens should initially be preserved in 70-96% ethanol.

References

Bather FA. 1900. The Echinodermata. Part iii, A and C. *A Treatise on Zoology* (RR Lankester, ed.). Black, London.

Carnevali MDC. 2006. Regeneration in Echinoderms: repair, regrowth, cloning. *Invertebrate Survival Journal* 3: 64-76.

Hyman LH. 1955. *The invertebrates: Echinodermata, the coelomate bilateria*. Volume IV. The McGraw-Hill Companies, London.

Jones G. 2008. *A field guide to the marine animals of the Cape peninsula*. Southern Underwater Research Group Press, Hout Bay, Cape Town. (271pp.)

Lawrence JM. 1975. On the relationships between marine plants and sea urchins . *Oceanographic Marine Biological Annual Review* 13: 213–286.

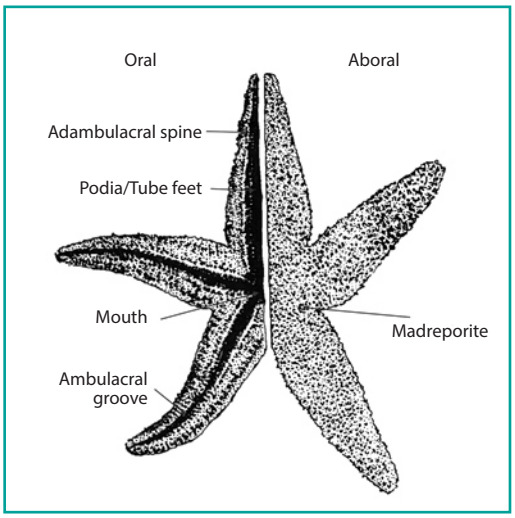
Moore J. 2006. *An Introduction to the Invertebrates*. Cambridge University Press, 2nd edition, doi: 10.1017/CBO9780511754760.

Nichols D. 1961. A comparative histological study of the tube-feet of two regular echinoids. *Journal of Cell Science*, 3(58): 157-180.

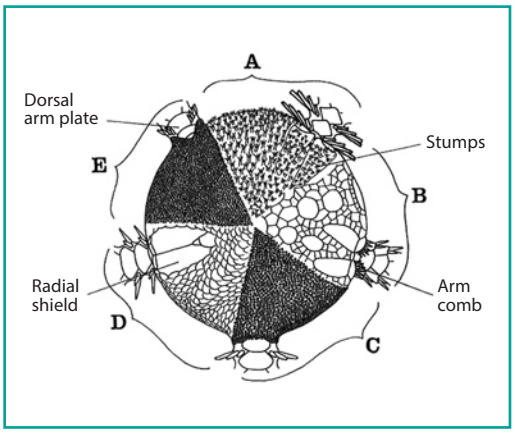
Pawson DL. 2007. Phylum Echinodermata. *Zootaxa* 1668(1):749-764.

Smith AB. 1984. Classification of the Echinodermata. *Paleontology* 27(3):431-459.

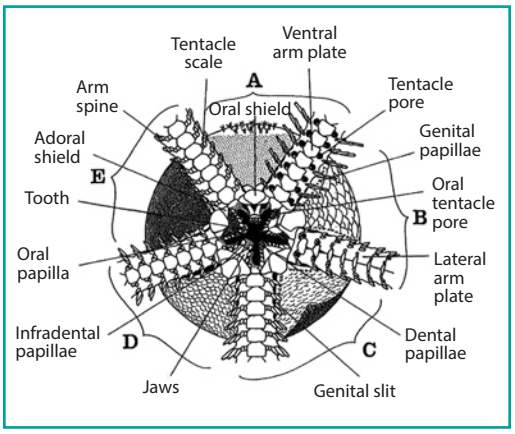
Asteriodea body plan (General FB code STARFS):



Ophiuroidea body plan (General FB code OPHIUR):



Composite diagram showing characters of the **dorsal** surface of the disc in the following families: A) Ophiotrichidae, B) Ophiuridae, C) Ophiocomidae, D) Amphiuridae and E) Ophiodermatidae. Adapted from Clark and Rowe (1971).

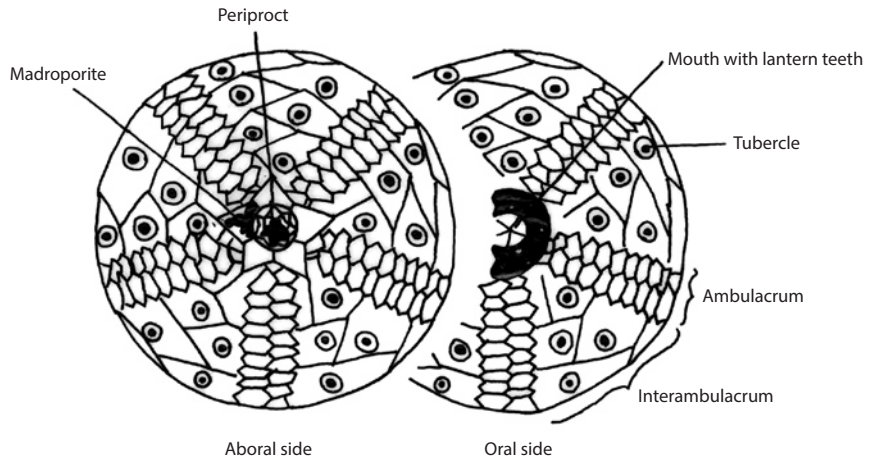


Composite diagram showing characters of the **ventral** surface of the disc in the following families: A) Ophiotrichidae, B) Ophiuridae, C) Ophiocomidae, D) Amphiuridae and E) Ophiodermatidae. Adapted from Clark and Rowe (1971).

Reference:

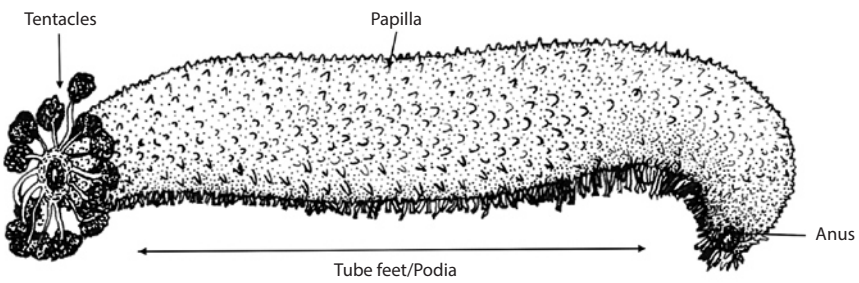
Clark AM and Rowe FWE. 1971. *Shallow-water Indo-West Pacific Echinoderms*. Pitman Press, Bath. 238 pp. Reproduced with permission.

Echinoidea body plan (General FB code URCHIN):



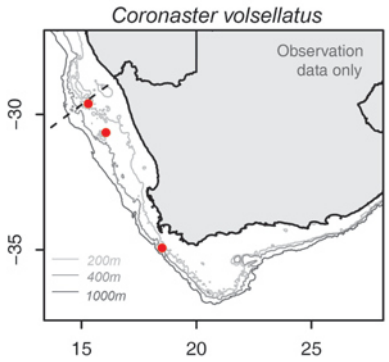
Composite diagram showing features of the dorsal and ventral surfaces of a general Echinoidea body plan.

Holothuroidea body plan (General FB code CUMBER):



Coronaster volsellatus (CorVol)

Phylum:	Echinodermata
Class:	Asteroidea
Order:	Forcipulatida
Family:	Asteriidae
Genus:	*Coronaster*
Species:	*volsellatus*
Common name:	False brisingid/Spiny pom-pom starfish



Distinguishing features

Characterised by having a small, circular disc, sharply differentiated from long, slender, slimy and usually deciduous arms (arms readily fall off, look for parts in catch!), always more than five arms, usually up to 11 arms. Arms and body surface covered by sharp spines, each with a tuft or "pom pom" of pedicellariae. Tube feet suckered in two rows. Skeleton is a delicate mesh, often reduced to scattered plates. Brisingid species are unlikely to be whole when landed in a trawl net, any parts should be recorded.

Colour

Orange and white patterning, salmon coloured to red.

Size

Usually ± 110 mm radius, i.e. 220 mm arm tip to arm tip (diameter), but recorded up to 630 mm diameter.

Distribution

West Coast of South Africa. Depth from 250-300 m and likely deeper.

Similar species

Brisingid *Stegnobrisinga splendens*, which has a more rigid, less slimy body.

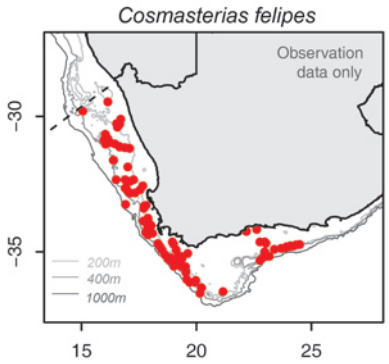
References

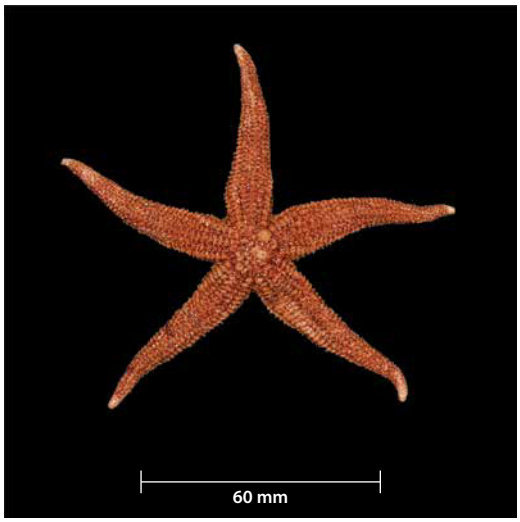
Clark AM and Downey ME. 1992. *Starfishes of the Atlantic (Volume 3)*. Chapman and Hall: London. pp. 459-461 (794pp.).

Species confirmed by Dr C. Mah, Smithsonian, Washington, June 2015.

Cosmasterias felipes (Sticha)

Phylum:	Echinodermata
Class:	Asteroidea
Order:	Forcipulatida
Family:	Stichasteridae
Genus:	*Cosmasterias*
Species:	*felipes*
Common name:	Indistinct star





Distinguishing features
Plates on upper surface in regular longitudinal rows, arm tips paler in colour, distinct madreporite located off-centre. Coarse texture. Arms usually readily detach from centre disc once out of water. Four rows of tube feet evident, characteristic of all Asteriidae family.

Colour
Brown, pink to orange, with pale tips of arms.

Size
Up to 100 mm diameter, but frequently smaller.

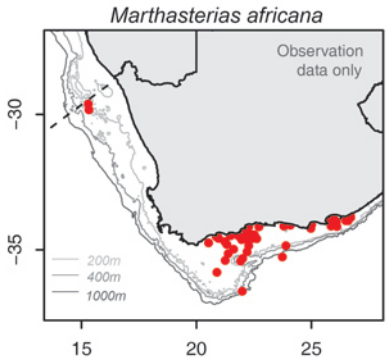
Distribution
West and South Coasts of South Africa. Depth from 79-373 m.

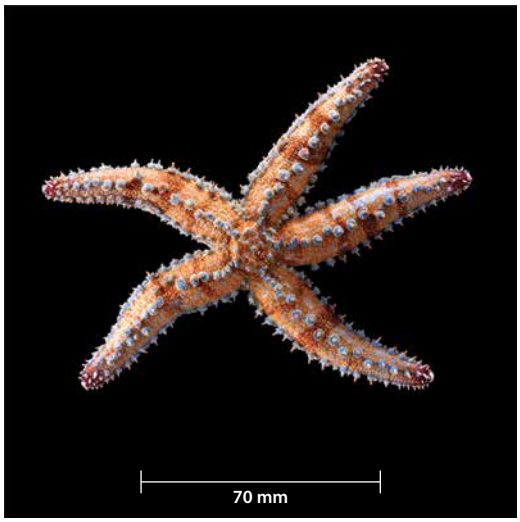
Similar species
Perissasterias polyacantha, but *Cosmasterias felipes* is smaller, firmer, rigid in texture and less 'spiny'.

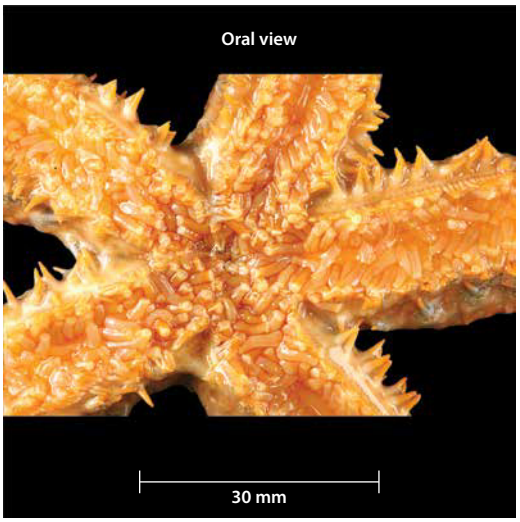
References
Clark AM and Downey ME. 1992. *Starfishes of the Atlantic (Volume 3)*. Chapman and Hall: London. pp. 428-429 (794pp.).

Marthasterias africana (Mart)

Phylum:	Echinodermata
Class:	Asteroidea
Order:	Forcipulatida
Family:	Asteriidae
Genus:	*Marthasterias*
Species:	*africana*
Common name:	African spiny starfish







Distinguishing features

One row of distinct, solid spines projecting all along midradius (carina) of each arm. Other aboral spines also present. Spines have rosettes of pedicellariae encircling spines. Small disc with long, chunky arms. Four rows of tube feet, each with a sucker disc. Five long, tapering arms. Marginal plates inconspicuous. Has tiny red dot on tip of each arm. Legs break off quite easily with handling. Four rows of tube feet evident, characteristic of all Asteriidae family.

Colour

Brick red to orange or blue-grey with spines mostly orange in colour. Tips of arms usually deeper maroon colour.

Size

Up to 180 mm radius sampled.

Distribution

Southern African endemic. West and South Coasts of South Africa; depth from 50 to 150 m, possibly deeper.

Similar species

Sclerasterias spp. appear similarly spiny and similar in shape, but *M. africana* has larger, distinct midradial spines along each arm.

References

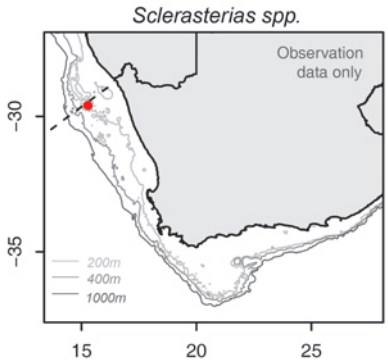
Branch GM, Griffiths CL, Branch ML and Beckley LE. 2016. *Two Oceans. A guide to the marine life of southern Africa*. Fourth Edition. Struik Nature, Cape Town. p. 226.

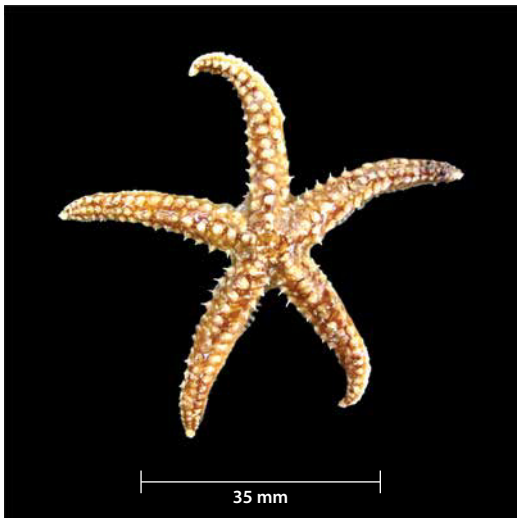
Clark AM and Courtman-Stock J. 1976. *The Echinoderms of Southern Africa.* British Museum (Natural History): London. p. 94 (as *Marthasterias glacialis*). (277pp.).

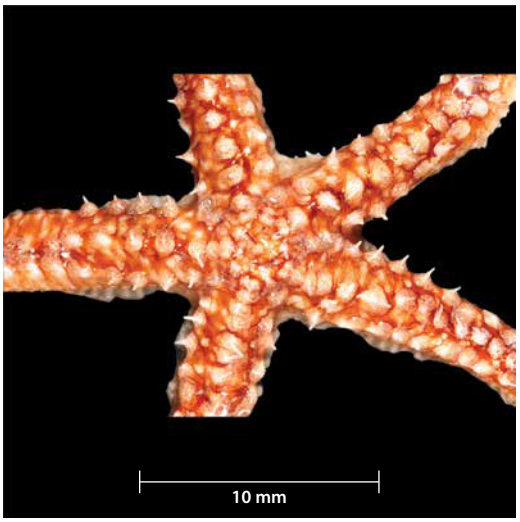
Wright AG, Pérez-Portela R and Griffiths CL. 2016. Determining the correct identity of South African Marthasterias (Echinodermata: Asteroidea). *African journal of marine science*, 38(3), pp.443-455.

Sclerasterias spp. (SclEus)

Phylum:	Echinodermata
Class:	Asteroidea
Order:	Forcipulatida
Family:	Asteriidae
Genus:	*Sclerasterias*
Species:	spp.
Common name:	Small spiny starfish







Distinguishing features
Main radius of each arm has an array of distinct spines along the arm which are smaller in size than those of *Marthasterias africana*, but are more numerous in *Sclerasterias* spp. This species is generally smaller in size and has a more slender body shape. The midradial spine (carina) is not as large or distinct as that of *Marthasterias africana*. *Sclerasterias* species usually have distinct brown to red to purple colouration. Four rows of tube feet evident, characteristic of all Asteriidae family.

Colour
Brick red to orange/brown, with white spines.

Size
Up to 60 mm diameter.

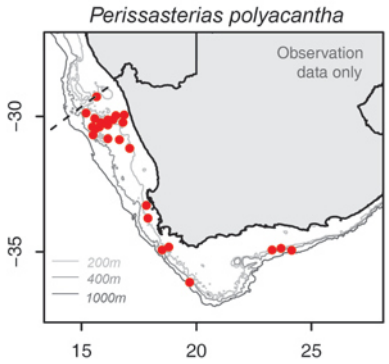
Distribution
West Coast of South Africa, but seldom encountered.

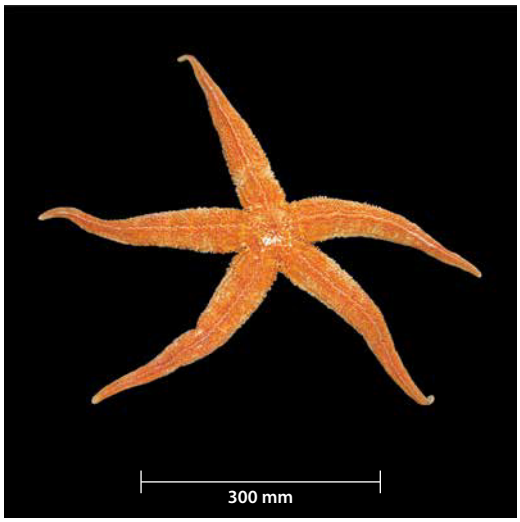
Similar species
Marthasterias africana, but *Sclerasterias* spp. spines are more equal in size than the distinctly larger central arm spine of *M. africana*.

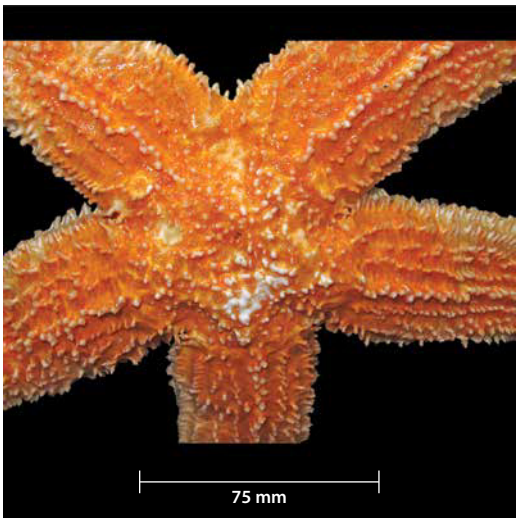
References
Mortensen T. 1933. *Echinoderms of South Africa (Asteroidea and Ophiuroidea): Papers from Dr Th. Mortensens's Pacific Expedition 1914–1916*, Videnskabelige Meddelelser fra Dansk Naturhistorisk Forening. 93: 215-400.

Perissasterias polyacantha (Cosmas)

Phylum:	Echinodermata
Class:	Asteroidea
Order:	Forcipulatida
Family:	Stichasteridae
Genus:	*Perissasterias*
Species:	*polyacantha*
Common name:	Very large orange star







Distinguishing features

Very large in size, arms usually break off easily or are broken off on disturbance. Can have five to seven arms. Marginal plates inconspicuous, tips of arms often curl. Four rows of tube feet, sharp spines lining rows of tube feet. Aboral surface (adambulacral plates) has middle ridge of spines (carina) distinctly enlarged and tipped white that are visibly larger and thicker than other spines. Six rows of spines either side of aboral spine ridge. Madreporite located nearer to arm than to disc centre.

Colour

Bright orange, with distinct white-tipped spines along midradial ridge.

Size

Average 200-300 mm radius from tips of legs if present. Up to 620 mm arm tip to arm tip, 70 mm disc, 280 mm arm length.

Distribution

West and South Coasts of South Africa.
Depth 96 to 760 m.

Similar species

Cosmastarias felipes, Marthasterias glacialis or *Sclerasterias* spp., but *Perissasterias polyacantha* has distinct white-tipped spines along midradial ridge.

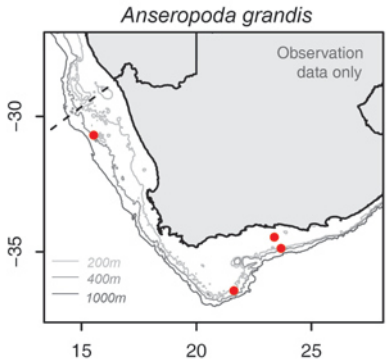
References

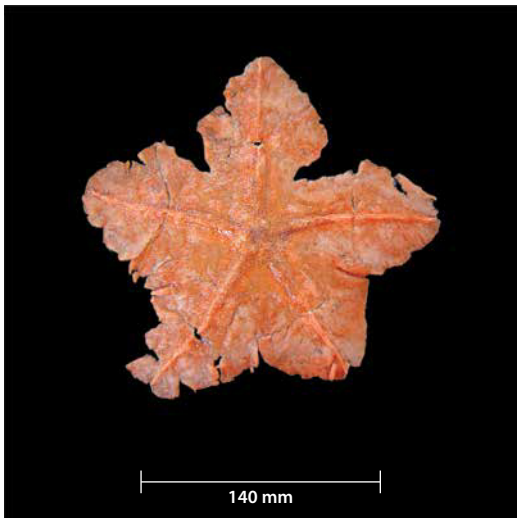
Clark AM and Downey ME. 1992. *Starfishes of the Atlantic (Volume 3)*. Chapman and Hall: London. pp. 445-446 (794pp.).

Species confirmed by Dr C. Mah, Smithsonian, Washington, June 2015.

Anseropoda grandis (AnsGra)

Phylum:	Echinodermata
Class:	Asteroidea
Order:	Valvatida
Family:	Asterinidae
Genus:	*Anseropoda*
Species:	*grandis*
Common name:	Pancake/Goosefoot star





Distinguishing features
Large in size (up to 300 mm diameter), flat and thin, flexible, but tears easily. Two rows of tube feet. Each arm has raised midradial ridge running the length of the arm. Shape described as a 'maple leaf-like'. Species is fragile and often breaks up easily in the trawl. Please keep a look out for fragments and record.

Colour
Orange.

Size
Up to 300 mm diameter.

Distribution
Southern African endemic. West and South Coasts of South Africa, up to Port Elizabeth. Depth from ± 275 to 315 m.

Similar species
None.

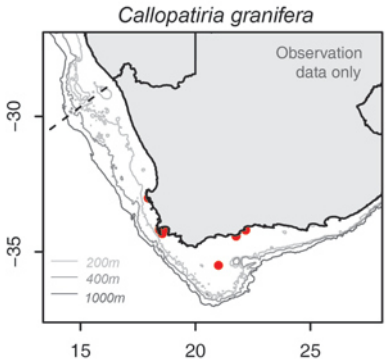
References
Clark AM and Courtman-Stock J. 1976. *The Echinoderms of Southern Africa*. British Museum (Natural History): London. pp. 75-76. (277pp.).

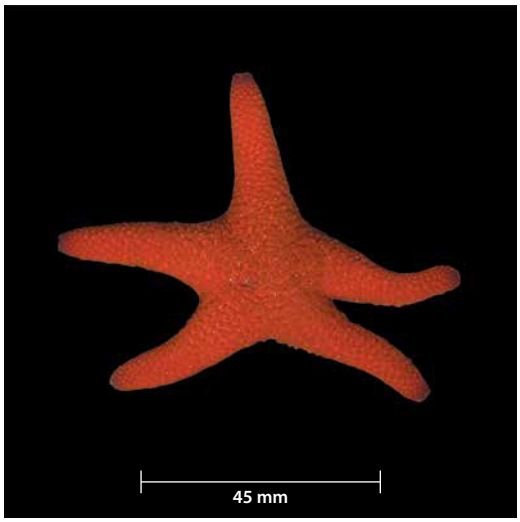
Clark AM and Downey ME. 1992. *Starfishes of the Atlantic (Volume 3)*. Chapman and Hall: London. pp. 174-17 (794pp.).

Mortensen T. 1933. *Echinoderms of South Africa (Asteroidea and Ophiuroidea): papers from Dr Th. Mortensens's Pacific Expedition 1914–1916*, Videnskabelige Meddelelser fra Dansk Naturhistorisk Forening. 93: 215-400.

Callopatiria granifera (CalGra)

Phylum:	Echinodermata
Class:	Asteroidea
Order:	Valvatida
Family:	Asterinidae
Genus:	*Callopatiria*
Species:	*granifera*
Common name:	Red starfish





Distinguishing features
Thick finger-like, blunt-tipped arms, almost semi-circular in cross-section. Granular texture on aboral surface said to resemble overlapping tiles.

Colour
Variable, some can be bright red to deep orange, or ranging to pale with darker patches. Usually has a lighter, paler shade on oral surface.

Size
Can reach up to 150 mm diameter.

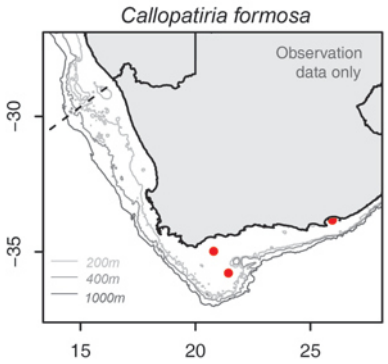
Distribution
Southern African endemic. Known to occur on West and South Coasts of South Africa, usually in shallow water to ± 90 m.

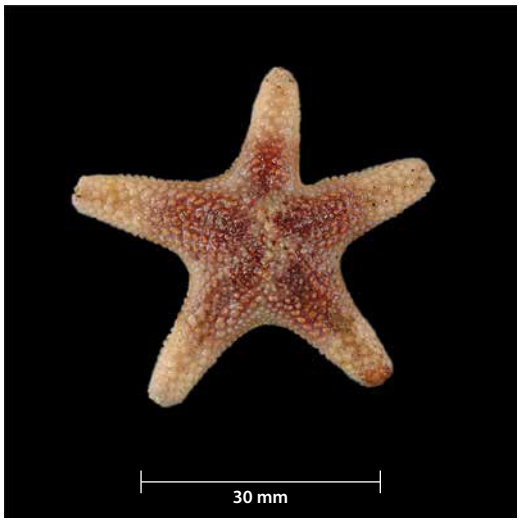
Similar species
Cushion star *Pteraster capensis*, but *C. granifera* has more distinct, longer arms. *Patiria stellifera* cushion star with more webbing between the arms.

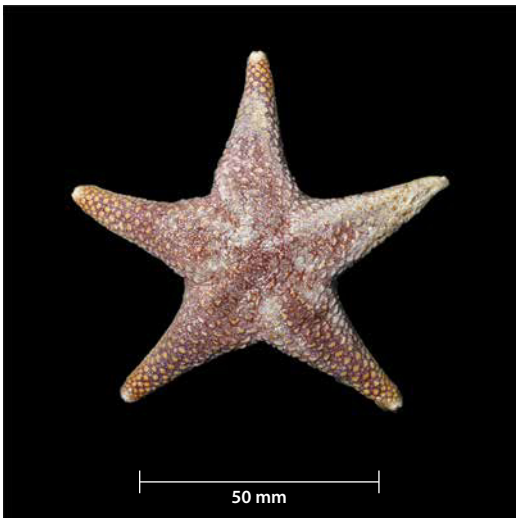
References
Clark AM and Downey ME. 1992. *Starfishes of the Atlantic (Volume 3)*. Chapman and Hall: London. pp. 190-192 (794pp.).

Callopatiria formosa (CalFor)

Phylum:	Echinodermata
Class:	Asteroidea
Order:	Valvatida
Family:	Asterinidae
Genus:	*Callopatiria*
Species:	*formosa*
Common name:	Purple starfish







Distinguishing features
Thick finger-like, blunt-tipped arms (some more than others), almost semi-circular in cross-section. Granular texture on aboral surface resembles overlapping tiles. Distal plates on arm tips are more enlarged and rounded than in *Callopatiria granifera*.

Colour
Blue-grey, purple to red, pale purple centrally grading to pale orange distally, underside white.

Size
Up to 80 mm diameter.

Distribution
Southern African endemic. West and South Coasts of South Africa. Previously only reported from False Bay, South Africa, 12-55 m depth. Verify identification and depth distribution needed.

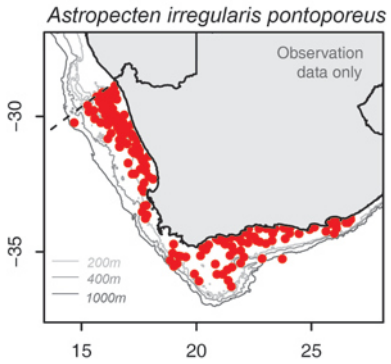
Similar species
Callopatiria granifera has no enlarged distal plates on arm tips and is orange to red in colour.

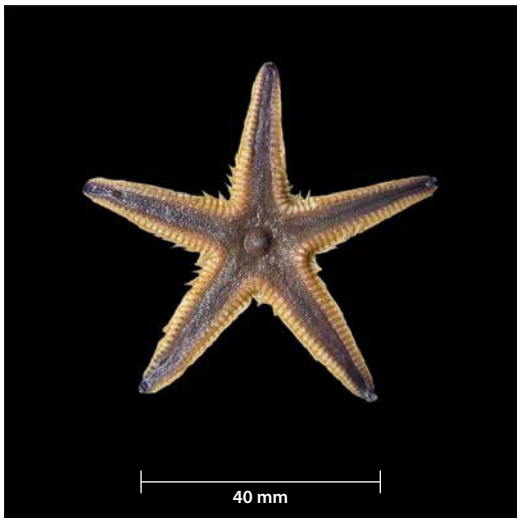
References
Clark AM and Courtman-Stock J. 1976. *The Echinoderms of Southern Africa*. British Museum (Natural History): London. pp. 78-79. (277pp.).

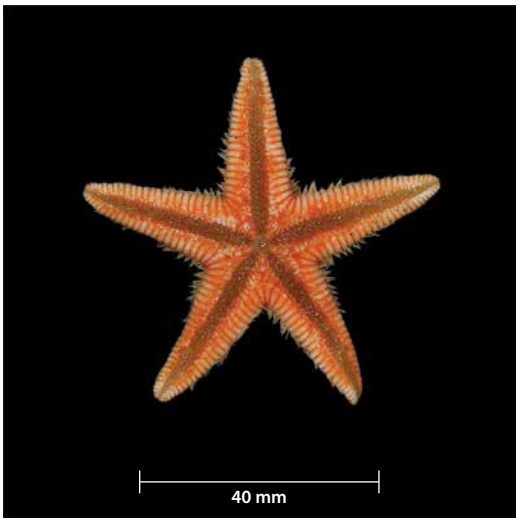
Species confirmed by Dr C. Mah, Smithsonian, Washington, June 2015.

Astropecten irregularis pontoporeus (AstPan)

Phylum:	Echinodermata
Class:	Asteriodea
Order:	Paxillosida
Family:	Astropectinidae
Genus:	*Astropecten*
Species:	*irregularis pontoporeus*
Common name:	Astropecten orange trim







Distinguishing features

Distinct marginal plates separated by grooves on aboral and oral sides. Lower marginal plates project beyond upper plates to form a distinct edge to disc and arms. Both series of marginal plates bear spines. Tube feet in two rows. Node in centre of disc sometimes raised (anal cone). Disc plates (paxillae) fine, often darker brown in colour, sometimes with distinct line down centre of each arm. Plates on upper surface with clusters of short spinelets. Madreporite in a slightly depressed area near marginal plate.

Colour

Pale orange to apricot/pink marginal plates, with darker pink/brown/mauve body. Distinct darker brown/purple lines along central aboral side of each arm. Often brighter orange bands separate each marginal plate. Pale cream colouring on oral side.

Size

Up to 90 mm diameter.

Distribution

Common on both West and South Coasts of South Africa; from 50 m to +200 m.

Similar species

Astropecten antares, which has shorter, wider, more petal-shaped arms. *A. irregularis pontoporeus* arms taper more and are longer.

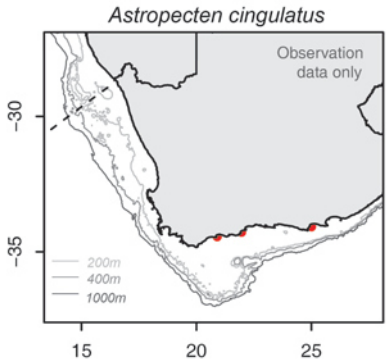
References

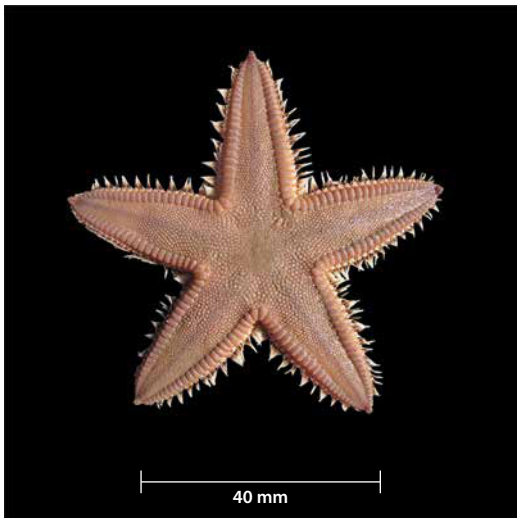
Clark AM and Courtman-Stock J. 1976. *The Echinoderms of Southern Africa*. British Museum (Natural History): London. pp. 50-51. (277pp.).

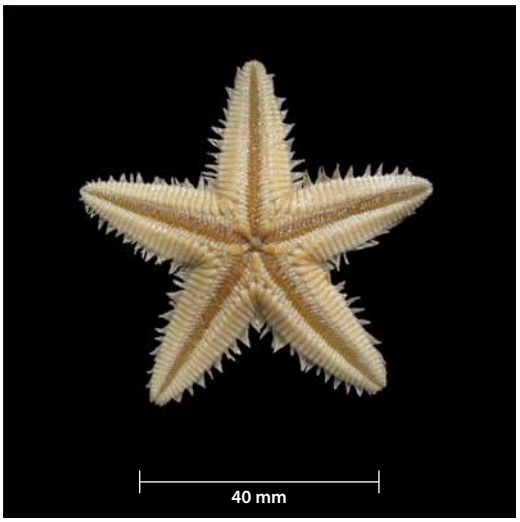
Clark AM and Downey ME. 1992. *Starfishes of the Atlantic (Volume 3)*. Chapman and Hall: London. pp. 25-44 (794pp.).

Astropecten cingulatus (AstAnt)

Phylum:	Echinodermata
Class:	Asteriodea
Order:	Paxillosida
Family:	Astropectinidae
Genus:	*Astropecten*
Species:	*cingulatus*
Common name:	Shallow water Astropecten







Distinguishing features
Has relatively short, petaloid (petal-like) arms and distinct marginal plates on both aboral and oral surfaces with distinctly elongated oral marginal plates. Lower marginal plates project beyond upper plates to form a distinct edge to disc and arms. A deeper mid-line colouration can be evident on the aboral disc plates (paxillae). Both series of marginal plates bear spines. Tube feet in two rows. Sometimes node raised in centre of disc (anal cone).

Colour
Dusty pink to brown/purple colouring on upper surface. The spines protruding from the marginal plate may be dark purple-brown but pale towards the tips. Pale cream colouring on oral side.

Size
Up to 90 mm diameter.

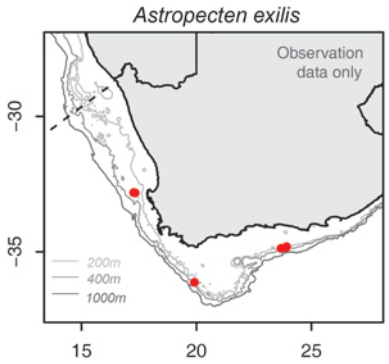
Distribution
This is a shallow-water species found more commonly on the South Coast of South Africa, from 0-65 m depth.

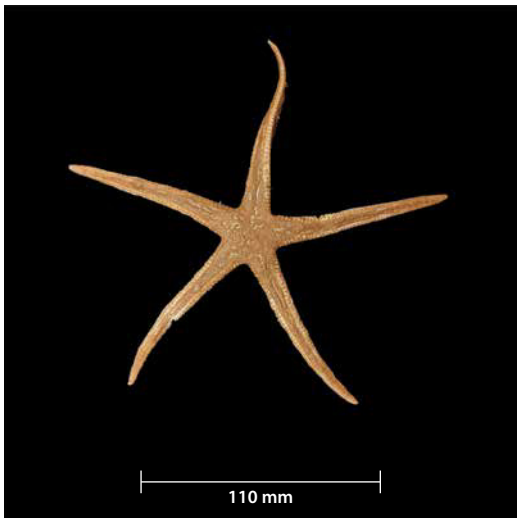
Similar species
Similar to *Astropecten irregularis pontoporeus*, but the marginal plates in *A. irregularis pontoporeus* are pale in comparison to *A.cingulatus*, which has petaloid arms and elongated oral marginal plates.

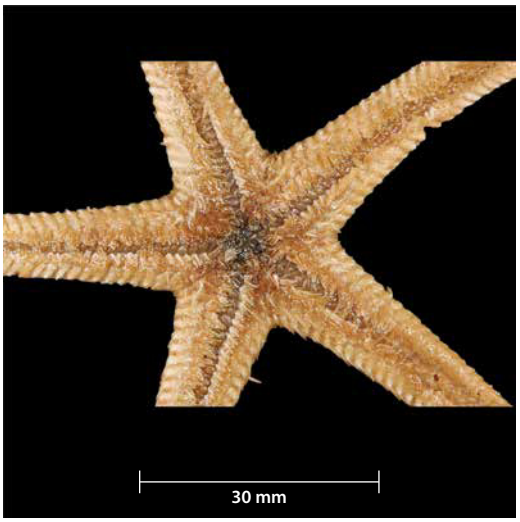
References
Clark AM and Courtman-Stock J. 1976. *The Echinoderms of Southern Africa*. British Museum (Natural History): London. p. 33. (277pp.).

Astropecten exilis (AstrLa)

Phylum:	Echinodermata
Class:	Asteroidea
Order:	Paxillosida
Family:	Astropectinidae
Genus:	*Astropecten*
Species:	*exilis*
Common name:	Long-arm Astropecten







Distinguishing features
Small disc; long, narrow tapering arms, flexible. Fine-grained aboral (top) plates, papillae-like. Distinct marginal plates on both aboral and oral sides. Three long spines on outer edge of oral marginal plate. Two rows of tube feet ending in a point, but without sucker disc.

Colour
Light brown in colour, marginal plates paler in colour.

Size
150 mm diameter.

Distribution
Previously recorded off Natal, however trawl specimens found along West and South Coasts of South Africa. Depth from 180 m to ±250 m.

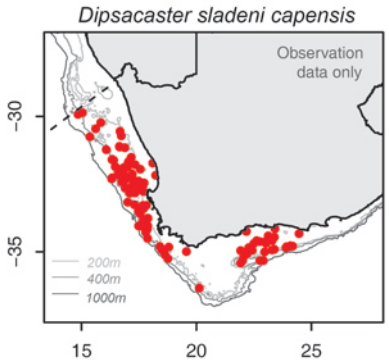
Similar species
Other *Astropecten* species and *Cheiraster hirsutus*, however *A. exilis* has distinctly long, strap-like arms that are fairly fragile. Spines of marginal plates usually fold flat on capture.

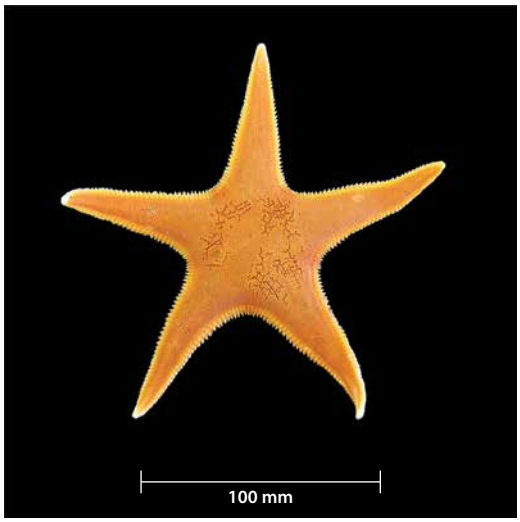
References
Clark AM and Courtman-Stock J. 1976. *The Echinoderms of Southern Africa*. British Museum (Natural History): London. p. 49. (277pp.).

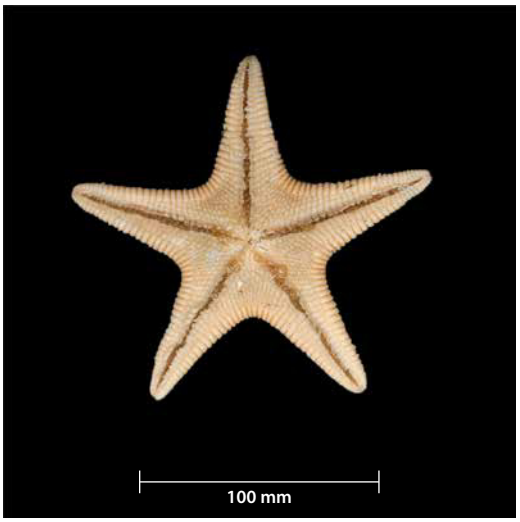
Species confirmed by Dr C. Mah, Smithsonian, Washington, June 2015.

Dipsacaster sladeni capensis (PerAga)

Phylum:	Echinodermata
Class:	Asteroidea
Order:	Paxillosida
Family:	Astropectinidae
Genus:	*Dipsacaster*
Species:	*sladeni capensis*
Common name:	Coarse-grained orange star







Distinguishing features

A common deep-water starfish found off South Africa. Distinct, large, star-shaped body form (stellate). Arms form triangle shape with body, ranging ~70-100 mm in diameter. Relatively large disc, coarse body texture. Arms tapering and pointed. Madreporite covered over by paxillae. Paxillae in regular rows. Tube feet are pointed. Marginal plates conspicuous and slightly swollen. Ventral marginal plate (inferomarginal) projects beyond the aboral marginal plate (superomarginal), defining the edge of the body when viewed from above.

Colour

Bright orange to reddish orange.

Size

Mostly 70-100 mm; can reach up to 150 mm diameter.

Distribution

West Coast of South Africa to East London, from ± 110 m to 630 m depth.

Similar species

Dipsacaster sladeni, which is a subspecies.

References

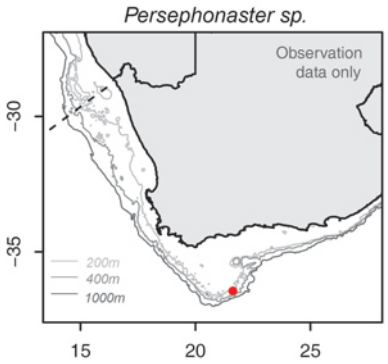
Clark AM and Courtman-Stock J. 1976. *The Echinoderms of Southern Africa*. British Museum (Natural History): London. pp. 52-53. (277pp.).

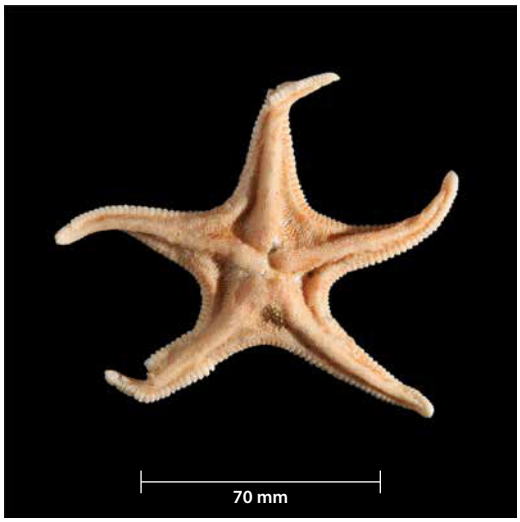
Clark AM and Downey ME. 1992. *Starfishes of the Atlantic (Volume 3)*. Chapman and Hall: London. pp. 50-51. (794pp.).

Species confirmed by Dr C. Mah, Smithsonian, Washington, June 2015.

Persephonaster sp. (PerCou)

Phylum:	Echinodermata
Class:	Asteroidea
Order:	Paxillosida
Family:	Astropectinidae
Genus:	*Persephonaster*
Species:	sp.
Common name:	Coarse-grained pale star





Distinguishing features
Large in size (70-100 mm diameter), coarse body texture, plates at margin conspicuous and slightly swollen. Appears similar to degraded *Dipsacaster sladeni capensis*, but specimens are required to confirm accurate identification.

Colour
Pale orange to apricot colour.

Size
70-100 mm diameter.

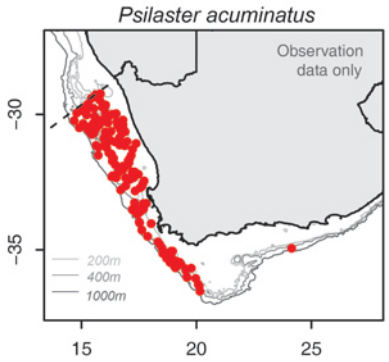
Distribution
South Coast of South Africa.

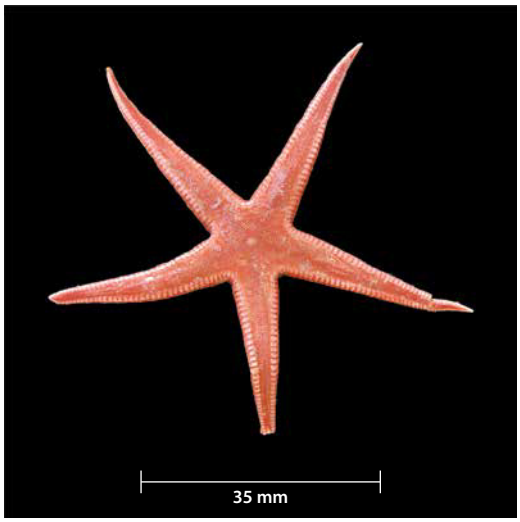
Similar species
Dipsacaster sladeni capensis, however *Persephonaster* sp. appear more sunken/collapsed on aboral, with midradial ribs projecting. Specimens to be retained for further taxonomic study.

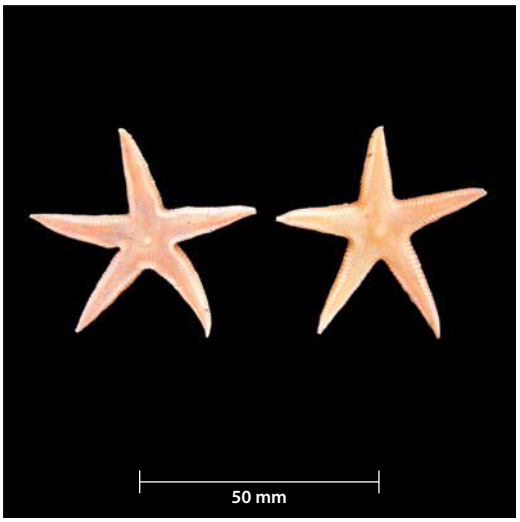
References
Clark AM and Downey ME. 1992. *Starfishes of the Atlantic (Volume 3)*. Chapman and Hall: London. pp. 59-66. (794pp.).

Psilaster acuminatus (PleAga)

Phylum:	Echinodermata
Class:	Asteroidea
Order:	Paxillosida
Family:	Astropectinidae
Genus:	*Psilaster*
Species:	*acuminatus*
Common name:	Pale orange fine-grained star







Distinguishing features
Leathery star with fine disc plates (paxillae), distinct marginal plates with dividing grooves. Marginal plates become more 'rolled' inwards towards the distal (end) part of the arms. Raised node in centre of disc (anal cone). Madreporite is evident. Long arms tapering to narrow, pointed tips. No obvious projecting spines visible to the naked eye. The tube feet are pointed and occur in two rows.

Colour
Pale orange to dark pink.

Size
Up to 180 mm diameter across arms.
Smaller individuals 40-50 mm width.

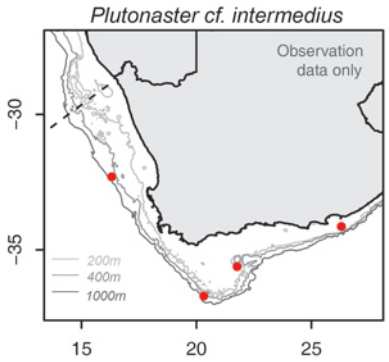
Distribution
West and South Coasts of South Africa, 155-550 m or deeper.

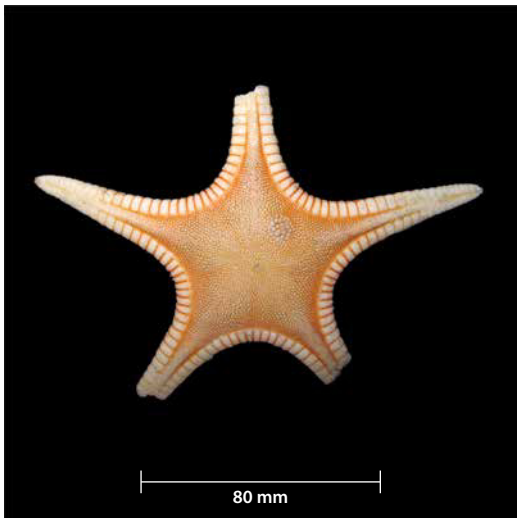
Similar species
None.

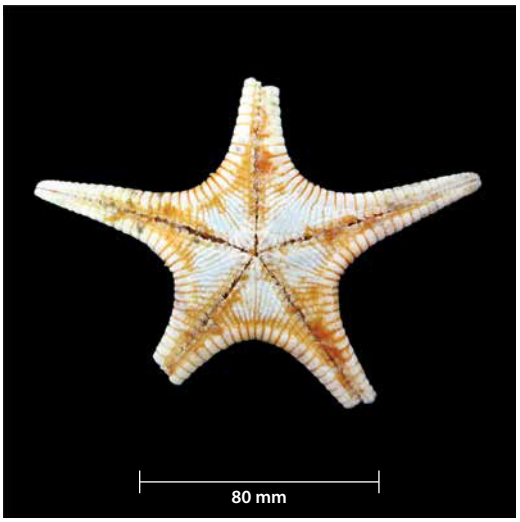
References
Clark AM and Downey ME. 1992. *Starfishes of the Atlantic (Volume 3)*. Chapman and Hall: London. pp. 73-81 (794pp.).

Plutonaster cf. *intermedius* (PluAga)

Phylum:	Echinodermata
Class:	Asteroidea
Order:	Paxillosida
Family:	Astropectinidae
Genus:	*Plutonaster*
Species:	cf. *intermedius*
Common name:	Intermediate starfish







Distinguishing features

Arms moderate length, narrow, tapering more abruptly in the basal part than beyond, tips blunt. Terminal plates more or less truncated (cut short); paxillae (plates) with low rounded columns crowned with 12-30 short spinelets, which emerge directly from the marginal plate. Madreporite covered with paxillae. Stiff, inflexible starfish. Specimens seldom encountered in trawls and are needed for confirming identification.

Colour

Pale orange with white marginal plates.

Size

Average ± 80 mm diameter, but larger up to 150 mm diameter have been recorded.

Distribution

Occurs on West and South Coasts of South Africa, around 350 m depth.

Similar species

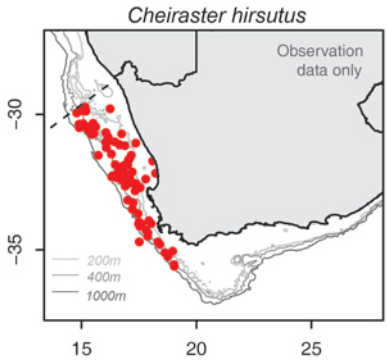
Persephonaster sp. and *Dipsacaster sladeni capensis*. Other species of *Plutonaster* spp. may occur in the region and may have distinct spines on the inferomarginal plates.

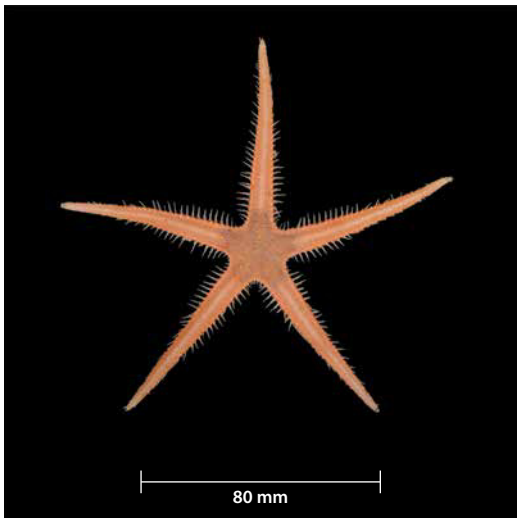
References

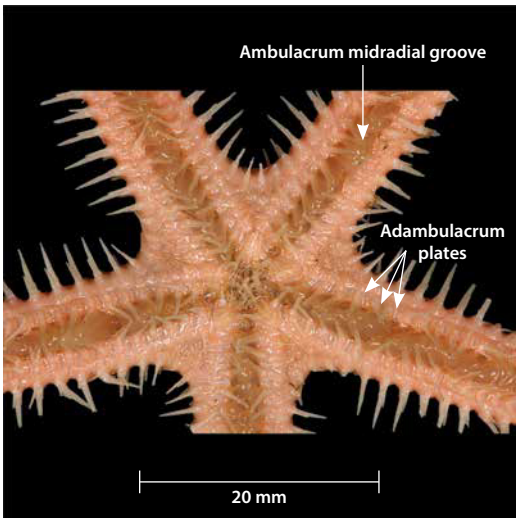
Clark AM and Downey ME. 1992. *Starfishes of the Atlantic (Volume 3)*. Chapman and Hall: London. pp. 66-73 (794pp.).

Cheiraster hirsutus (Astrop)

Phylum:	Echinodermata
Class:	Asteroidea
Order:	Notomyotida
Family:	Benthopectinidae
Genus:	*Cheiraster*
Species:	*hirsutus*
Common name:	Spiky orange centre star







Distinguishing features
Tips of arms often curled at ends. Numerous spines, both small and larger, protrude from aboral marginal edge. Long, thin, tapering arms. Double rows of tube feet. Single aboral spine shorter than oral (underside) spines. Two oral (underside) spines, one nearly twice the length of the other.

Colour
Ranging from light to dark pink and pale to bright orange.

Size
Up to 110 mm diameter. Disc 20 mm diameter.

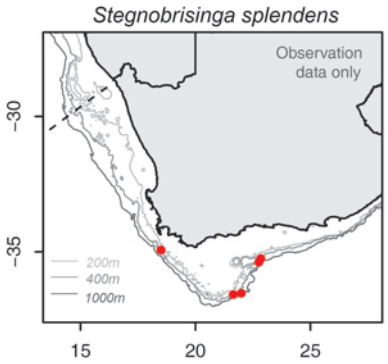
Distribution
Predominantly West Coast region of South Africa.

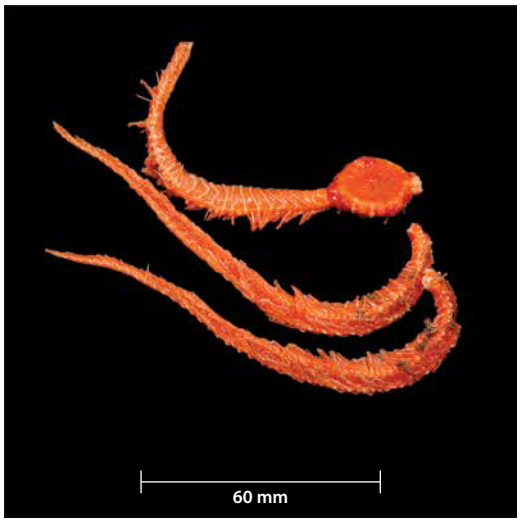
Similar species
Can appear similar to some *Astropecten* species, however *Cheiraster hirsutus* is distinct in having particularly long spines, suckered tube feet and tips of arms curl up on capture.

References
Clark AM and Downey ME. 1992. *Starfishes of the Atlantic (Volume 3)*. Chapman and Hall: London. pp. 126-136 (794pp.).

Stegnobrisinga splendens (SteSpl)

Phylum:	Echinodermata
Class:	Asteroidea
Order:	Brisingida
Family:	Brisingidae
Genus:	*Stegnobrisinga*
Species:	*splendens*
Common name:	Brisingid rigid





Distinguishing features
Characterised by having a small, circular disc, sharply differentiated from long, slender, rigid and usually deciduous arms (arms fall off), always more than five, usually between 11 to 14. Tube feet suckered in two rows. More rigid, calcified skeleton with raised, ridged markings (furrows) along arms.

Colour
Orange, with white ridges.

Size
Arms up to 200 mm long, disc up to 30 mm diameter.

Distribution
West and South Coasts of South Africa. Deep-water species 800-4 000 m.

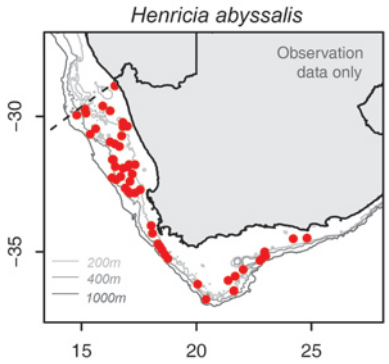
Similar species
Coronaster volsellatus, but *Stegnobrisinga splendens* is more rigid and calcified and has raised, ridged markings traversing arms. *Brisinga cricophora* also occurs in the region and appears very similar to *S. splendens*. Microscopic examination required to distinguish.

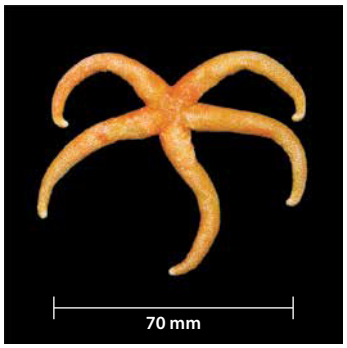
References
Clark AM and Downey ME. 1992. *Starfishes of the Atlantic (Volume 3)*. Chapman and Hall: London. pp. 476-477. (794pp.).

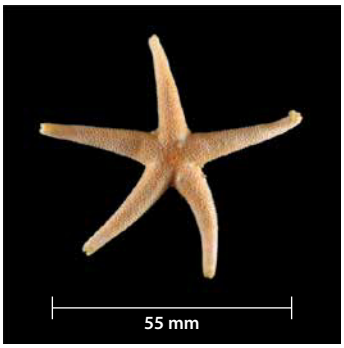
Species confirmed by Dr C. Mah, Smithsonian, Washington, June 2015.

Henricia abyssalis (HerAbs)

Phylum:	Echinodermata
Class:	Asteroidea
Order:	Spinulosida
Family:	Echinasteridae
Genus:	*Henricia*
Species:	*abyssalis*
Common name:	Apricot puffy-arm star







Distinguishing features
Small disc; long, tapering, 'puffy' arms. Whitened arm tips that often curl in at ends. Arms and disc inflated (puffy). Small papillae cover entire disc and arms. Aboral surface appears covered in very fine mesh work. Madreporite located midway between centre and arm edge. Two rows of tube feet.

Colour
Pale yellow, pale orange, apricot or bright orange.

Size
Average 80 mm diameter; up to 175 mm diameter.

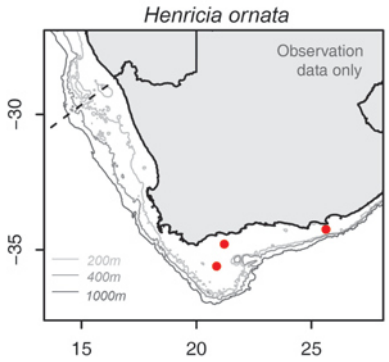
Distribution
West and South Coasts of South Africa, 56-408 m.

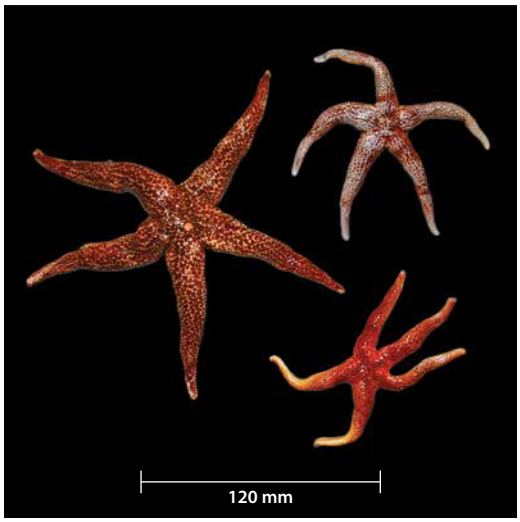
Similar species
Henricia ornata, but *H. abyssalis* more common and distinguished by the white tips.

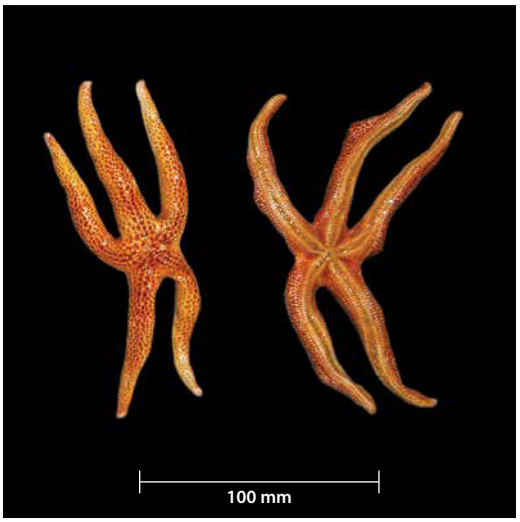
References
Clark AM and Courtman-Stock J. 1976. *The Echinoderms of Southern Africa*. British Museum (Natural History): London. p. 88. (277pp.).

Henricia ornata (HenOrn)

Phylum:	Echinodermata
Class:	Asteroidea
Order:	Spinulosida
Family:	Echinasteridae
Genus:	*Henricia*
Species:	*ornata*
Common name:	Reticulated star







Distinguishing features
Appears similar to *Henricia abyssalis*, however surface texture is described as irregular-honeycombed. Arms long and tapering, with small disc. Arms and disc inflated (puffy). Two rows of tube feet.

Colour
Orange to maroon.

Size
Up to 100 mm diameter.

Distribution
Occurs predominantly on South Coast, South Africa. Intertidal to 90 m.

Similar species
Henricia abyssalis, but *H. ornata* has spotted appearance (irregular-honeycombed) on aboral surface and usually deeper/darker colour.

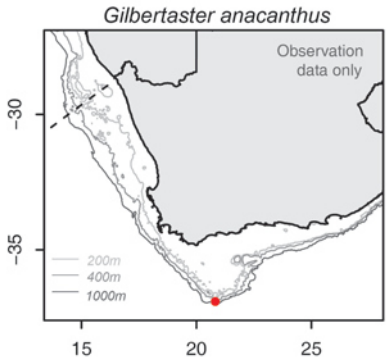
References
Branch GM, Griffiths CL, Branch ML and Beckley LE. 2016. *Two Oceans. A guide to the marine life of southern Africa*. Fourth Edition. Struik Nature, Cape Town. p. 190.

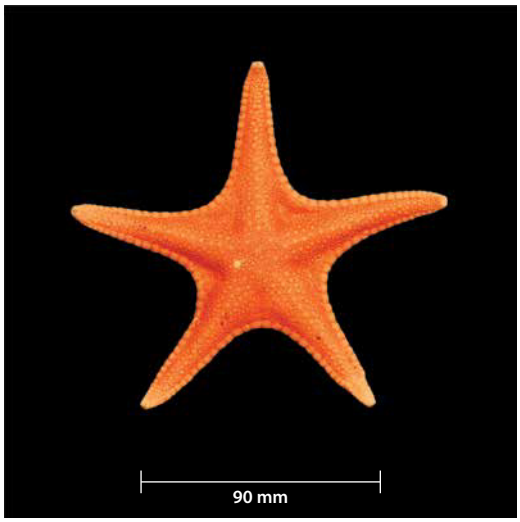
Clark AM and Courtman-Stock J. 1976. *The Echinoderms of Southern Africa*. British Museum (Natural History): London. p. 89. (277pp.).

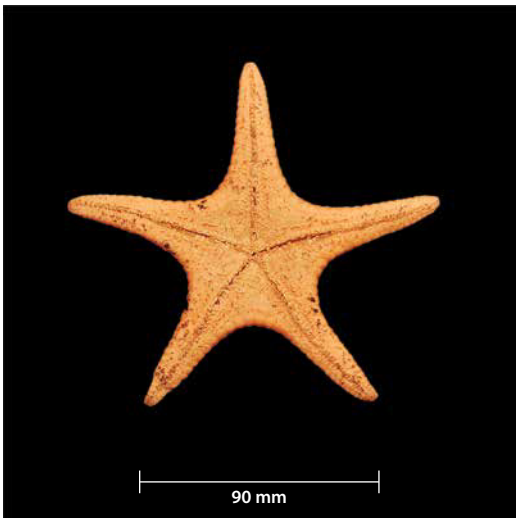
Clark AM and Downey ME. 1992. *Starfishes of the Atlantic (Volume 3)*. Chapman and Hall: London. pp. 394-395. (794pp.).

Gilbertaster anacanthus (GilAna)

Phylum:	Echinodermata
Class:	Asteroidea
Order:	Valvatida
Family:	Goniasteridae
Genus:	*Gilbertaster*
Species:	*anacanthus*
Common name:	Gilbert's star







Distinguishing features

Arms long and narrow, tapering abruptly at the base and then very slightly throughout to the blunt tip. Disc is of fair size and central part of arms often inflated. Marginal plates are well rounded in shape. No spines of any description occur on general body surface. Very large (1.5 mm), bivalved pedicellaria (claw-shaped structure) present on aboral and oral surfaces, but not on marginal plates. Each marginal plate is covered with close-set, superficially flat, large, irregular granules. Granules around the border of the plate are smaller and form in irregular patterns.

Colour

Orange to red.

Size

165 mm diameter and bigger.

Distribution

One specimen collected from South Coast, South Africa (2014) at 638 m. This species is known primarily from the tropical North Pacific (Hawaiian Islands area).

Similar species

Similar in shape to *Mediaster bairdi capensis*, but *Gilbertaster anacanthus* have large, obvious pedicellaria covering aboral and oral surfaces.

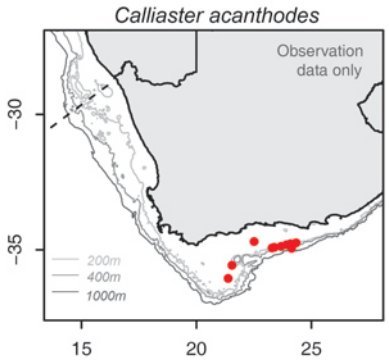
References

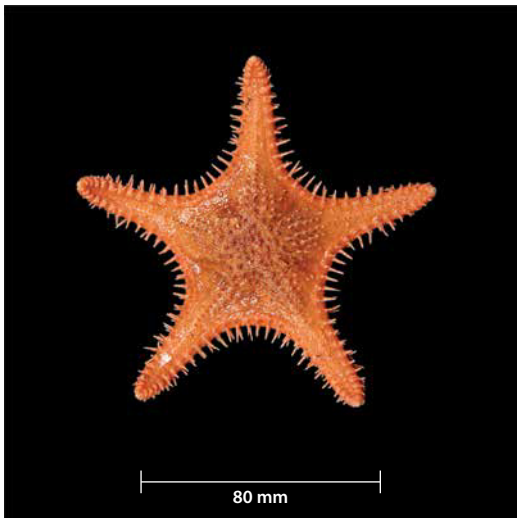
Fisher, WK. 1906. The starfishes of the Hawaiian Islands. *Bulletin of the United States Fish Commission* 23: 987-1130. p. 1045.

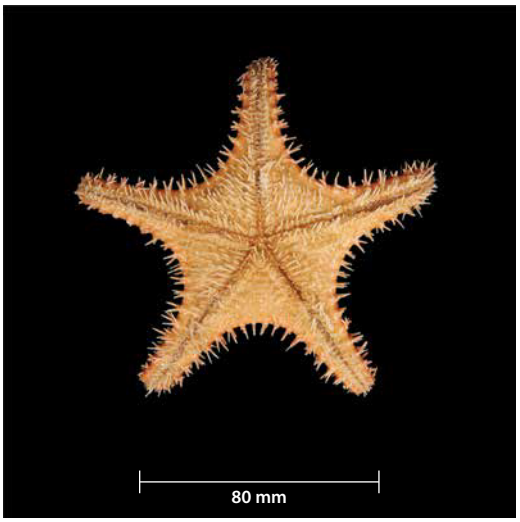
Species identification confirmed by Dr C. Mah, Smithsonian, Washington, June 2015.

Calliaster acanthodes (CalAca)

Phylum:	Echinodermata
Class:	Asteroidea
Order:	Valvatida
Family:	Goniasteridae
Genus:	*Calliaster*
Species:	*acanthodes*
Common name:	Spiky sheriff star







Distinguishing features
Long, sharp and very distinct marginal spines along outer edges, with smaller spines covering the aboral surface. Distinct marginal plates separated by grooves, with long spines emerging from each aboral and oral plate. Pentagon-shaped central disc, but with elongated arms. Six to nine slender furrow spines. Strong, sharp spines on the marginal edges.

Colour
Orange, with brown markings on central disc.

Size
Up to ± 120 mm in diameter.

Distribution
South African endemic. South to East Coasts of South Africa. Not usually found on West Coast. Occur at depths between ~ 130 and 420 m.

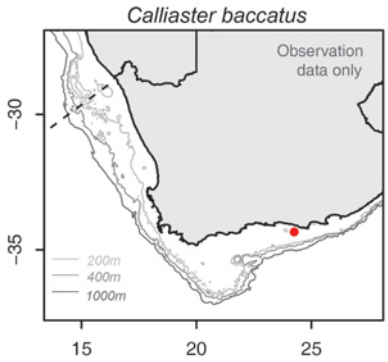
Similar species
Calliaster baccatus, which has three to four furrow spines, blunt spines on surface and no sharp spines on marginal plates; and *Hippasteria phyrangiana*, which has blunt, stout marginal spines and bivalve pedicilaria.

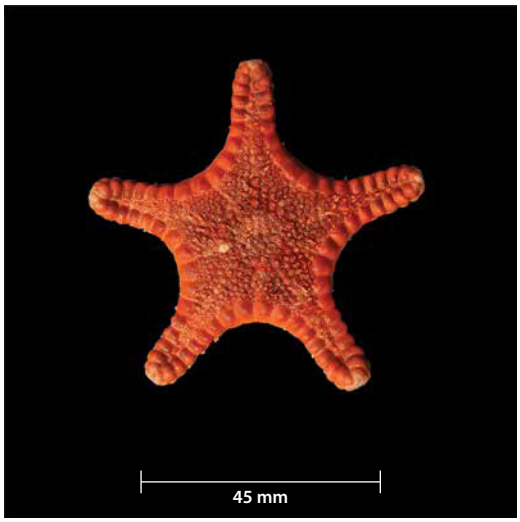
References
Clark AM and Courtman-Stock J. 1976. *The Echinoderms of Southern Africa*. British Museum (Natural History): London. pp. 60-61. (277pp.).

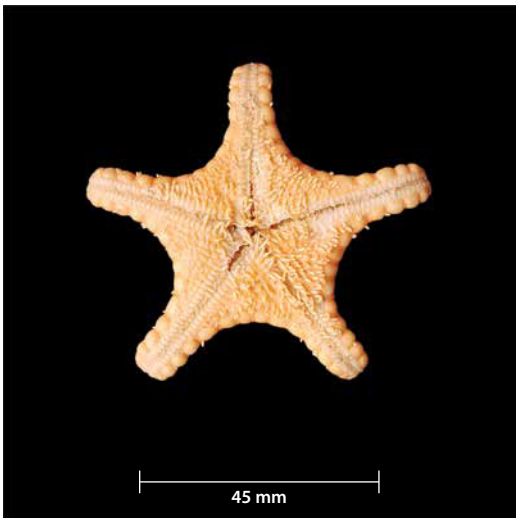
Species identification confirmed by Dr C. Mah, Smithsonian, Washington, June 2015.

Calliaster baccatus (CalBac)

Phylum:	Echinodermata
Class:	Asteroidea
Order:	Valvatida
Family:	Goniasteridae
Genus:	*Calliaster*
Species:	*baccatus*
Common name:	Blunt sheriff star







Distinguishing features

Pentagon-shaped central disc, with elongated arms ending in bluntly rounded tips. Marginal plates square shaped and conspicuous. *Calliaster baccatus* has three to four furrow spines on plates lining the tube feet grooves. Blunt, bullet-shaped spines on the marginal edges and aboral surface (but no sharp spines present). Pedicellariae are rare or absent.

Colour

Orange, brick red to brown colouration and frequently mottled in colour.

Size

Up to ± 100 mm in diameter.

Distribution

South African endemic. South to East Coasts of South Africa. Not usually found on West Coast. Occur at depths between ~ 10 and 23 m.

Similar species

Calliaster acanthodes (has sharper pointed spines along marginal plates and aboral surface) and *Hippasteria phyrangia* (blunt, stout marginal spines and obvious bivalve pedicellariae).

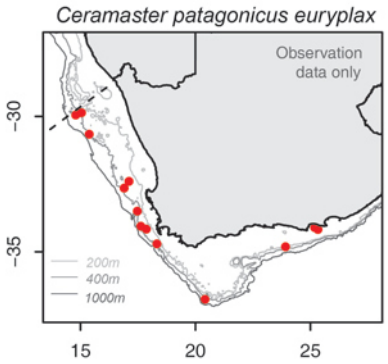
References

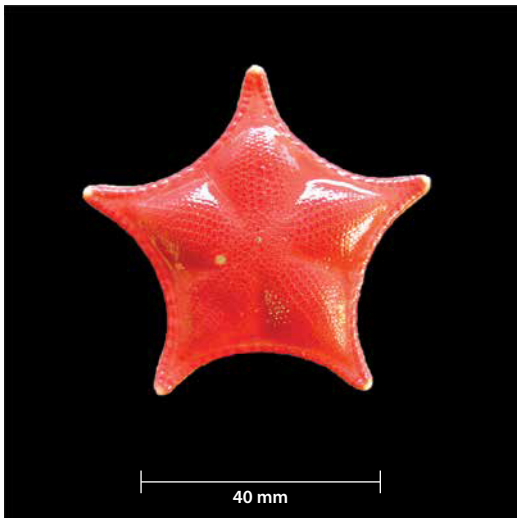
Clark AM and Courtman-Stock J. 1976. *The Echinoderms of Southern Africa*. British Museum (Natural History): London. p. 61. (277pp.).

Species identification confirmed by Dr C. Mah, Smithsonian, Washington, June 2015.

Ceramaster patagonicus euryplax (CerGra)

Phylum:	Echinodermata
Class:	Asteroidea
Order:	Valvatida
Family:	Goniasteridae
Genus:	*Ceramaster*
Species:	*patagonicus euryplax*
Common name:	Shiny red sheriff star





Distinguishing features
Well-defined marginal plates separated by grooves. Rigid body with slightly inflated areas over the midradial ridge. Pentagon-shaped with short, webbed arms. Double rows of tube feet. Tips of each arm with a white plate. Often smooth and shiny aboral surface.

Colour
Bright red to orange, with pale tips at end of each arm. Pale white to yellow oral surface.

Size
Up to 70 mm diameter.

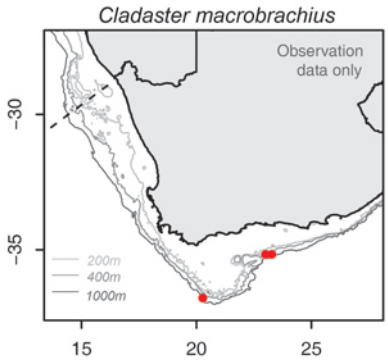
Distribution
Southern African endemic. West and South Coasts of South Africa, 150-462 m.

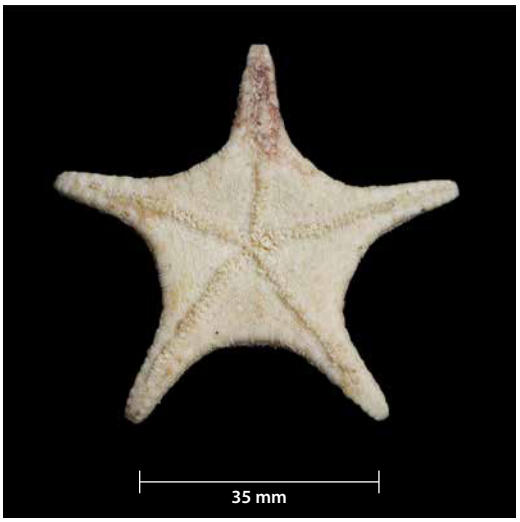
Similar species
Toraster tuberculatus and *Odontaster australis*, but *C. granularis* is usually a bright, shiny red with a smoother aboral texture.

References
Clark AM and Courtman-Stock J. 1976. *The Echinoderms of Southern Africa*. British Museum (Natural History): London. pp. 61-62 (277pp.).

Cladaster macrobrachius (ClaMac)

Phylum:	Echinodermata
Class:	Asteroidea
Order:	Valvatida
Family:	Goniasteridae
Genus:	*Cladaster*
Species:	*macrobrachius*
Common name:	Macro-clad starfish





Distinguishing features

Stellate-shaped with well-developed, pronounced arms tapering to rounded tips. Two rows of tube feet. Marginal plates, square in shape, are covered by widely spaced, coarse granules. In preservation, these granules rub off readily and leave pits. Body is well calcified, i.e. quite rigid. Broad-valved pedicellaria (claw-shape structure) clearly visible on oral surface.

Colour

Pale orange, with white areas and white pedicellaria on aboral, becoming paler to white towards edges and tips of arms.

Size

± 60 mm diameter.

Distribution

Southern African endemic. Recorded on West and South Coasts of South Africa, but rarely encountered. Depth recorded from 420 to 914 m.

Similar species

Gilbertaster anacanthus, which has large pedicellaria on both aboral and oral surfaces; *Mediaster bairdi capensis*, which do not have large pedicellaria evident.

References

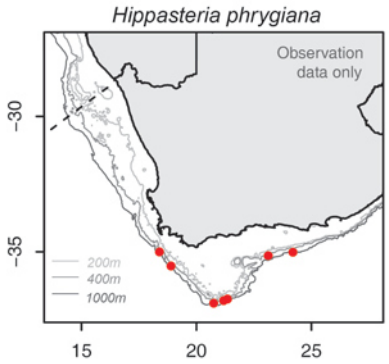
Clark AM and Courtman-Stock J. 1976. *The Echinoderms of Southern Africa*. British Museum (Natural History): London. p. 62. (277pp.).

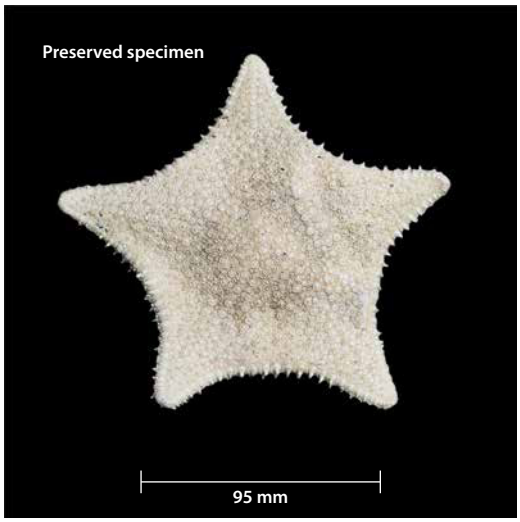
Clark AM and Downey ME. 1992. *Starfishes of the Atlantic (Volume 3)*. Chapman and Hall: London. pp. 239-240. (794pp.).

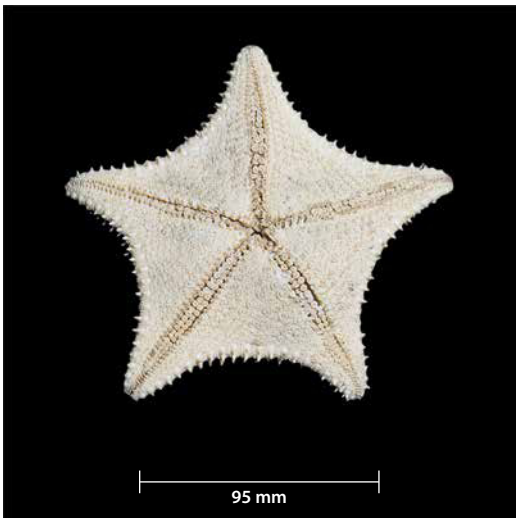
Species identification confirmed by Dr C. Mah, Smithsonian, Washington, June 2015.

Hippasteria phrygiana (HipPhr)

Phylum:	Echinodermata
Class:	Asteroidea
Order:	Valvatida
Family:	Goniasteridae
Genus:	*Hippasteria*
Species:	*phrygiana*
Common name:	Thorny starfish







Distinguishing features

A pentagonal-shaped starfish with fairly short, less pronounced arms. Marginal plates are large, smooth and conspicuous in aboral view and have one or two pronounced, stout spines emerging from each marginal plate. There are no spines on the aboral surface, which has a coarsely granulated appearance. On the oral surface large, obvious clam-shaped pedicellaria are present.

Colour

Brick red to orange.

Size

Up to 260 mm diameter, but small individuals likely to occur.

Distribution

Mostly occur on South Coast of South Africa, from 310 to 980 m.

Similar species

Toraster tuberculatus.

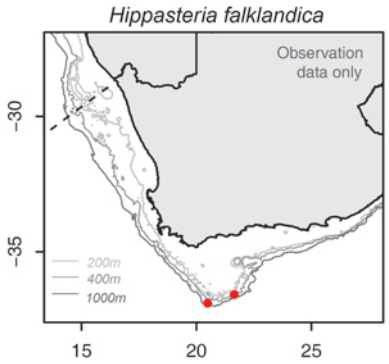
References

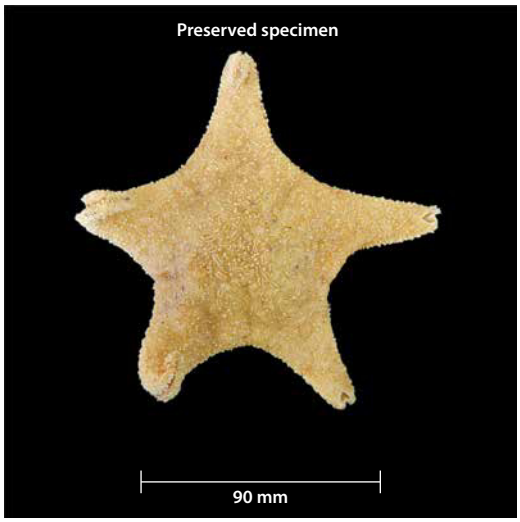
Clark AM and Courtman-Stock J. 1976. *The Echinoderms of Southern Africa*. British Museum (Natural History): London. p. 63 (277pp.).

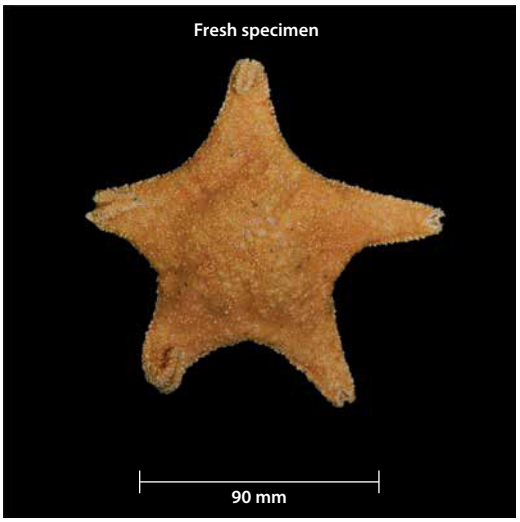
Species identification confirmed by Dr C. Mah, Smithsonian, Washington, June 2015.

Hippasteria falklandica (HipFal)

Phylum:	Echinodermata
Class:	Asteroidea
Order:	Valvatida
Family:	Goniasteridae
Genus:	*Hippasteria*
Species:	*falklandica*
Common name:	Falkland starfish







Distinguishing features

A pentagonal-shaped starfish with fairly pronounced arms. Marginal plates are large; smooth granules which are conspicuous in aboral view but do not have marginal spines. There are no spines on the aboral surface, which has a coarsely granulated appearance. On the oral and aboral surface large, obvious, clam-shaped pedicellaria are present.

Colour

Orange.

Size

Up to 130 mm diameter recorded, but small individuals likely to occur.

Distribution

Mostly occurring on South Coast of South Africa. Known from depths of 149-1 148 m.

Similar species

Hippasteria phrygiana, but *H. falklandica* does not have marginal spines; *Toraster tuberculatus* which have large, bald, convex tubercles covering the oral surface.

References

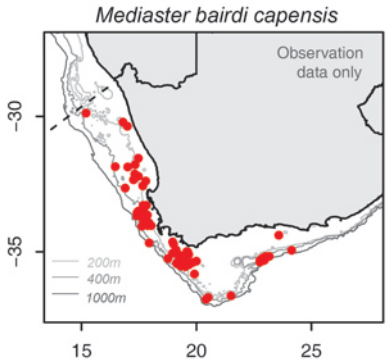
Clark AM and Downey ME. 1992. *Starfishes of the Atlantic (Volume 3)*. Chapman and Hall: London. p. 247 (794pp.).

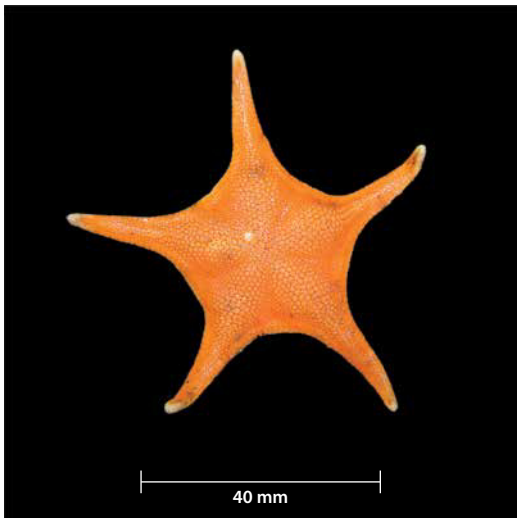
Mah C, Neill K, Eléaume M and Foltz D. 2014. New species and global revision of *Hippasteria* (Hippasterinae: Goniasteridae; Asteroidae; Echinodermata). The Linnean Society of London, *Zoological Journal of the Linnean Society*, 171: 422-456

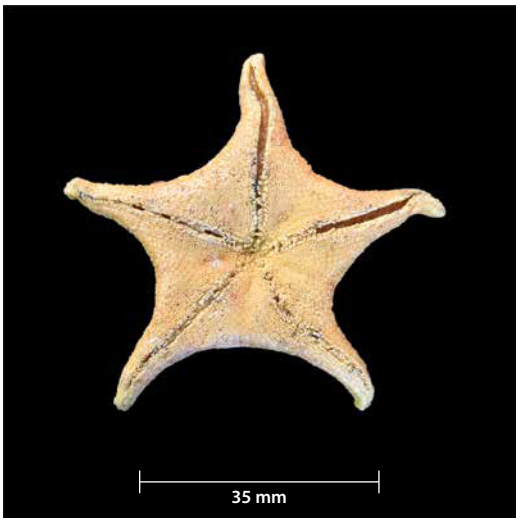
Species photographs confirmed by Dr C. Mah, Smithsonian, Washington, November 2016.

Mediaster bairdi capensis (MedCap)

Phylum:	Echinodermata
Class:	Asteroidea
Order:	Valvatida
Family:	Goniasteridae
Genus:	*Mediaster*
Species:	*bairdi capensis*
Common name:	Orange sheriff star







Distinguishing features
Commonly occurring inflexible, rigid star with broad disc. Marginal plates distinct, block-shaped and covered with granules, separated by grooves on upper surface. Tube feet end in a blunt sucker tip. Disc plates distinct and large, with distinct checkerboard appearance. Arms taper narrowly and immediately.

Colour
Orange to red.

Size
Average up to 70 mm diameter.

Distribution
West and South Coasts of South Africa.

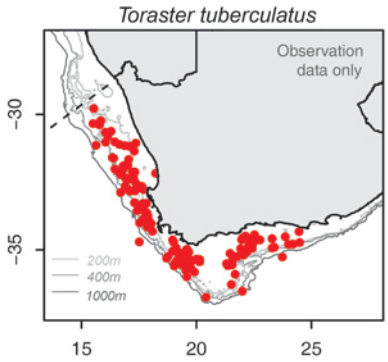
Similar species
Dipsacaster sladeni capensis, Gilbertaster anacanthus, Odontaster sp. body slightly more flexible and webbing between arms not as pronounced. Arm tips curl upwards at times. Easily confused with *Odontaster australis*, but *M. bairdi capensis* has more distinct marginal plates and does not have enlarged tooth surrounding mouth opening.

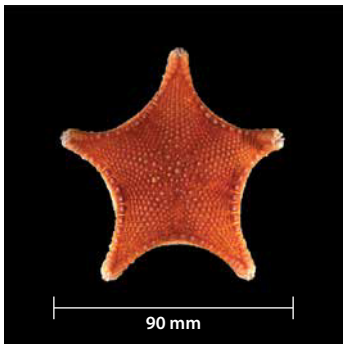
References
Clark AM and Courtman-Stock J. 1976. *The Echinoderms of Southern Africa*. British Museum (Natural History): London. p. 64. (277pp.).

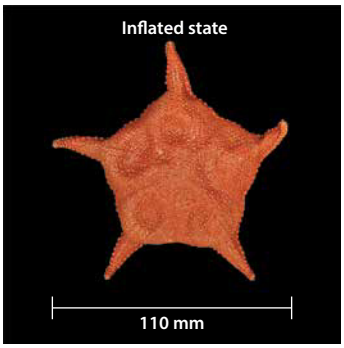
Clark AM and Downey ME. 1992. *Starfishes of the Atlantic (Volume 3)*. Chapman and Hall: London. pp. 251-253 (794pp.).

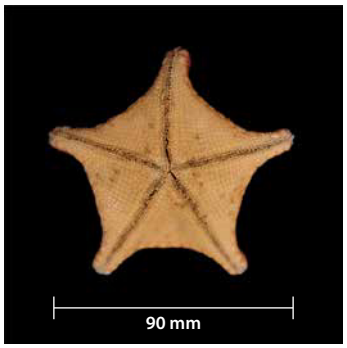
Toraster tuberculatus (TorTub)

Phylum:	Echinodermata
Class:	Asteroidea
Order:	Valvatida
Family:	Goniasteridae
Genus:	*Toraster*
Species:	*tuberculatus*
Common name:	Red sheriff star









Distinguishing features

Commonly occurring, rigid starfish with broad disc and short arms. Pentagonal to stellate in body shape. Distinct bald tubercles cover the entire aboral surface. Marginal plates distinct, granulated and separated by grooves on upper surface. Distinct madreporite. Distal plates (towards arm tips) often swollen or enlarged. Arm tips vary from either sharply pointed to bluntly rounded. Abactinal plates larger in size along radial lines. Ventral plates covered with granules. Body of starfish sometimes inflated when landed from a trawl net, but deflates over time.

Colour

Red, brown, dark orange on aboral; pale cream to yellow on oral side.

Size

Up to 160 mm diameter.

Distribution

Southern African endemic. West and South Coasts of South Africa. Has been reported from Durban area.

Similar species

Ceramaster granularis, Odontaster australis, Hippasteria phrygiana.

References

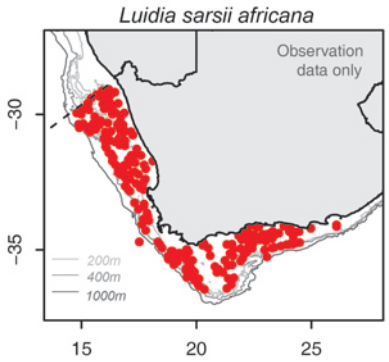
Clark AM and Downey ME. 1992. *Starfishes of the Atlantic (Volume 3)*. Chapman and Hall: London. p. 267 (794pp.).

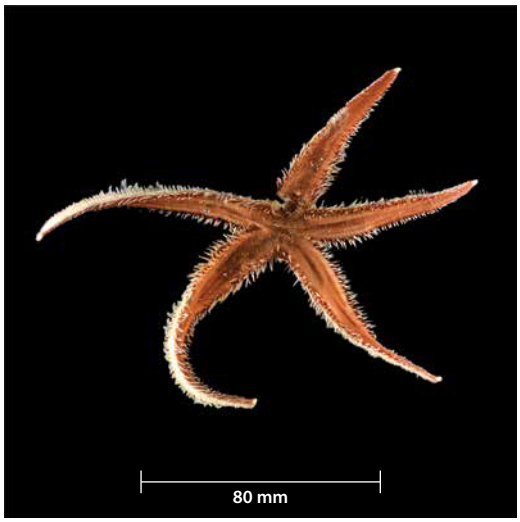
Mortensen T. 1933. *Echinoderms of South Africa (Asteroidea and Ophiuroidea): Papers from Dr Th. Mortensens's Pacific Expedition* 1914–1916, Videnskabelige Meddelelser fra Dansk Naturhistorisk Forening. 93: 215-400.

Species identification confirmed by Dr C. Mah, Smithsonian, Washington, June 2015.

Luidia sarsii africana (LucAfr)

Phylum:	Echinodermata
Class:	Asteroidea
Order:	Paxillosida
Family:	Luidiidae
Genus:	*Luidia*
Species:	*sarsii africana*
Common name:	Legs break easily starfish





Distinguishing features
Arms usually break off central disc very easily. Distinct spines protrude from aboral margin edge; arms long, flexible, flattened and tapering, strap-like. Usually five arms.

Colour
Brown to dark pink.

Size
Average up to 150 mm diameter, but can get larger individuals.

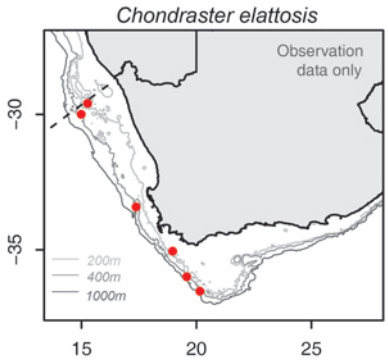
Distribution
Southern African endemic. West and South Coasts of South Africa, to Port Elizabeth; 54 m to 360+ m depth.

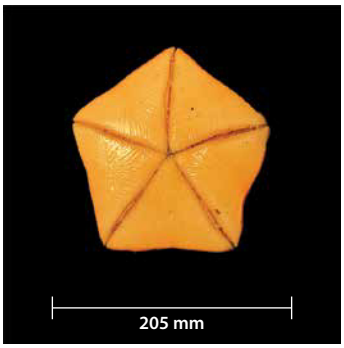
Similar species
Astropecten polyacanthus and *Astropecten exilis*, however arms of *Luidia africana* are more flattened and broader, i.e. less tapered, and break off central disc easily.

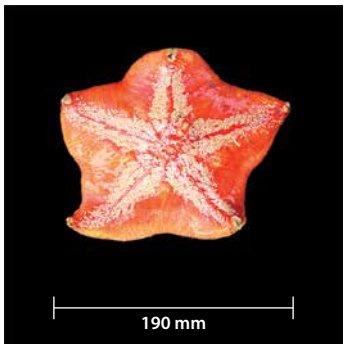
References
Clark AM and Downey ME. 1992. *Starfishes of the Atlantic (Volume 3)*. Chapman and Hall: London. p. 20. (794pp.).

Chondraster elattosis (ChoEla)

Phylum:	Echinodermata
Class:	Asteroidea
Order:	Valvatida
Family:	Poraniidae
Genus:	*Chondraster*
Species:	*elattosis*
Common name:	Pentagon star







Distinguishing features

Inflexible, rigid star with thick, solid, spongy disc. Pentagonal in shape. Marginal plates indistinct. Distinct madreporite. Fine raised bumps (sheaths of adambulacral spines) form distinct rows along each arm, but no spines apparent. Thick fleshy starfish with smooth aboral and oral surface. Double rows of tube feet. No marginal plates visible. Patterning on aboral surface can be very distinct when brooding (see third image).

Colour

Bright pink to orange on aboral; pale yellow on oral surface.

Size

Can reach up to 230 mm diameter.

Distribution

South African endemic. West and South Coasts of South Africa; from 400 to 1 000+ m depth.

Similar species

Spoladaster veneris, but *Chondraster ellatosis* does not inflate and is more leathery.

References

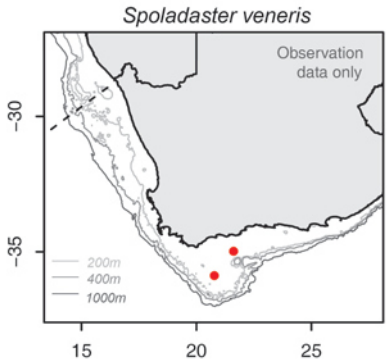
Clark AM and Courtman-Stock J. 1976. *The Echinoderms of Southern Africa*. British Museum (Natural History): London. pp. 73-74 (277pp.).

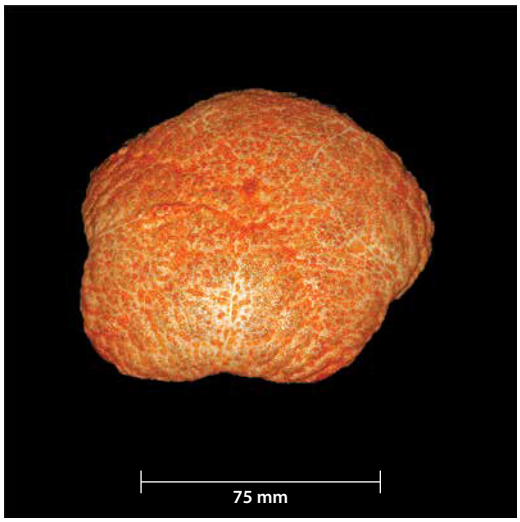
Clark AM and Downey ME. 1992. *Starfishes of the Atlantic (Volume 3)*. Chapman and Hall: London. pp. 202-204 (794pp.).

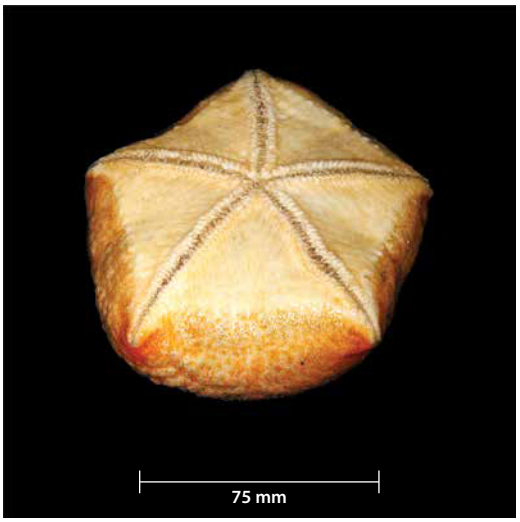
Species identification confirmed by Dr C. Mah, Smithsonian, Washington, June 2015.

Spoladaster veneris (SpoBra)

Phylum:	Echinodermata
Class:	Asteroidea
Order:	Valvatida
Family:	Poraniidae
Genus:	*Spoladaster*
Species:	*veneris*
Common name:	Inflated star







Distinguishing features
Pentagonal in shape, cushion-like body, often inflated when landed (as in photo), but slowly deflates with time out of water. Numerous papillae coat the aboral surface. Ventral smooth with fine lines.

Colour
Speckled brilliant orange aboral surface and pale cream smooth oral surface.

Size
Up to 160 mm diameter.

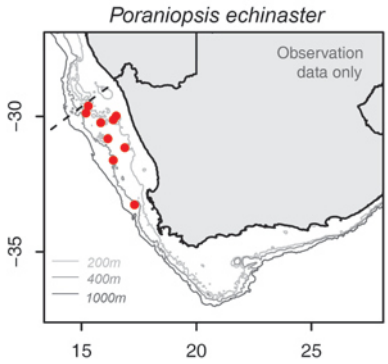
Distribution
West and South Coasts of South Africa; from 40 to 205+ m depth.

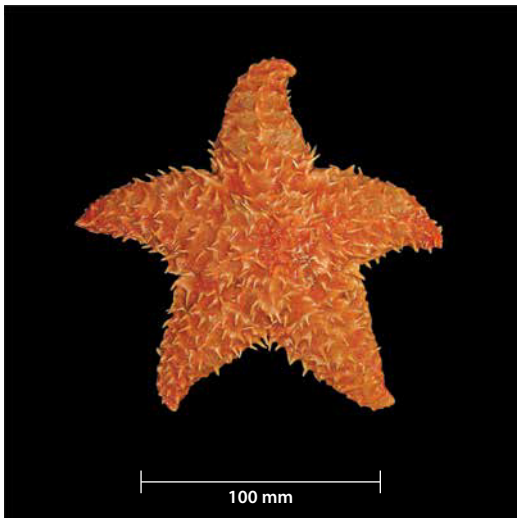
Similar species
Chondraster elattosis, but *S. brachyactis* inflates and is not as leathery.

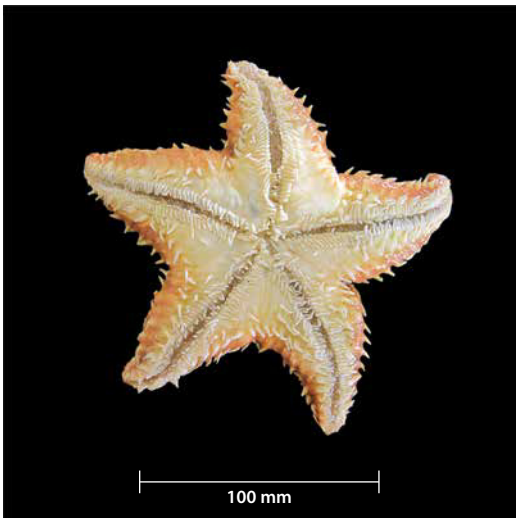
References
Clark AM and Downey ME. 1992. *Starfishes of the Atlantic (Volume 3)*. Chapman and Hall: London. pp. 222-224 (794pp.).

Poraniopsis echinaster (PorEch)

Phylum:	Echinodermata
Class:	Asteriodea
Order:	Valvatida
Family:	Poraniidae
Genus:	*Poraniopsis*
Species:	*echinaster*
Common name:	Spiky cushion star







Distinguishing features
Short-armed, stellate body form with a reticular skeleton (spiky skeleton with soft tissue covering). Distinct raised spines covering the aboral surface 1-4 mm in length. Arms fairly rigid, with ends often turning upwards or curling inwards. Two rows of tube feet. Madreporite white in colour, located off-centre halfway to base of arms. Strong spines along the base of arms.

Colour
Deep orange to red or even pure white, with spines light red to yellowish white. Pale oral surface.

Size
Average 50 up to 160 mm diameter, mostly small specimens but occasionally large too.

Distribution
South Atlantic including West Coast of South Africa.

Similar species
Lophaster quadrispinus, which has many dense raised tubercles on the aboral surface or *Diplopteraster multipes*, which is more cushion-like, with arms that are not as clearly defined as *P. echinaster*.

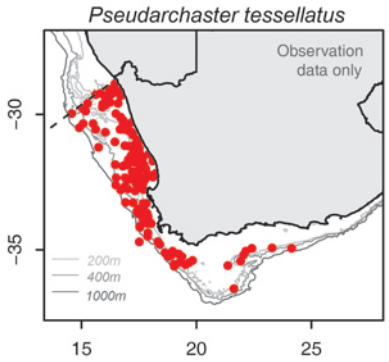
References
Clark AM and Courtman-Stock J. 1976. *The Echinoderms of Southern Africa*. British Museum (Natural History): London. p. 90 (277pp.).

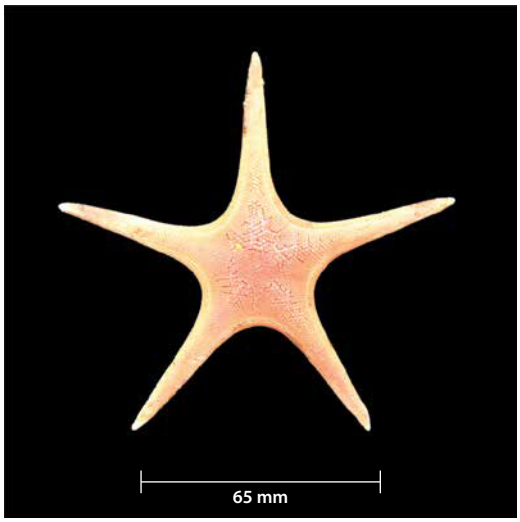
Clark AM and Downey ME. 1992. *Starfishes of the Atlantic (Volume 3)*. Chapman and Hall: London. pp. 220-222 (794pp.).

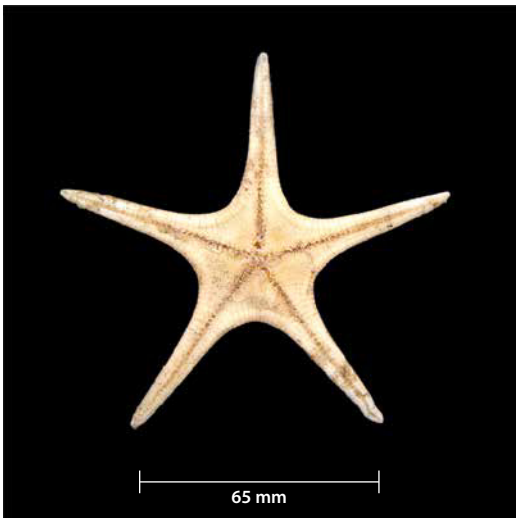
Species identification confirmed by Dr C. Mah, Smithsonian, Washington, June 2015.

Pseudarchaster tessellatus (PseTes)

Phylum:	Echinodermata
Class:	Asteriodea
Order:	Paxillosida
Family:	Pseudarchasteridae
Genus:	*Pseudarchaster*
Species:	*tessellatus*
Common name:	Dusky pink long-armed star







Distinguishing features
Inflexible star with broad disc and long, tapering, rigid arms. Disc plates distinct, regular oval/circular in shape. Fine texture on aboral plates, but plates begin to separate once out of water. Distinct marginal plates on both aboral and oral sides. Two rows of tube feet mostly hidden by fine clusters of spines on the inside oral margin of each arm. Madreporite midway between disc centre and marginal plate.

Colour
Dusky pink to white.

Size
Average 70 mm diameter, but up to 160 mm.

Distribution
West and South Coasts of South Africa.

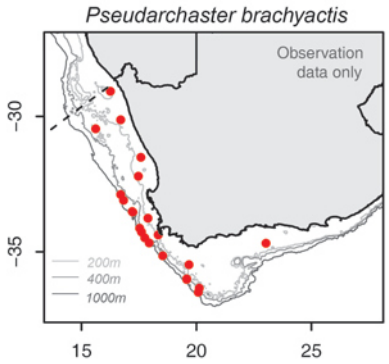
Similar species
Pseudarchaster brachyactis, but *P. tessellatus* has longer, more tapering arms.

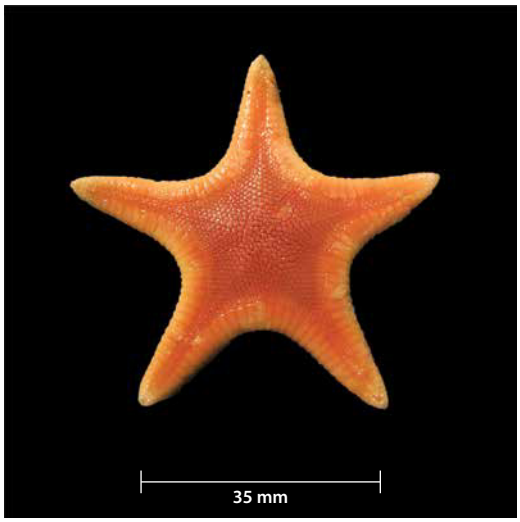
References
Clark AM and Downey ME. 1992. *Starfishes of the Atlantic (Volume 3)*. Chapman and Hall: London. pp. 260-264 (794pp.).

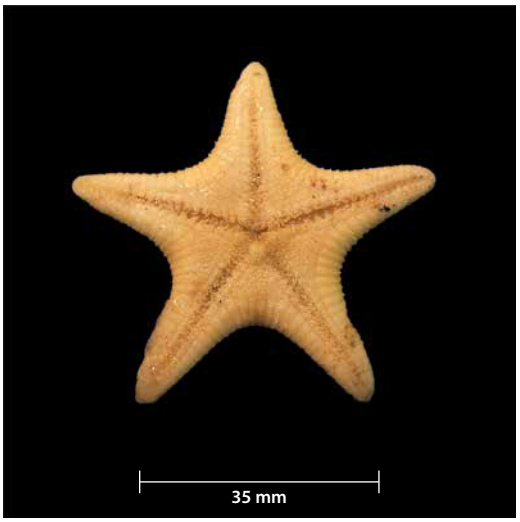
Species identification confirmed by Dr C. Mah, Smithsonian, Washington, June 2015.

Pseudarchaster brachyactis (PseBra)

Phylum:	Echinodermata
Class:	Asteriodea
Order:	Paxillosida
Family:	Pseudarchasteridae
Genus:	*Pseudarchaster*
Species:	*brachyactis*
Common name:	Dusky pink short-armed star







Distinguishing features
Inflexible star with broad disc similar to *Pseudarchaster tessellatus*, but has shorter, stubbier arms. Fine texture on aboral plates, but plates begin to separate once out of water. Disc plates distinct. Distinct marginal plates. Two rows of tube feet.

Colour
Dusky pink to white.

Size
Average 70 mm diameter.

Distribution
West and South Coasts of South Africa.

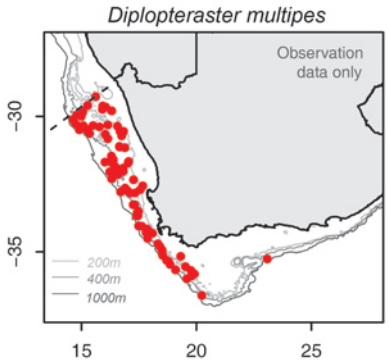
Similar species
Pseudarchaster tessellatus, but *P. brachyactis* has shorter, stubbier arms. *P. brachyactis* currently considered same species as *P. tessellatus* by some experts, but separation currently retained in this guide.

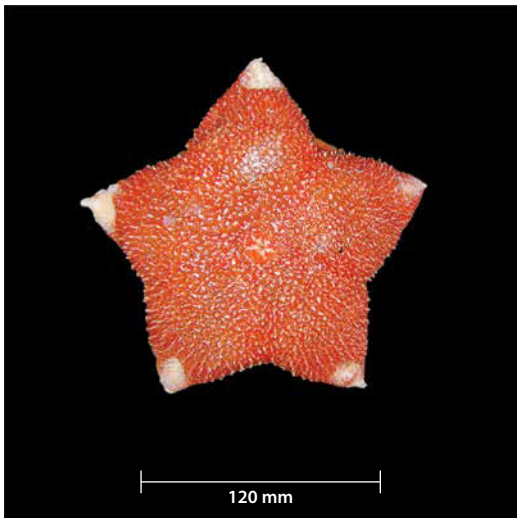
References
Clark AM and Downey ME. 1992. *Starfishes of the Atlantic (Volume 3)*. Chapman and Hall: London. pp. 260-264 (794pp.).

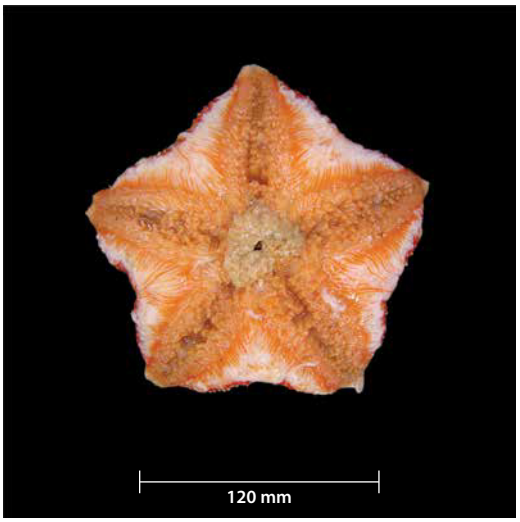
Species identification confirmed by Dr C. Mah, Smithsonian, Washington, June 2015.

Diplopteraster multipes (DipMul)

Phylum:	Echinodermata
Class:	Asteriodea
Order:	Velatida
Family:	Pterasteridae
Genus:	*Diplopteraster*
Species:	*multipes*
Common name:	Large prickly slime cushion star







Distinguishing features
Large, fleshy and inflated disc with cover of skin supported by spines. Tips of arms appear upturned and white. Flesh 'decomposes' rapidly when on deck, resulting in mushy texture and production of a lot of mucus. Best to keep specimens in dish of water until ready to discard. Four rows of tube feet visible in wide tube foot grooves.

Colour
Pale orange, bright orange to red.

Size
Up to 200-260 mm diameter.

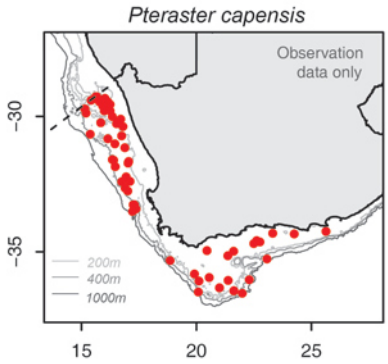
Distribution
Throughout West and South Coast region of South Africa.

Similar species
Pteraster capensis can appear similar, however *Diplopteraster multiples* rapidly disintegrates when out of water on deck and becomes mushy very quickly, while *P. capensis* is firm in texture and remains so on deck.

References
Clark AM and Downey ME. 1992. *Starfishes of the Atlantic (Volume 3)*. Chapman and Hall: London. pp. 310-313 (794pp.).

Pteraster capensis (PteCap)

Phylum:	Echinodermata
Class:	Asteroidea
Order:	Velatida
Family:	Pterasteridae
Genus:	*Pteraster*
Species:	*capensis*
Common name:	Common/Brooding cushion star



Distinguishing features
Small, puffy cushion starfish with fairly solid texture. Produce a lot of mucus when disturbed (also called Slime Stars). Plates appear as fine rosettes of holes covering aboral surface. Ends of arms turned upwards and have white tips. Specimens range in size from very tiny (20 mm diameter) to very large (150 mm diameter).

Colour
Wide range of colours – pink, yellow, orange, brown, mottled. In deeper waters usually white, but colour variation of orange occurs on South Coast.

Size
Average 20-25 mm; can be larger up to 135+ mm diameter.

Distribution
Southern African endemic. West and South Coasts of South Africa.

Similar species
Pteraster affinus, which has more tapering arms, otherwise similar (keep a look out).

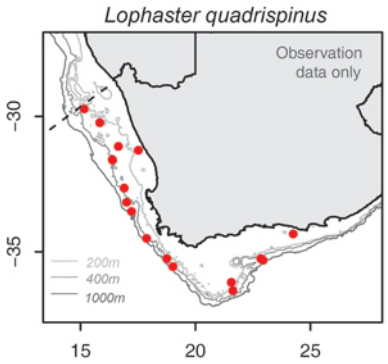
References
Branch GM, Griffiths CL, Branch ML and Beckley LE. 2016. *Two Oceans. A guide to the marine life of southern Africa*. Fourth Edition. Struik Nature, Cape Town. p. 188.

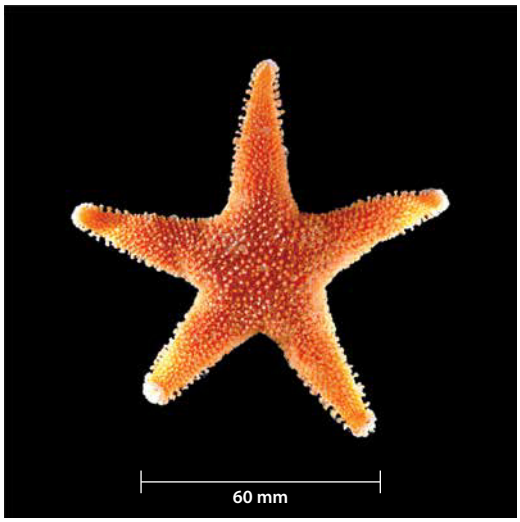
Clark AM and Downey ME. 1992. *Starfishes of the Atlantic (Volume 3)*. Chapman and Hall: London. pp. 327-328. (794pp.).

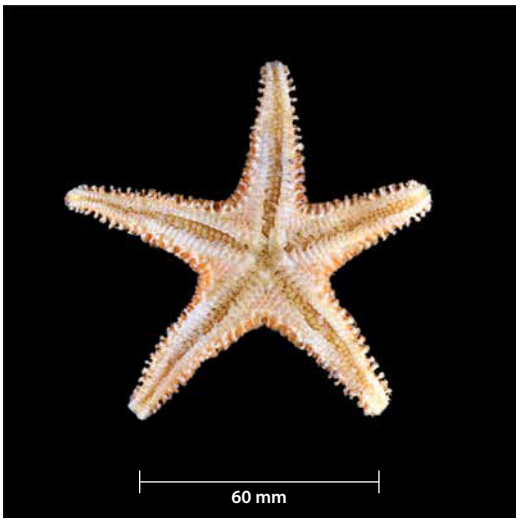
Species identification confirmed by Dr C. Mah, Smithsonian, Washington, June 2015.

Lophaster quadrispinus (LopQua)

Phylum:	Echinodermata
Class:	Asteroidea
Order:	Valvatida
Family:	Echinasteridae
Genus:	*Lophaster*
Species:	*quadrispinus*
Common name:	Four-spined starfish







Distinguishing features
Many raised tubercles (paxillae) covering entire aboral surface in symmetric pattern. Fairly rigid star and arms usually bent stiffly when on deck. Marginal edge with extended paxillae distinct and small tufts on tips.

Colour
Pale to bright orange to red.

Size
Average 50 mm diameter, but larger specimens can occur.

Distribution
Southern African endemic. West and South Coasts of South Africa.

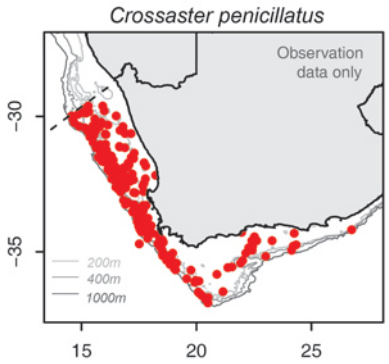
Similar species
Poraniopsis echinaster, but *Lophaster quadrispinus* does not have as spiky aboral texture and has more tubercles on aboral surface.

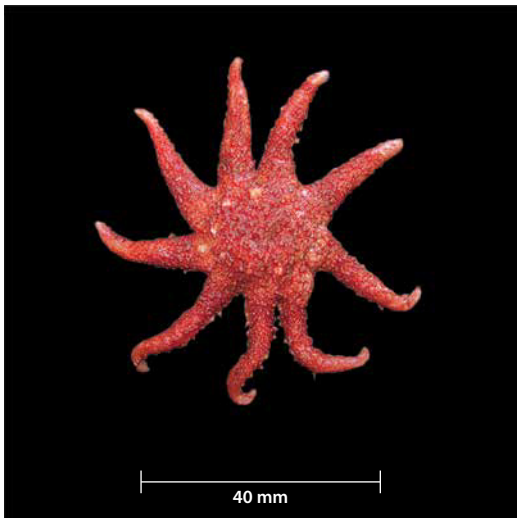
References
Clark AM and Downey ME. 1992. *Starfishes of the Atlantic (Volume 3)*. Chapman and Hall: London. pp. 299-301. (794pp.).

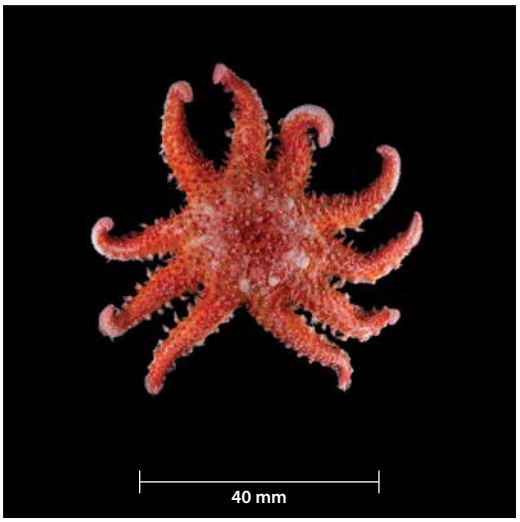
Species identification confirmed by Dr C. Mah, Smithsonian, Washington, June 2015.

Crossaster penicillatus (Blomme)

Phylum:	Echinodermata
Class:	Asteroidea
Order:	Valvatida
Family:	Solasteridae
Genus:	*Crossaster*
Species:	*penicillatus*
Common name:	Raspberry star/Blomme







Distinguishing features
Wide flattened disc with 9 to 12 arms. Bundles of spines on aboral surface. Soft-bodied starfish with flexible spines. Very common starfish occurring in dense patches and hundreds are often landed in trawls.

Colour
Orange-pink, white-pink, dark pink.

Size
Average 70 mm diameter; up to 120 mm diameter.

Distribution
Throughout West and South Coast region of South Africa.

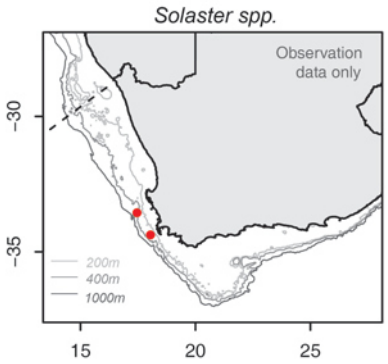
Similar species
Solaster spp., which is a larger species and has a puffier appearance.

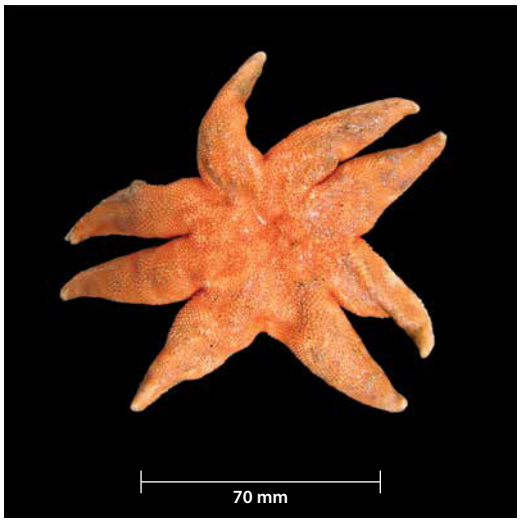
References
Clark AM and Courtman-Stock J. 1976. *The Echinoderms of Southern Africa*. British Museum (Natural History): London. p. 86 (277pp.).

Clark AM and Downey ME. 1992. *Starfishes of the Atlantic (Volume 3)*. Chapman and Hall: London. pp. 296-298 (794pp.).

Solaster spp. (Solast)

Phylum:	Echinodermata
Class:	Asteroidea
Order:	Valvatida
Family:	Solasteridae
Genus:	*Solaster*
Species:	spp.
Common name:	Sun-shaped orange star





Distinguishing features
Thick puffy arms, tapering gently to points. Small tubercles covering aboral surface (paxillae). Up to eight arms. Seldom occurs in South African waters.

Colour
Orange.

Size
150-200 mm diameter.

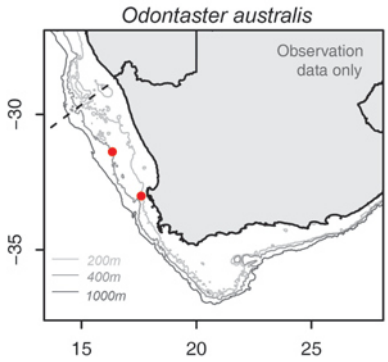
Distribution
West Coast of South Africa.

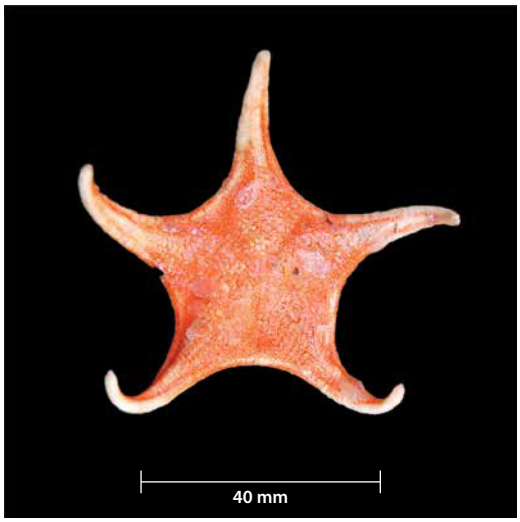
Similar species
Crossaster penicillatus, which is a smaller, less puffy starfish and is very abundant.

References
Clark AM and Downey ME. 1992. *Starfishes of the Atlantic (Volume 3)*. Chapman and Hall: London. pp. 301-306. (794pp.).

Odontaster australis (OdoAus)

Phylum:	Echinodermata
Class:	Asteroidea
Order:	Valvatida
Family:	Odontasteridae
Genus:	*Odontaster*
Species:	*australis*
Common name:	False sheriff star





Odontaster spp. have a clearly visible, large tooth surrounding the mouth, which distinguishes it from the similar *Mediaster* spp.

Distinguishing features

Fairly rigid star with distinct marginal plates and slightly inflated disc and arms. Madreporite located off-centre, as a clearly distinguishable light spot. Wider marginal plates distinct; oral surface plates have spinules (rather than granules, as in *Mediaster*); fewer spines and distinct plates surrounding mouth opening.

Odontaster spp. have 5 x single, long, sharply tapered teeth visible on oral surface surrounding the mouth opening (see photo) = distinguishing feature between *Odontaster* spp. and *Mediaster* spp.

Colour

Ranging from pale yellow to orange to red.

Size

Average 70-80 mm diameter.

Distribution

Southern African endemic. Known from 320 m Saldanha Bay, West Coast of South Africa. Rarely encountered in trawl surveys.

Similar species

Toraster sp. and *Ceramaster* sp., but *Odontaster* sp. body slightly more flexible and webbing between arms not as pronounced. Arm tips curl upwards at times.

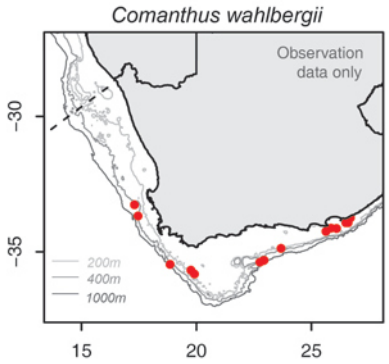
References

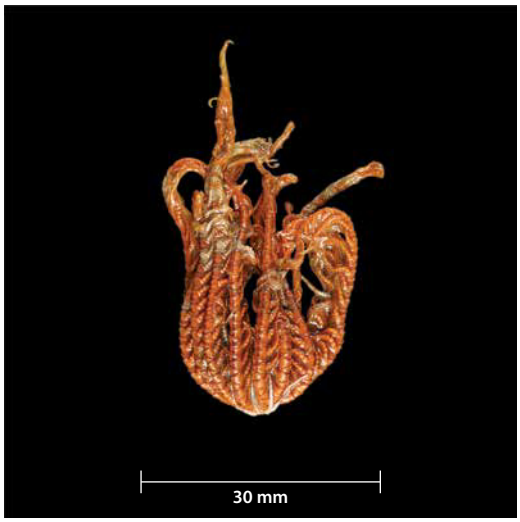
Clark AM and Courtman-Stock J. 1976. *The Echinoderms of Southern Africa*. British Museum (Natural History): London. pp. 58-59. (277pp.).

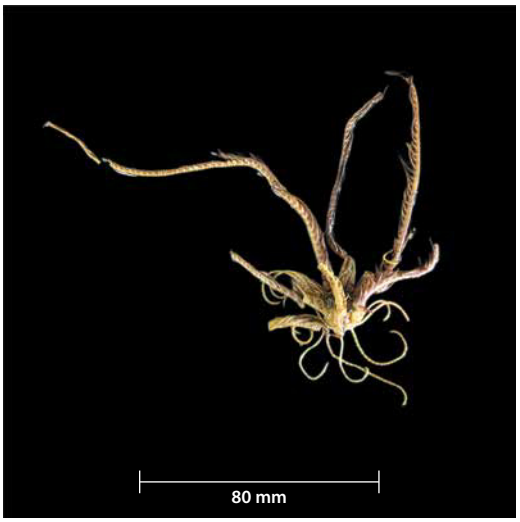
Clark AM and Downey ME. 1992. *Starfishes of the Atlantic (Volume 3)*. Chapman and Hall: London. pp. 154-155. (794pp.).

Comanthus wahlbergii (ComWah)

Phylum:	Echinodermata
Class:	Crinoidea
Order:	Comatulida
Family:	Comasteridae
Genus:	*Comanthus*
Species:	*wahlbergii*
Common name:	Common feather star/Crinoid







Distinguishing features
Between 10 and 22 segmented arms that originate from a small, central disc, below which are cirri which attach the animal to the seafloor or rock. Arms have a feather-like appearance with side branches or pinnules.

Colour
White, pink, orange to pale brown or yellow, often variegated.

Size
Arms can be up to 150 mm in length.

Distribution
South-western Cape, South Coast and southern reach of East Coast of South Africa. Shallow to ± 60 m and possibly deeper.

Similar species
Sea lilies, which are distinguished from feather stars (*Comanthus wahlbergii*) by the absence of a stalk in feather stars. *Tropiometra carinata* is a similar species, but usually smaller and have finer, more numerous pinnules and only 10 long arms.

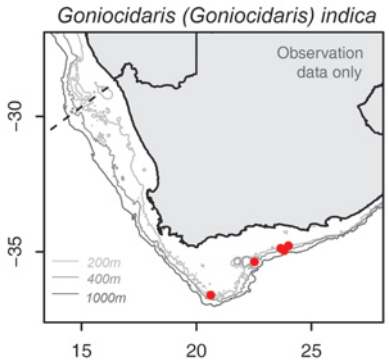
References
Branch GM, Griffiths CL, Branch ML and Beckley LE. 2016. *Two Oceans. A guide to the marine life of southern Africa.* Fourth Edition. Struik Nature, Cape Town. p. 192.

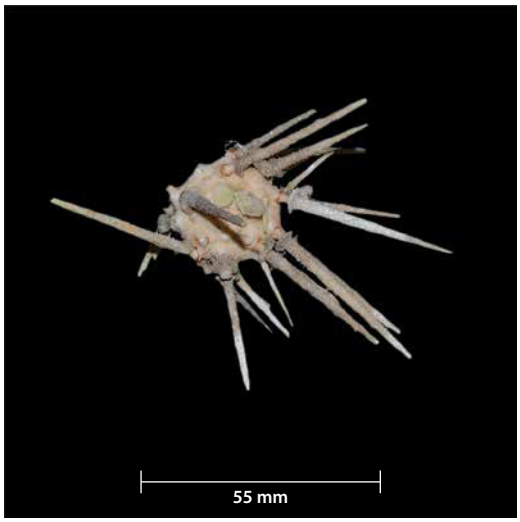
Clark AM and Courtman-Stock J. 1976. *The Echinoderms of Southern Africa.* British Museum (Natural History): London. pp. 11-12 (794pp.).

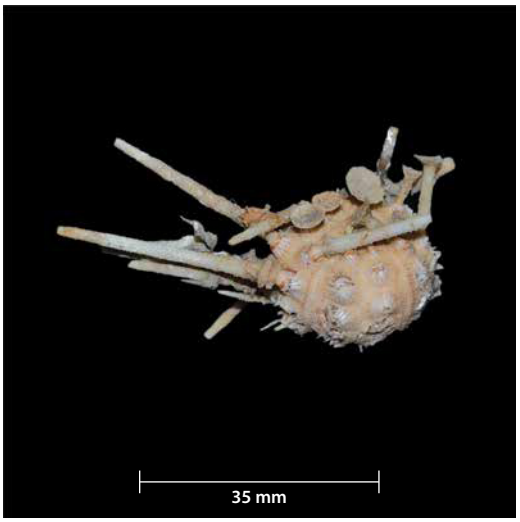
Jones G. 2008. *A Field guide to the marine animals of the Cape Peninsula.* Southern Underwater Research Group. p. 172.

Goniocidaris indica (GonInd)

Phylum:	Echinodermata
Class:	Echinoidea
Order:	Cidaroida
Family:	Cidaridae
Genus:	*Goniocidaris (Goniocidaris)*
Species:	*indica*
Common name:	Umbrella urchin







Distinguishing features
Robust, small urchin. Sturdy, thorny primary spines with umbrella-like structures at base. Spines readily detach from the test.

Colour
Pinkish-cream test, with brownish spines.

Size
Maximum horizontal diameter 25 mm.

Distribution
South Coast of South Africa, Maldives, Tanzania; 160-620 m depth range.

Similar species
None. Umbrella-like structures distinguish *Goniocidaris indica*.

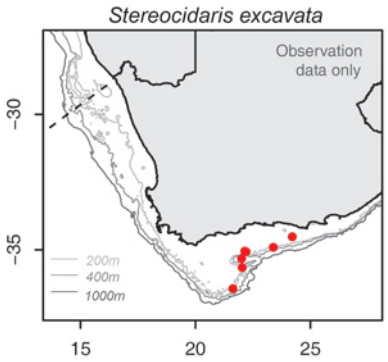
References
Filander Z and Griffiths CL. 2014. Additions to and revision of the South African echinoid fauna (Echinodermata: Echinoidea). *African Natural History* 10: 47-56.

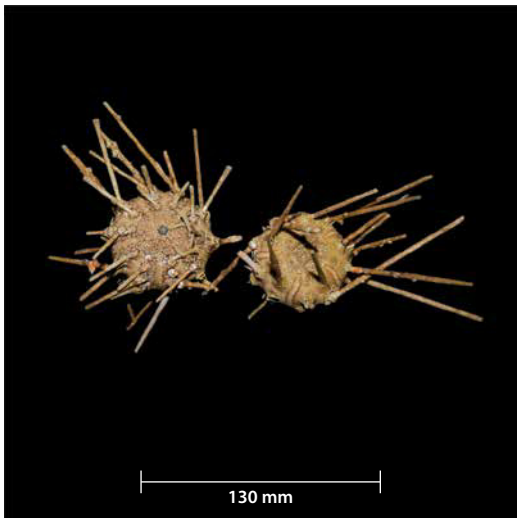
Filander Z and Griffiths C. 2017. Illustrated guide to the echinoid (Echinodermata: Echinoidea) fauna of South Africa. *Zootaxa*, 4296 (1): 1-72. p.15.

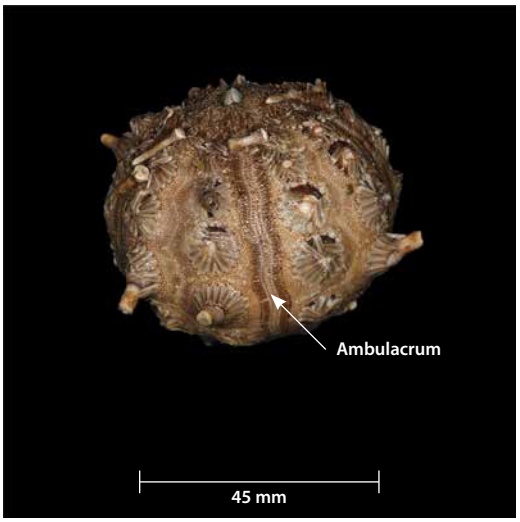
Mortensen T. 1951. *A Monograph of the Echinoidea. V.2: Spatangoida II. Amphisternata II. Spatangiae, Loveniidae, Pericosmidae, Schizasteridae, Brissidae*. C. A. Reitzel, Copenhagen. pp. 555.

Stereocidaris excavata (SteSpp)

Phylum:	Echinodermata
Class:	Echinoidea
Order:	Cidaroida
Family:	Cidaridae
Genus:	*Stereocidaris*
Species:	*excavata*
Common name:	Pencil urchin







Distinguishing features
Large, robust urchin. Sturdy, long, slender, serrated, flute-like primary spines (although often easily detach from test). Darkened secondary spines encircling base of primary spines. Dark, double rows of miliary spines, extending from top to bottom of test (ambulacrum). Anal area, sunken with centrally positioned, elevated pores.

Colour
Beige to brown, with darkened secondary spines at base of primary spine and darkened ambulacrum. May have a green tint.

Size
Maximum horizontal diameter 69 mm.

Distribution
Endemic to the South Coast of South Africa; 120-170 m depth range.

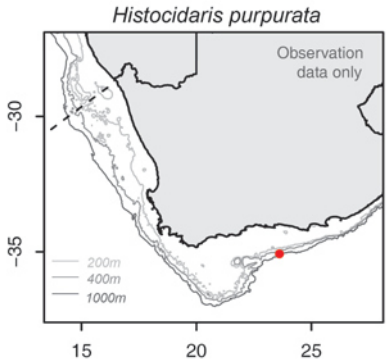
Similar species
Stereocidaris capensis, which is smaller (up to 36 mm diameter). *S. capensis* lacks darkened secondary spines at the base of the primary spine.

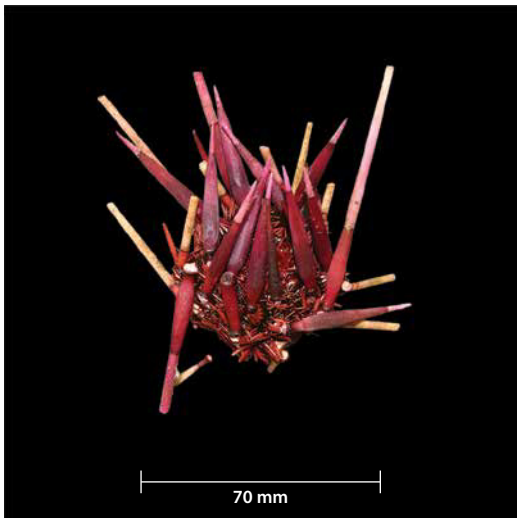
References
Filander Z and Griffiths C. 2017. Illustrated guide to the echinoid (Echinodermata: Echinoidea) fauna of South Africa. *Zootaxa*, 4296 (1): 1-72. p.17.

Mortensen T. 1932. New Contributions to the Knowledge of the Cidarids I: Notes on Some Recent Cidarids. *Det Kkongelige Danske Videnskabernes Selskabs Skrifter, Naturvidenskabelig og Afdeling* 9, 145-174.

Histocidaris purpurata (HisPur)

Phylum:	Echinodermata
Class:	Echinoidea
Order:	Cidaroida
Family:	Histocidaridae
Genus:	*Histocidaris*
Species:	*purpurata*
Common name:	Purple pencil urchin





Distinguishing features
Round, robust test. Long, robust, pointy primary spines with darkened smooth base and lighter ridged extensions. Secondary spines considerably shorter, flattened, narrowing to a blunt tip.

Colour
Brown underlying test and brown to red secondary spines. Base of primary spines deep purplish-red, with contrasting pale pink to white at tips.

Size
Maximum horizontal diameter 28 mm.

Distribution
South Coast of South Africa, and globally North Atlantic, Indian Ocean and New Zealand; 750-1080 m depth range.

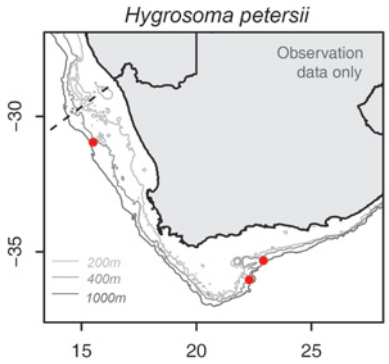
Similar species
Coelopleurus spp. have similar red to pink colouring, but spines are banded.

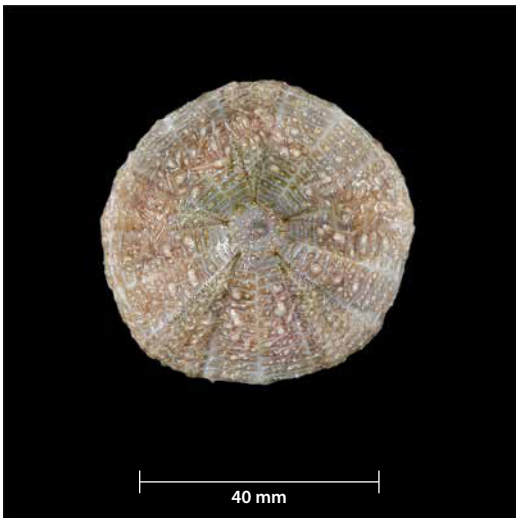
References
Mortensen T. 1928. *A Monograph of the Echinoidea. I. Cidaroidea*. C. A. Reitzel & Oxford University Press, Copenhagen & London. pp. 104-107.

Sladen WP. 1889. Report on a collection of echinodermata from the south-west coast of Ireland, dredged in 1888 by a committee appointed by the Royal Irish Academy. *Proceedings of the Royal Irish Academy* (1889-1901), 1, pp. 687-704. p. 699; pl. 29: figs 1-5.

Hygrosoma petersii (TamSha)

Phylum:	Echinodermata
Class:	Echinoidea
Order:	Echinothurioida
Family:	Echinothuriidae
Genus:	*Hygrosoma*
Species:	*petersii*
Common name:	Grey Tam O'Shanter





Distinguishing features
Test circular, collapsed. Large tubercles (structures bearing spines) and distinctive areoles (circular outlines around tubercles). Spines bearing poisonous glands (handle with caution). Believed to serve as a host to juvenile cusk eels.

Colour
Light grey/green in colour, sometimes dark violet.

Size
Maximum horizontal diameter 180 mm.

Distribution
West and South Coasts of South Africa, Atlantic; 200-3 200 m depth range.

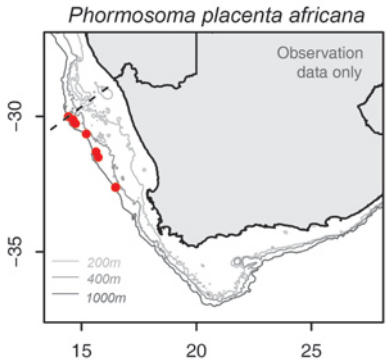
Similar species
Several Echinothuriidae species occur in the region, distinguished from these by tubercle arrangement, where tubercles disappear towards mouth (peristome) in *H. petersii*.

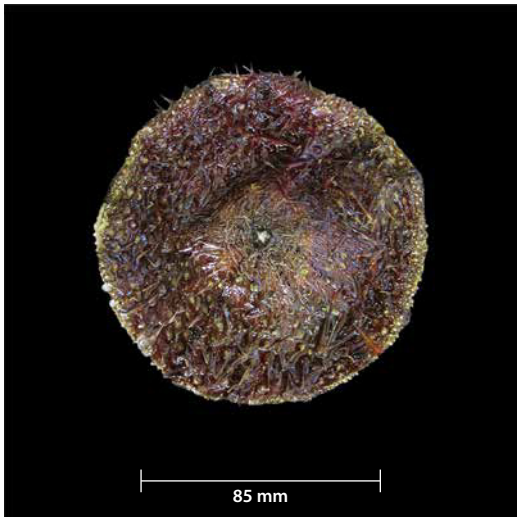
References
Clark AM and Courtman-Stock J. 1976. *The echinoderms of southern Africa*. Publ. No. 766. British Museum (Nat. Hist), London. pp. 220. (277pp.).

Filander Z and Griffiths C. 2017. Illustrated guide to the echinoid (Echinodermata: Echinoidea) fauna of South Africa. *Zootaxa*, 4296 (1): 1-72. pp. 22-23.

Phormosoma placenta africana (TamOsh)

Phylum:	Echinodermata
Class:	Echinoidea
Order:	Echinothurioida
Family:	Echinothuriidae
Genus:	*Phormosoma*
Species:	*placenta africana*
Common name:	Beret urchin/Tam O'Shanter





Distinguishing features
Soft, flexible, disc-shaped test, texture leather-like, usually collapsed in trawl. Deepened areoles (circular areas around spine-bearing structure). Short, uniform spines, easily brushed off. Spines bearing poisonous glands (handle with caution).

Colour
Usually dark purple, but may also occur in other colours.

Size
Maximum horizontal diameter 120 mm.

Distribution
Endemic to the West Coast of South Africa; at 50-3 700 m depth range.

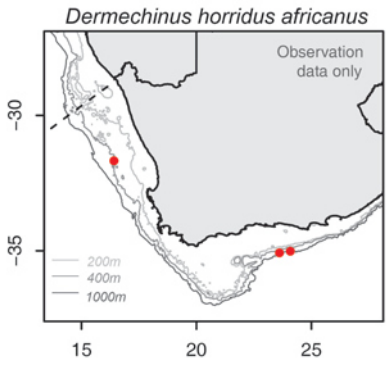
Similar species
Hygrosoma petersii, but *P. placenta africana* differs in that both large tubercles (structure bearing spines) and areoles disappear towards mouth (peristome).

References
Clark AM and Courtman-Stock J. 1976. *The echinoderms of southern Africa*. Publ. No. 766. British Museum (Nat. Hist), London. pp. 221. (277pp.).

Filander Z and Griffiths C. 2017. Illustrated guide to the echinoid (Echinodermata: Echinoidea) fauna of South Africa. *Zootaxa*, 4296 (1): 1-72. pp. 25-26.

Dermechinus horridus africanus (DemHor)

Phylum:	Echinodermata
Class:	Echinoidea
Order:	Camarodonta
Family:	Echinidae
Genus:	*Dermechinus*
Species:	*horridus africanus*
Common name:	Orange pumpkin urchin



Distinguishing features
Globular, delicate and extremely high test (pumpkin-like appearance), becoming more vertically raised with age. Slender, fragile, sparsely arranged spines that readily detach from test. Primary spines longer than secondary ones. Distinct white tubercles in rows from oral to aboral sides.

Colour
Bright, sometimes pale, orange to red.

Size
Maximum horizontal diameter 90 mm; maximum height 120 mm.

Distribution
West and South Coast region of South Africa, Pacific and Antarctica; 30-1 020 m depth range.

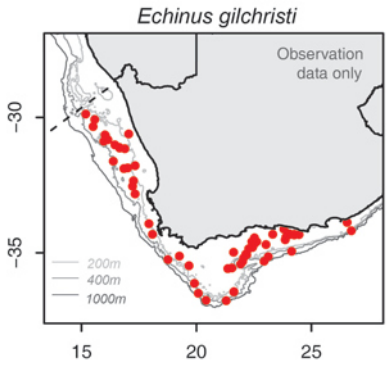
Similar species
Apart from the subspecies (*Dermechinus horridus horridus*), other similar species known thus far is *Pseudechinus marionus* from Marion Island.

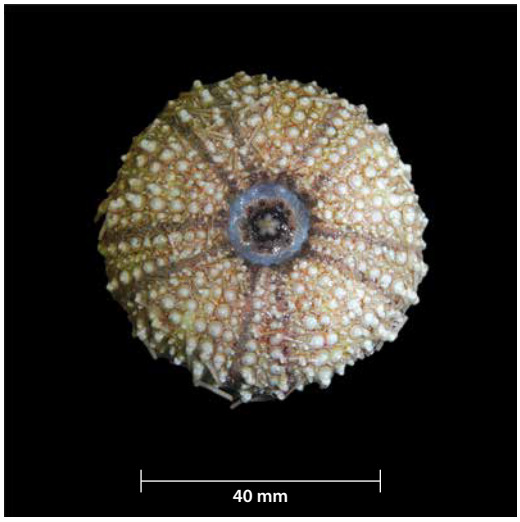
References
Clark AM and Courtman-Stock J. 1976. *The echinoderms of southern Africa.* Publ. No. 766. British Museum (Nat. Hist), London. p. 235. (277pp.).

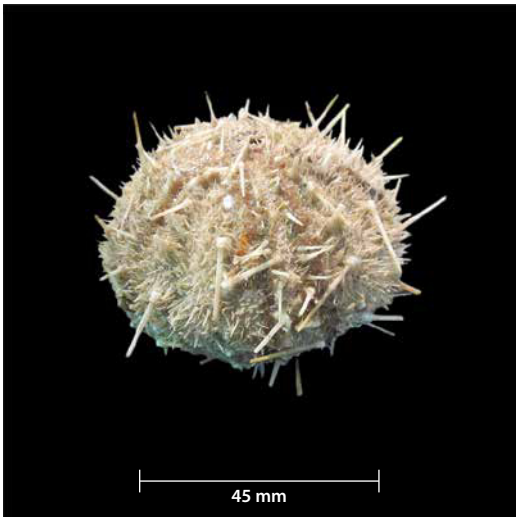
Filander Z and Griffiths C. 2017. Illustrated guide to the echinoid (Echinodermata: Echinoidea) fauna of South Africa. *Zootaxa*, 4296 (1): 1-72. pp. 39-40.

Echinus gilchristi (EchGil)

Phylum:	Echinodermata
Class:	Echinoidea
Order:	Camarodonta
Family:	Echinidae
Genus:	*Echinus*
Species:	*gilchristi*
Common name:	Spiky/Common sea urchin







Distinguishing features
Round test, dorsally compressed and wider laterally (short, squat). Thin, hollow, brittle spines readily broken in trawl net. Mouth with protruding teeth and fleshy lip around opening.

Colour
Test brownish to pink and sometimes greenish, primary spines uniform white, green or pale pink, secondary spines red-brownish, sometimes greenish. Distinct darker bands in double rows running from dorsal to ventral side.

Size
Maximum horizontal diameter 84 mm.

Distribution
Endemic to the West and South Coast region of South Africa; at 40-500 m depth range.

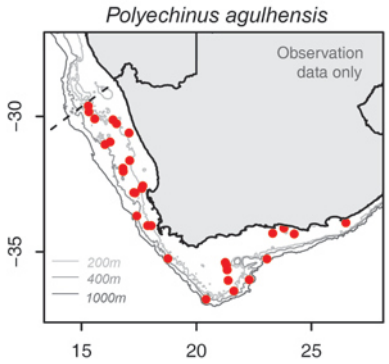
Similar species
Polyechinus agulhensis, which lacks fleshy tissue around mouth.

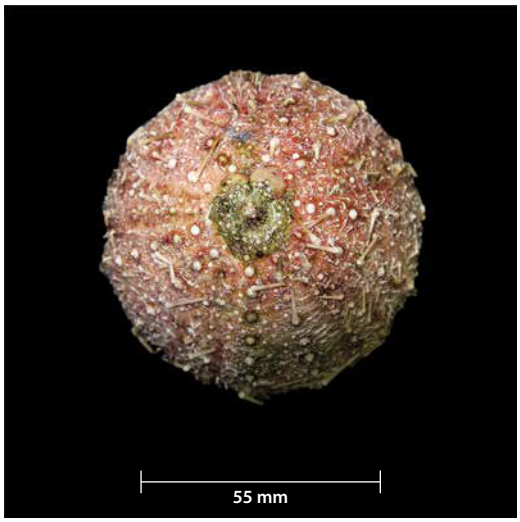
References
Clark AM and Courtman-Stock J. 1976. *The echinoderms of southern Africa*. Publ. No. 766. British Museum (Nat. Hist), London. pp. 277. (277pp.).

Filander Z and Griffiths C. 2017. Illustrated guide to the echinoid (Echinodermata: Echinoidea) fauna of South Africa. *Zootaxa*, 4296 (1): 1-72. pp. 40-41.

Polyechinus agulhensis (ParGra)

Phylum:	Echinodermata
Class:	Echinoidea
Order:	Camarodonta
Family:	Echinidae
Genus:	*Polyechinus*
Species:	*agulhensis*
Common name:	Large spiky urchin





Distinguishing features

Conically shaped test, sloping upwards (volcano-shaped), although this shape is often only evident in large specimens. Smaller specimens have similar shape to *Echinus gilchristi*. Stout but brittle, long primary spines; secondary spines shorter.

Colour

Variable colour – pink, green, white, purple. Distinct darker bands in double rows running from dorsal to ventral side.

Size

Maximum horizontal diameter 86 mm wide, 58 mm high.

Distribution

Endemic to the West and South Coast region of South Africa; at 200-1 080 m depth range.

Similar species

Echinus gilchristi, but *P. agulhensis* has a more tapered, sloping test in volcano shape and lacks fleshy ring around mouth.

References

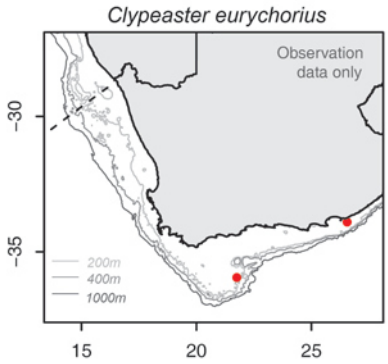
Clark HL. 1923. The Echinoderm fauna of South Africa. *Trustees of the South African Museum* 13:7. p. 221, 23 plates.

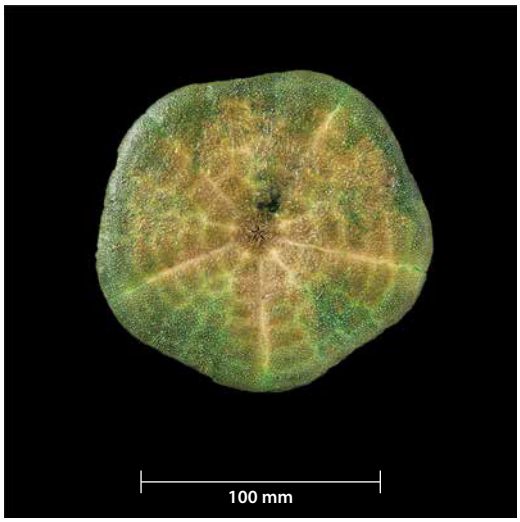
Clark AM and Courtman-Stock J. 1976. *The echinoderms of southern Africa*. Publ. No. 766. British Museum (Nat. Hist), London. p. 238. (277pp.).

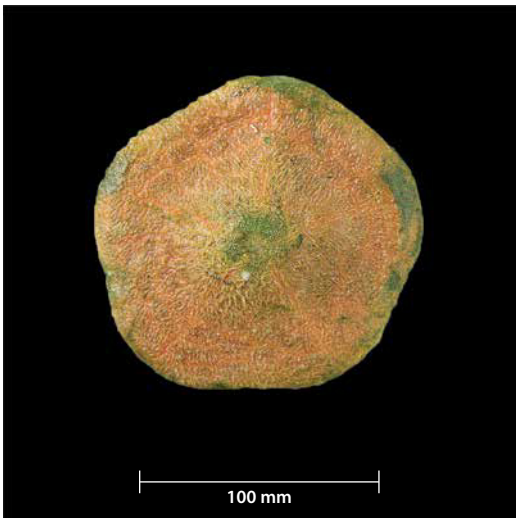
Filander Z and Griffiths C. 2017. Illustrated guide to the echinoid (Echinodermata: Echinoidea) fauna of South Africa. *Zootaxa*, 4296 (1): 1-72. pp. 41-42.

Clypeaster eurychorius (ClyEur)

Phylum:	Echinodermata
Class:	Echinoidea
Order:	Clypeasteroidea
Family:	Clypeasteridae
Genus:	*Clypeaster*
Species:	*eurychorius*
Common name:	Green sunhat urchin







Distinguishing features
Flattened, pentagonal-shaped test, concave edges, posterior (dorsal/top) side convex forming a raised centre, margin slightly thickened. Raised, distally opened petals.

Colour
Live animal yellow to green.

Size
Maximum horizontal diameter 190 mm.

Distribution
South and East Coast region of South Africa, Mediterranean and Indian Ocean; from littoral to 370 m.

Similar species
Clypeaster rarispinus, but *C. eurychorius* differs in having distally opened petals and a raised centre.

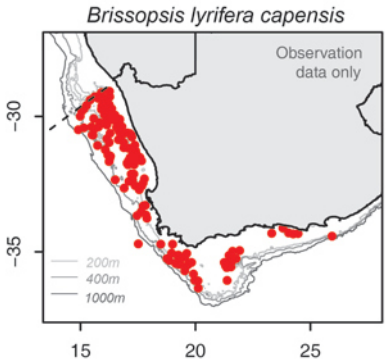
References
Clark AM and Rowe FWE. 1971. *Monograph of shallow-water indo-west Pacific Echinoderms*. Trustees of the British Museum (Natural History). London. 238 pp. + 30 plates.

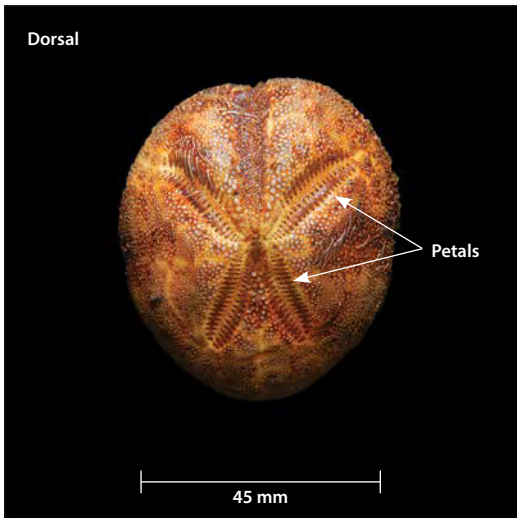
Clark AM and Courtman-Stock J. 1976. *The echinoderms of southern Africa*. Publ. No. 766. British Museum (Nat. Hist), London. p. 241. (277pp.).

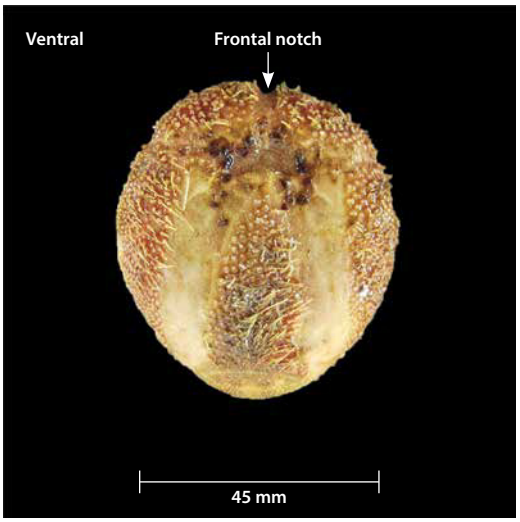
Filander Z and Griffiths C. 2017. Illustrated guide to the echinoid (Echinodermata: Echinoidea) fauna of South Africa. *Zootaxa*, 4296 (1): 1-72. pp. 50-51.

Brissopsis lyrifera capensis (Smouse)

Phylum:	Echinodermata
Class:	Echinoidea
Order:	Spatangoida
Family:	Brissidae
Genus:	*Brissopsis*
Species:	*lyrifera capensis*
Common name:	Brissopsis/Heart urchins







Distinguishing features
Elongated, heart-shaped test, with distinct frontal notch. Petals straight, divergent, anterior ones longer than posterior. Thin, short, fragile uniform spines, generally fall off in trawl net. Some specimens with distinct darker brown/black fasciole in shape of lyre on dorsal surface, but not all individuals have this marking.

Colour
Brown, with some individuals (but not all) having a distinct darker line in shape of lyre.

Size
Maximum horizontal diameter 70 mm.

Distribution
Endemic to the West and South Coast region of South Africa; 5-1 400 m.

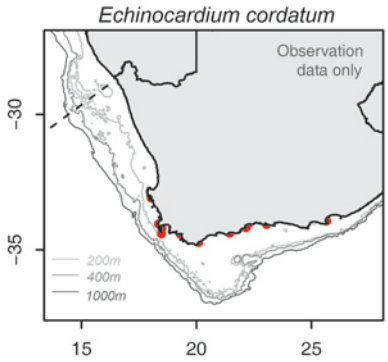
Similar species
Echinocardium cordatum which has wider petals, with conspicuous pores and deeper frontal notch.

References
Clark AM and Courtman-Stock J. 1976. *The echinoderms of southern Africa*. Publ. No. 766. British Museum (Nat. Hist), London. p. 249. (277pp.).

Filander Z and Griffiths C. 2017. Illustrated guide to the echinoid (Echinodermata: Echinoidea) fauna of South Africa. *Zootaxa*, 4296 (1): 1-72. p. 57.

Echinocardium cordatum (EchCor)

Phylum:	Echinodermata
Class:	Echinoidea
Order:	Spatangoida
Family:	Loveniidae
Genus:	*Echinocardium*
Species:	*cordatum*
Common name:	Small heart urchin/Sea potato



Distinguishing features
Moderately high, oval-shaped test, with deepened anterior notch, frequently with a red colouration. Distinctive, wide petals, with conspicuous pores containing tube feet. Anterior petals longer than posterior ones. Spines closely packed, directed backwards.

Colour
White to pale beige/cream, sometimes with red colouration around the frontal notch.

Size
Maximum horizontal diameter 90 mm.

Distribution
Cosmopolitan species, reported along the entire coast of South Africa; from littoral to 230 m.

Similar species
Schizaster lacunosus, which has an extremely pointed end and test very high at posterior end.

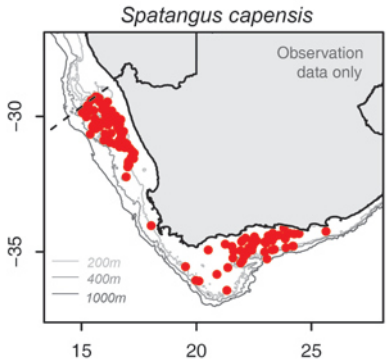
References
Branch GM, Griffiths CL, Branch ML and Beckley LE. 2016. *Two Oceans. A guide to the marine life of southern Africa*. Fourth Edition. Struik Nature, Cape Town. p. 236.

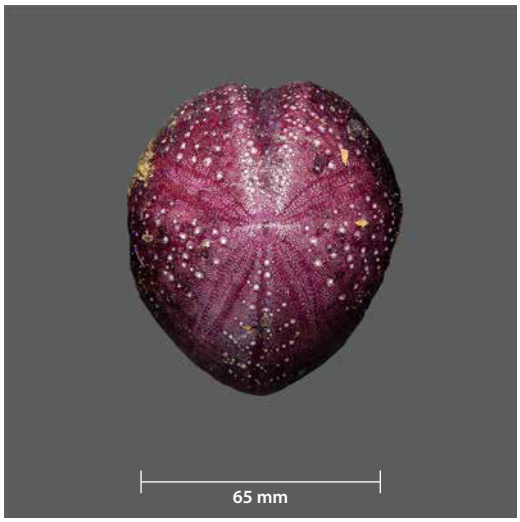
Clark AM and Courtman-Stock J. 1976. *The echinoderms of southern Africa.* Publ. No. 766. British Museum (Nat. Hist), London. p. 251. (277pp.).

Filander Z and Griffiths C. 2017. Illustrated guide to the echinoid (Echinodermata: Echinoidea) fauna of South Africa. *Zootaxa*, 4296 (1): 1-72. pp. 60-61.

Spatangus capensis (Pheart)

Phylum:	Echinodermata
Class:	Echinoidea
Order:	Spatangoida
Family:	Spatangidae
Genus:	*Spatangus*
Species:	*capensis*
Common name:	Purple heart urchin





Distinguishing features
Large urchin, deep purple in colour. Test with anterior notch, giving a heart-shaped appearance. Narrow, distinctive paired petals. Short, dense spines.

Colour
Purple, sometimes brownish-beige, cleaned test white.

Size
Maximum horizontal diameter 125 mm.

Distribution
Endemic to the South and West Coasts of South Africa; 37-500 m depth range.

Similar species
Spatogobrissus mirabilis, which lacks frontal notch.

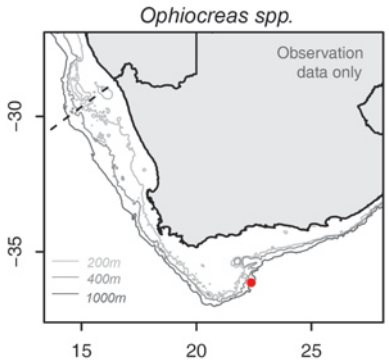
References
Clark AM and Courtman-Stock J. 1976. *The echinoderms of southern Africa.* Publ. No. 766. British Museum (Nat. Hist), London. p. 253. (277pp.).

Filander Z and Griffiths C. 2017. Illustrated guide to the echinoid (Echinodermata: Echinoidea) fauna of South Africa. *Zootaxa*, 4296 (1): 1-72. pp. 63-64.

Mortensen T. 1951. *A Monograph of the Echinoidea. V.2: Spatangoida II. Amphisternata II. Spatangiae, Loveniidae, Pericosmidae, Schizasteridae, Brissidae.* C. A. Reitzel, Copenhagen. p. 16.

Ophiocreas spp. (Ophiu 6)

Phylum:	Echinodermata
Class:	Ophiuroidea
Order:	Euryalida
Family:	Asteroschematidae
Genus:	*Ophiocreas*
Species:	spp.
Common name:	Brown-skinned snake star



Distinguishing features
Moderate in size, often attached onto other marine life when landed on deck. Arms do not branch but curl considerably, thick at bases and most of arms, thin at arm tips. Whole animal covered in thin skin, which easily tears off when damaged.

Colour
Light brown, becoming darker towards arm tips. White beneath skin.

Size
Disc diameter up to 30 mm. Arms very long, but tightly curled.

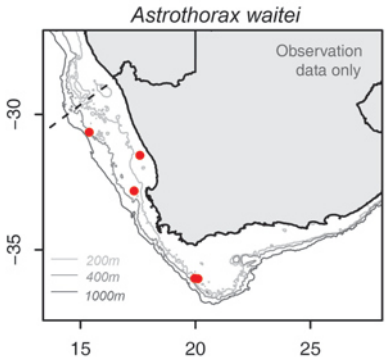
Distribution
Unknown. Only two specimens encountered to date. Further specimens and taxonomy required.

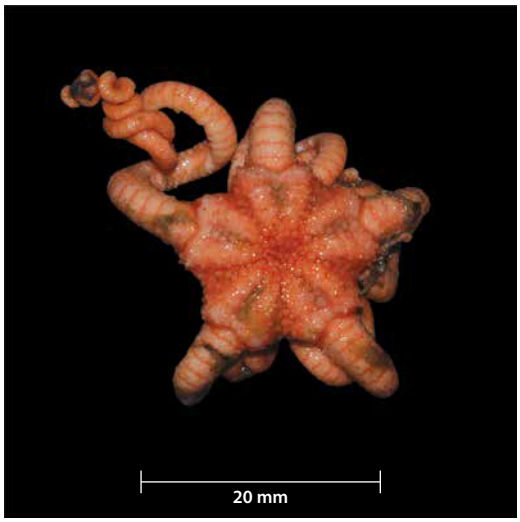
Similar species
None.

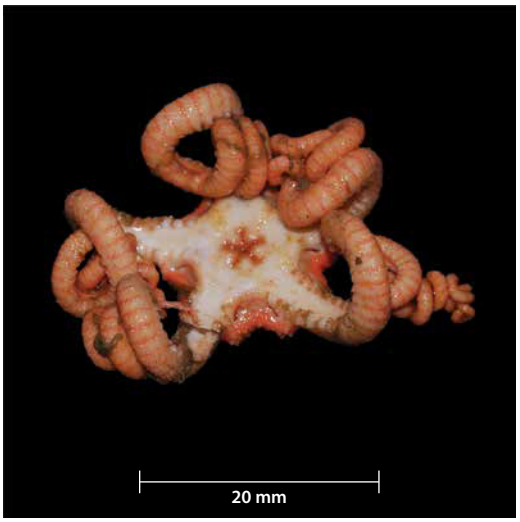
References
Okanishi M. 2012. *Systematic study of the Order Euryalida (Echinodermata, Ophiuroidea) from the Western Pacific*. Seto Marine Biological Laboratory. Kyoto, Kyoto University. pp. 56.

Astrothorax waitei (AstWai)

Phylum:	Echinodermata
Class:	Ophiuroidea
Order:	Euryalida
Family:	Gorgonocephalidae
Genus:	*Astrothorax*
Species:	*waitei*
Common name:	Apricot basket star







Distinguishing features
Small size, often attached onto other marine life (sea fans or sponges) when landed on deck. Disc swollen (tumid), dorsal surface and arms banded. Both dorsal and ventral sides covered in coarse and fine tubercles intermixed, ventral tubercles abruptly finer. Jaws also covered by fine tubercles. Arms five, long, do not branch, but may be tightly coiled dorso-ventrally. Arm spines, up to ten, with shape changing from thorny-tipped stumps proximally to F-shaped hooks distally.

Colour
Pale orange, apricot.

Size
Considerably smaller than other basket stars, disc diameter up to 20 mm.

Distribution
West Coast of South Africa to East Coast, Durban; 0-1 005 m depth.

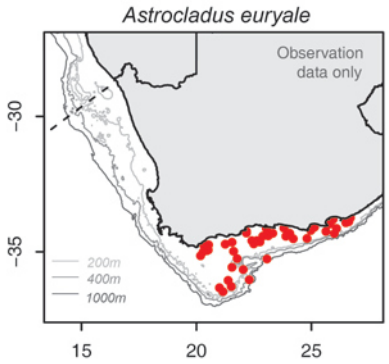
Similar species
None.

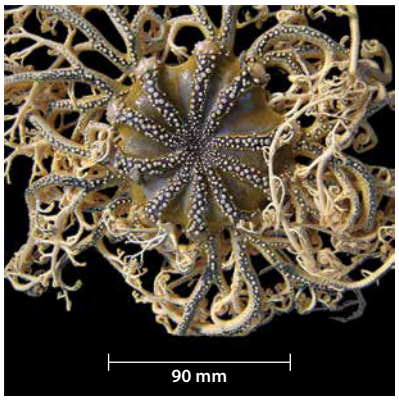
References
Clark AM and Courtman-Stock J. 1976. *The Echinoderms of Southern Africa*. London, British Museum (Natural History). p. 132. (277pp.).

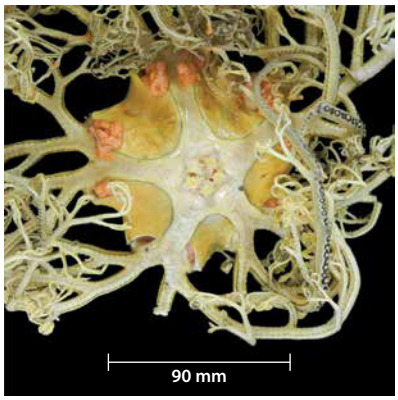
Olbers JM. 2016. *Taxonomy, Biodiversity and Biogeography of the Ophiuroidea of South Africa*. PhD dissertation, Department of Biological Sciences, University of Cape Town, South Africa. pp. 149-150. (434pp.).

Astrocladus euryale (AstEur)

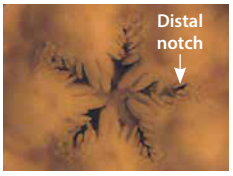
Phylum:	Echinodermata
Class:	Ophiuroidea
Order:	Euryalida
Family:	Gorgonocephalidae
Genus:	*Astrocladus*
Species:	*euryale*
Common name:	Black and white basket star








Radial shields and arm bases



Oral papillae

Distinguishing features

Disc round, smooth. Radial shields armed with moderate to large round tubercles, which continue down arms but are absent at arm tips. Arms branch at disc margin. Arms readily detach and a tangled mass of arms may be the only parts retained. Ventral disc smooth and naked, including jaws and oral area. Oral papillae spiniform, fringe oral area including distal notches. Arm spines on ventral side of arms, conical, becoming hook-shaped towards arm tips.

Colour

Mainly black and white and/or grey with black surrounding tubercles on disc and arms, disc colour sometimes olive green.

Size

Disc diameter up to 75 mm.

Distribution

Endemic. West Coast, off Cape Town to East Coast, central KwaZulu-Natal; 11-555 m depth.

Similar species

Astrodendum capensis, which is purple to pink in colour, with tubercles that do not extend down arms.

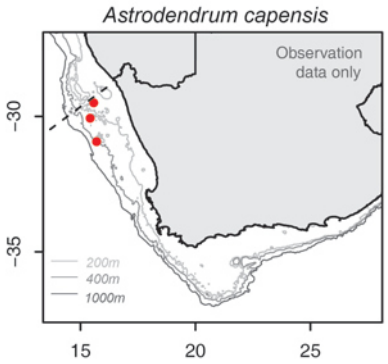
References

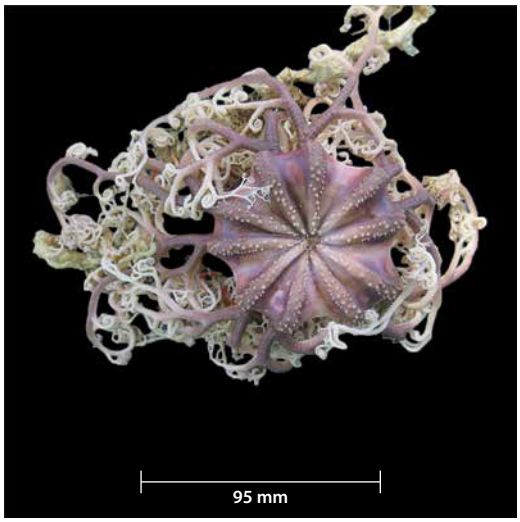
Clark AM and Courtman-Stock J. 1976. *The Echinoderms of Southern Africa.* London, British Museum (Natural History). p. 131. (277pp.).

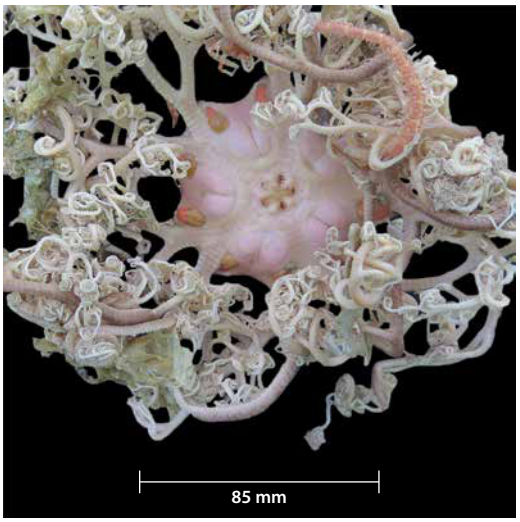
Olbers JM. 2016. *Taxonomy, Biodiversity and Biogeography of the Ophiuroidea of South Africa.* PhD dissertation, Department of Biological Sciences, University of Cape Town, South Africa. pp. 143-144. (434pp.).

Astrodendrum capensis (AstCap)

Phylum:	Echinodermata
Class:	Ophiuroidea
Order:	Euryalida
Family:	Gorgonocephalidae
Genus:	*Astrodendrum*
Species:	*capensis*
Common name:	Purple basket star







Distinguishing features

Disc round, few scattered tubercles in between radial shields. Radial shields armed with small to moderate tubercles, which are fat at their bases but pointed at their tips. Tubercles do not continue down arms. Arms branch extensively from disc margin. Ventral disc smooth and naked, sometimes with small tubercles. Oral papillae spiniform, fringe oral area excluding in distal notches.

Colour

Purple or reddish, may have a few white speckles on main area of disc.

Size

Disc diameter up to 95 mm.

Distribution

Southern African endemic. West Coast, off Orange River to East Coast, Kosi Bay, South Africa. Depth range 161-420 m.

Similar species

Gorgonocephalus chilensis and *Astrocladus euryale*. Tubercles are wide at base in comparison to *G. chilensis* and *Astrodendrum capensis* is purple to red in colour.

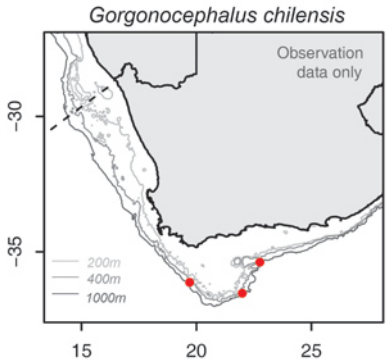
References

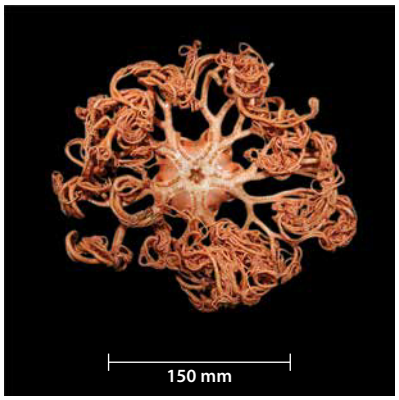
Clark AM and Courtman-Stock J. 1976. *The Echinoderms of Southern Africa.* London, British Museum (Natural History). p. 132. (277pp.).

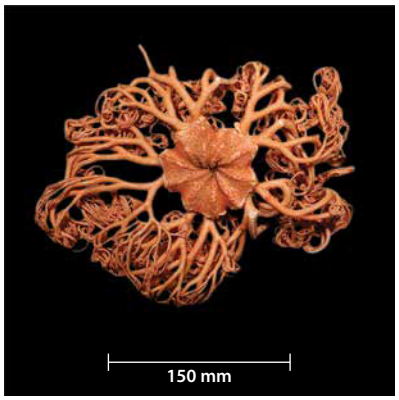
Olbers JM. 2016. *Taxonomy, Biodiversity and Biogeography of the Ophiuroidea of South Africa*. PhD dissertation, Department of Biological Sciences, University of Cape Town, South Africa. pp. 146-147. (434pp.).

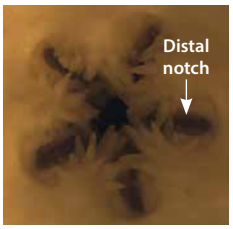
Gorgonocephalus chilensis (GorChi)

Phylum:	Echinodermata
Class:	Ophiuroidea
Order:	Euryalida
Family:	Gorgonocephalidae
Genus:	*Gorgonocephalus*
Species:	*chilensis*
Common name:	Red basket star/Chilean basket star









Oral papillae

Distinguishing features

Disc slightly inflated; dorsal areas between radial shields slightly indented. Radial shields conspicuous, narrow, densely covered in conical tubercles; remainder of disc covered in skin with numerous scattered tubercles, sometimes smaller in size. Disc margin with few larger tubercles. Ventral interradial areas covered in skin with small, scattered, low tubercles, few scattered tubercles towards oral area. Five arms, branching from or within disc. Arms readily detach and tangled mass of arms may be the only parts retained. Oral papillae and teeth spiniform, fringe oral frame, but absent in distal notches.

Colour

Brick red, pink to light brown in colour, with white speckles.

Size

Up to 64 mm disc diameter.

Distribution

West Coast, off Cape Town to East Coast, Port Edward; 22-900 m depth.

Similar species

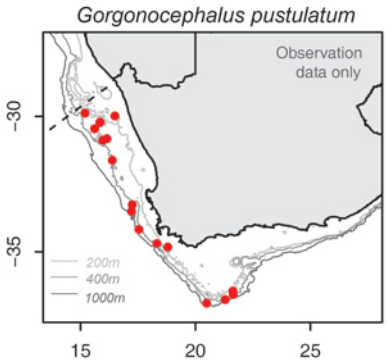
Gorgonocephalus pustulatum and *Astrodendrum capensis*, but *G. chilensis* has more tubercles on radial shields and is red or pink in colour.

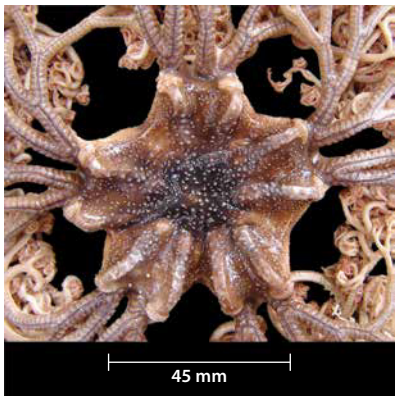
References

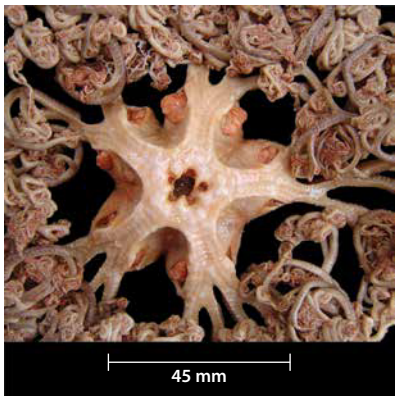
Olbers JM. 2016. *Taxonomy, Biodiversity and Biogeography of the Ophiuroidea of South Africa.* PhD dissertation, Department of Biological Sciences, University of Cape Town, South Africa. pp. 151-152. (434pp.).

Gorgonocephalus pustulatum (GorEuc)

Phylum:	Echinodermata
Class:	Ophiuroidea
Order:	Euryalida
Family:	Gorgonocephalidae
Genus:	*Gorgonocephalus*
Species:	*pustulatum*
Common name:	Brown basket star







Oral papillae

Distinguishing features

Dorsal disc covering variable, sometimes naked interradially, while others with many tubercles, conical or almost spine-like. Radial shields narrow, with irregular tubercles. Ventral surface flat, covered in tubercles or may be naked. Oral papillae and teeth slender, spiniform, forming continuous fringe, but not within distal notches. Arms, five, branching from or within disc. Arms readily detach and tangled mass of arms may be the only parts retained.

Colour

Brown to pink-brown with white speckles. Centre of disc dark.

Size

Up to 54 mm disc diameter.

Distribution

West Coast of South Africa to beyond East London; 78-860 m depth.

Similar species

Gorgonocephalus chilensis and *Astrodendrum capensis*. *G. pustulatum* has fewer tubercles on radial shields and is usually darker in the centre.

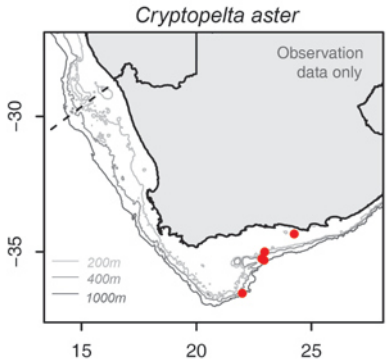
References

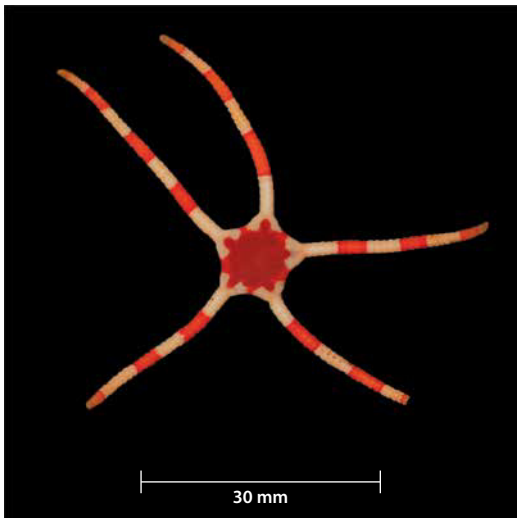
Clark AM and Courtman-Stock J. 1976. *The Echinoderms of Southern Africa.* London, British Museum (Natural History). p. 133. (277pp.).

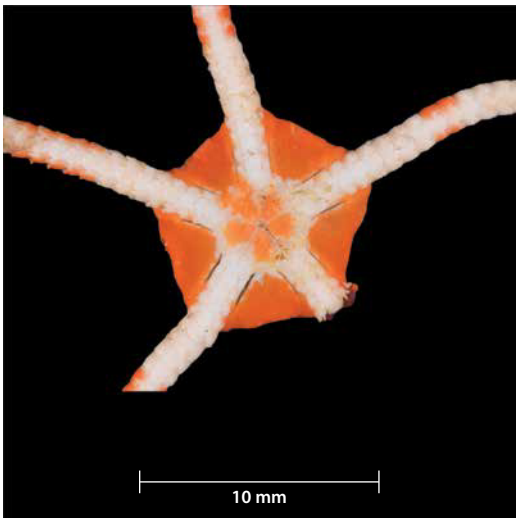
Olbers JM. 2016. *Taxonomy, Biodiversity and Biogeography of the Ophiuroidea of South Africa.* PhD dissertation, Department of Biological Sciences, University of Cape Town, South Africa. pp. 152-154. (434pp.).

Cryptopelta aster (Ophiu5)

Phylum:	Echinodermata
Class:	Ophiuroidea
Order:	Ophiurida
Family:	Ophiodermatidae
Genus:	*Cryptopelta*
Species:	*aster*
Common name:	Red and white banded brittle star







Distinguishing features

Distinct red-and-white-banded arms with a red floret-patterned (flower-patterned) central disc. Disc pentagonal, flat, covered both dorsally and ventrally in fine granules extending onto first few arm segments. Arm spines up to seven, sometimes eight, less than half segment length.

Colour

Floret pattern red to orange and white, arms banded.

Size

Disc diameter up to 13 mm. Arms relatively short, three times disc diameter in length.

Distribution

Endemic. West and South Coasts of South Africa, reaching to East Coast, north of Durban; 75-421 m depth.

Similar species

None. Distinctive red-and-white-banded arms make this species unmistakeable.

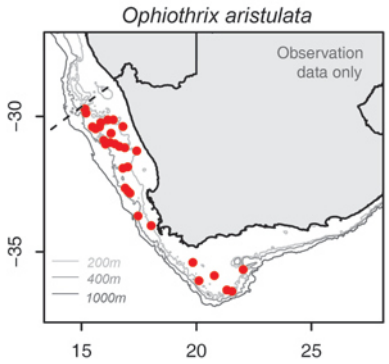
References

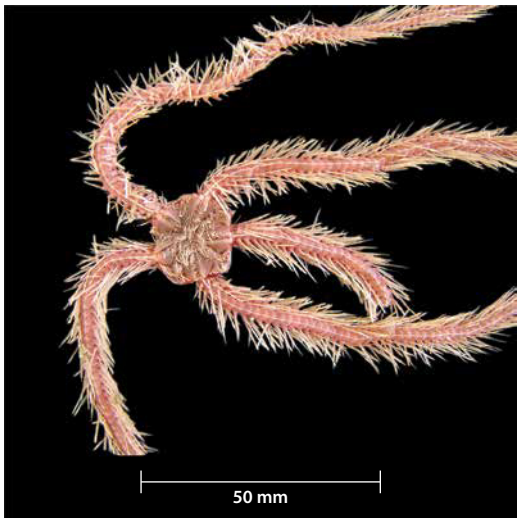
Clark AM and Courtman-Stock J. 1976. *The Echinoderms of Southern Africa.* London, British Museum (Natural History). p. 182. (277pp.).

Olbers JM. 2016. *Taxonomy, Biodiversity and Biogeography of the Ophiuroidea of South Africa.* PhD dissertation, Department of Biological Sciences, University of Cape Town, South Africa. pp. 316-317. (434pp.).

Ophiothrix aristulata (OphFra)

Phylum:	Echinodermata
Class:	Ophiuroidea
Order:	Ophiurida
Family:	Ophiotrichidae
Genus:	*Ophiothrix*
Species:	*aristulata*
Common name:	Feathery brittle star





Distinguishing features

Disc round or pentagonal, disc scales on the central disc are more or less obscured by spines, spinelets or thorny stumps. Radial shields triangular, large and naked. Arms are mainly horizontally flexible (side-to-side movement) and have minimal dorso-ventral (up and down) movement. Distinct white stripe down arms. Arm spines, up to ten, usually long (six times arm segment length), glassy, more or less serrated and tapering, lower spines short and often just stumps. Species very active on deck, readily flipping from dorsal to ventral sides. Frequently associated with sponges.

Colour

Disc usually darker than arms, colours vary from orange, grey, red to pink. Arms with light white longitudinal line, sometimes with pink or red stripes bordering the line.

Size

Disc diameter up to 16 mm. Arms long, nine times disc diameter in length.

Distribution

West Coast, off Orange River to East Coast, Sodwana Bay; usually more than 200 m depth.

Similar species

Ophiothrix fragilis, which has shorter arms, spines on radial shields and does not have the distinctive white stripe along arms.

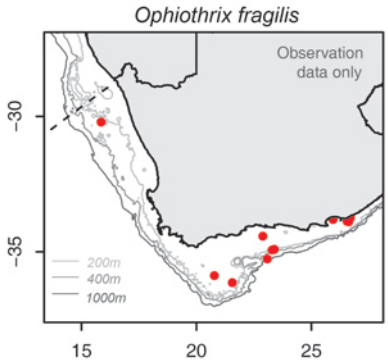
References

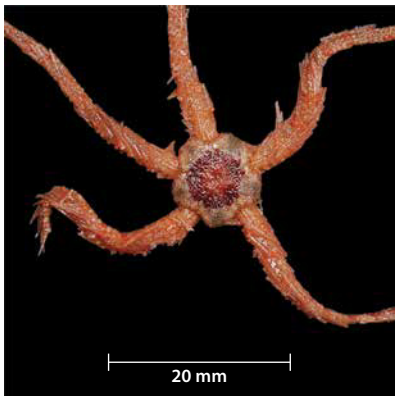
Clark AM and Courtman-Stock J. 1976. *The Echinoderms of Southern Africa*. London, British Museum (Natural History). pp. 142-143. (277pp.).

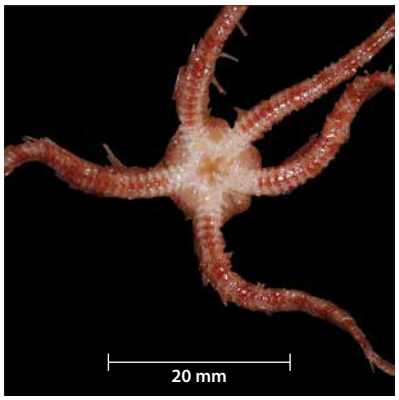
Olbers JM. 2016. *Taxonomy, Biodiversity and Biogeography of the Ophiuroidea of South Africa*. PhD dissertation, Department of Biological Sciences, University of Cape Town, South Africa. pp. 284-285. (434pp.).

Ophiothrix fragilis (Ophiu4)

Phylum:	Echinodermata
Class:	Ophiuroidea
Order:	Ophiurida
Family:	Ophiothrichidae
Genus:	*Ophiothrix*
Species:	*fragilis*
Common name:	Bristly brittle star







Arm spines

Distinguishing features

Dorsal disc covered in thorny spinelets, stumps and spines; may be intermixed. Radial shields large, covered with spines. Arm spines up to ten, glassy, thorny over total length, not tapering, sometimes lowermost spine transformed into a hook, longest spine not more than three times segment length. Long spines protrude along the margins of the length of the arms, giving a 'feathery' appearance. Tips of the arms are readily discarded when disturbed. Shallow, abundant species.

Colour

Orange to red, often with darker brown, grey or purple central disc. May have various combinations of oranges, reds, greens, greys, browns, purples, yellows and pinks. Arms banded and often with dots associated with dorsal arm plates longitudinally along arms.

Size

Disc diameter up to 20 mm. Arms moderate in length, three to five times disc diameter.

Distribution

West Coast, off Orange River to East Coast, Kosi Bay; less than 100 m depth.

Similar species

Ophiothrix abyssicola and *O. aristulata*, which have longer arms and naked radial shields while *O. fragilis* has spines on radial shields and shorter arms.

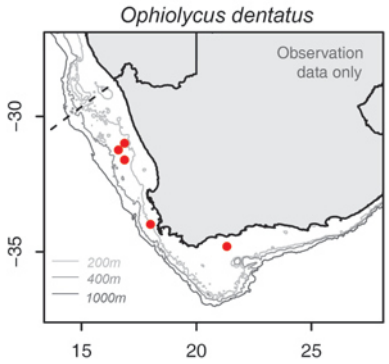
References

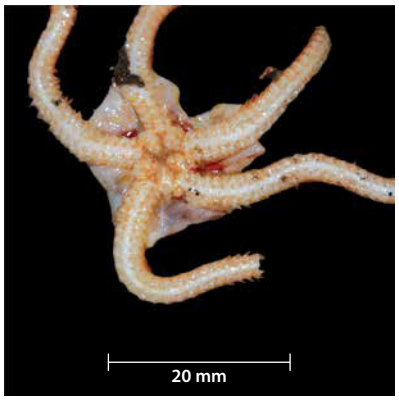
Clark AM and Courtman-Stock J. 1976. *The Echinoderms of Southern Africa.* London, British Museum (Natural History). pp. 144-145. (277pp.).

Olbers JM. 2016. *Taxonomy, Biodiversity and Biogeography of the Ophiuroidea of South Africa.* PhD dissertation, Department of Biological Sciences, University of Cape Town, South Africa. pp. 288-290. (434pp.).

Ophiolycus dentatus (OphDen)

Phylum:	Echinodermata
Class:	Ophiuroidea
Order:	Ophiurida
Family:	Ophiomyxidae
Genus:	*Ophiolycus*
Species:	*dentatus*
Common name:	Toothed brittle star






Arm spines


Oral papillae

Distinguishing features

Disc pentagonal, covered in thick skin. Radial shields narrow, just shorter than width of arm base, not distinct. Oral papillae spiniform, long. Teeth similar in shape, but smaller and clustered at apex of jaw. Arms five, simple, length moderate. Dorsal arm plates fragmented especially basally, covered by thick skin. Arm spines three, lowermost cigar-shaped, broad and flattened, approximately one segment length, remaining spines spiniform, uppermost being slightly longer than segment length, distal spines becoming hook-shaped. Often damaged in sample.

Colour

Red to orange dorsally, lighter ventrally. Colouration sometimes fades to white from trawl damage. Arms red, mottled.

Size

Disc diameter up to 23 mm. Arms three times disc diameter in length.

Distribution

Southern African endemic. West Coast (Groen river) to East Coast (Sodwana Bay) of South Africa; 129-450 m depth.

Similar species

Ophiomyxa vivipara capensis is glossier in appearance and *Ophiolycus dentatus* has larger, more obvious arm spines and many spine-shaped oral papillae.

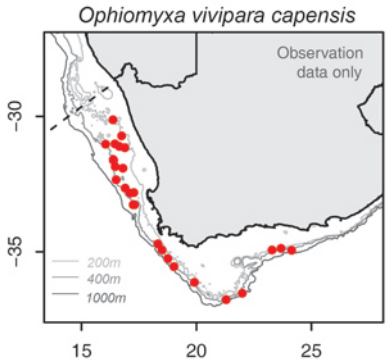
References

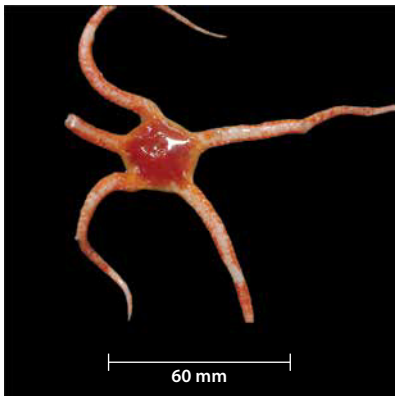
Clark AM and Courtman-Stock J. 1976. *The Echinoderms of Southern Africa*. London, British Museum (Natural History). p. 135. (277pp.).

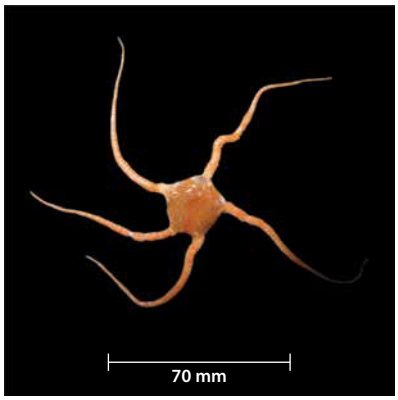
Olbers JM. 2016. *Taxonomy, Biodiversity and Biogeography of the Ophiuroidea of South Africa*. PhD dissertation, Department of Biological Sciences, University of Cape Town, South Africa. pp. 160-162. (434pp.).

Ophiomyxa vivipara capensis (Ophiu2)

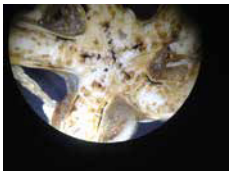
Phylum:	Echinodermata
Class:	Ophiuroidea
Order:	Ophiurida
Family:	Ophiuridae
Genus:	*Ophiomyxa*
Species:	*vivipara capensis*
Common name:	Bright red disc brittle star








Arm spines


Oral papillae

Distinguishing features

Bright red/orange in colour. Disc pentagonal, covered with thick, smooth, glossy skin. Radial shields short, but not distinct in fresh specimens. Oral papillae three to four, broad, serrated, flattened, with transparent edges. Teeth similar, four to five. Arms five, moderately long, flexible and tapered, mottled in colouration, also covered in thick skin. Arm spines slender, serrated and rugose at tip, up to four on free segments. Disintegrates quickly out of water and is often severely damaged in trawls.

Colour

Bright glossy red, yellow or orange disc, mottled red/orange/white arms.

Size

Disc diameter up to 23 mm. Arms three to four times disc diameter in length.

Distribution

Endemic. West Coast off Orange River to East Coast, East London; 101-450 m depth.

Similar species

Ophiolycus dentatus, but *Ophiomyxa vivipara capensis* has a smoother appearance, arm spines are shorter (not obvious) and thorny but often covered in skin. Teeth flat and glassy.

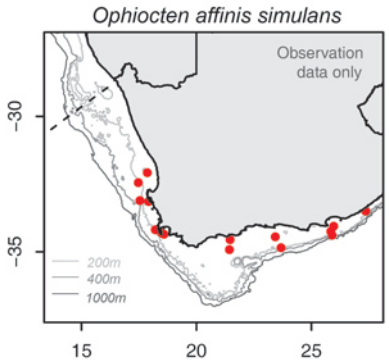
References

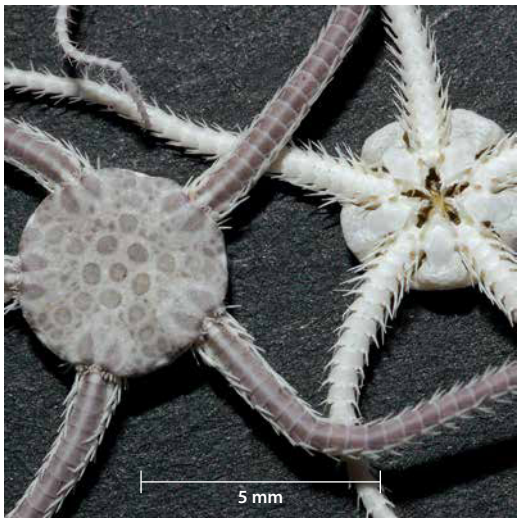
Clark AM and Courtman-Stock J. 1976. *The Echinoderms of Southern Africa.* London, British Museum (Natural History). pp. 134-135. (277pp.).

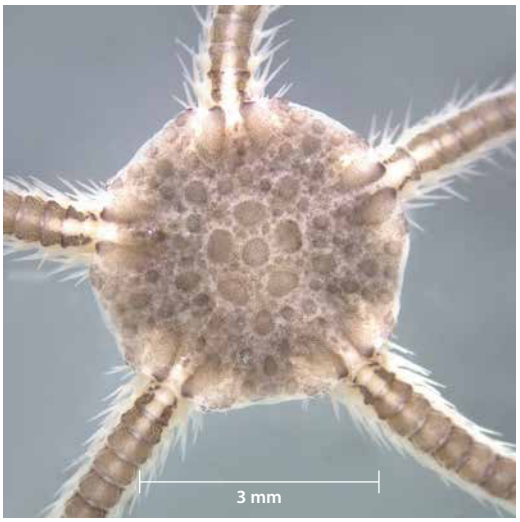
Olbers JM. 2016. *Taxonomy, Biodiversity and Biogeography of the Ophiuroidea of South Africa.* PhD dissertation, Department of Biological Sciences, University of Cape Town, South Africa. pp. 159-160. (434pp.).

Ophiocten affinis simulans (OphAff)

Phylum:	Echinodermata
Class:	Ophiuroidea
Order:	Ophiurida
Family:	Ophiuridae
Genus:	*Ophiocten*
Species:	*affinis simulans*
Common name:	Stepping stone brittle star







Distinguishing features
Small species. Disc scales large circular plates, all encircled by smaller scales. Radial shields separated by scales. Edge of disc slightly indented at arms. Arm combs present. Oral papillae three each side of apical papillae, distalmost broad. Three slender and pointed arm spines.

Colour
Light brown to grey.

Size
Disc diameter up to 4 mm. Arms three times disc diameter in length.

Distribution
Endemic. West Coast, off Lamberts Bay to South Coast, Port Alfred; depth range 55-273 m.

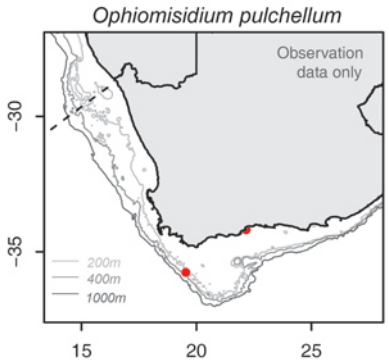
Similar species
None.

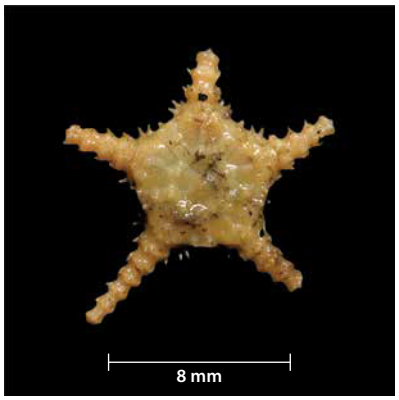
References
Clark AM and Courtman-Stock J. 1976. *The Echinoderms of Southern Africa*. London, British Museum (Natural History). pp. 192-193. (277pp.).

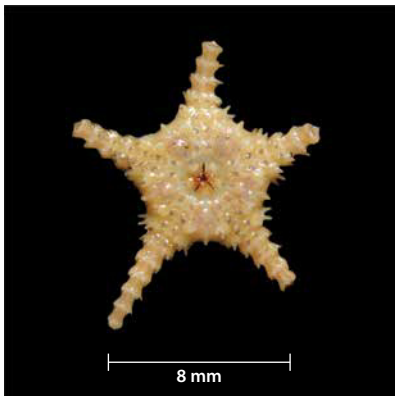
Olbers JM. 2016. *Taxonomy, Biodiversity and Biogeography of the Ophiuroidea of South Africa*. PhD dissertation, Department of Biological Sciences, University of Cape Town, South Africa. pp. 173-174. (434pp.).

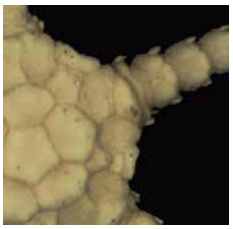
Ophiomisidium pulchellum (Ophiu)

Phylum:	Echinodermata
Class:	Ophiuroidea
Order:	Ophiurida
Family:	Ophiuridae
Genus:	*Ophiomisidium*
Species:	*pulchellum*
Common name:	Spiky orange brittle star









Radial shields

Distinguishing features

Very small species, seldom encountered. Disc round, disc scales large, thick and taking up most of dorsal disc. Radial shields oval. Oral papillae two, fused each side of triangular apical papillae. Arms rigid, short, consisting of approximately 15 segments only. Spiky in appearance due to spines on arms and disc. Arm spines three, enlarged, flattened, blunt, and rapidly decreasing in size down arm.

Colour

Pale orange.

Size

Disc diameter up to 5 mm. Arms one to two times disc diameter in length.

Distribution

West Coast, off Cape Town to East Coast, south of Durban; 70-3 065 m depth.

Similar species

None.

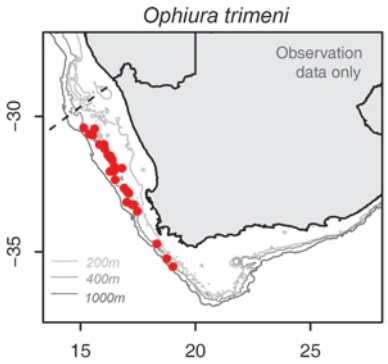
References

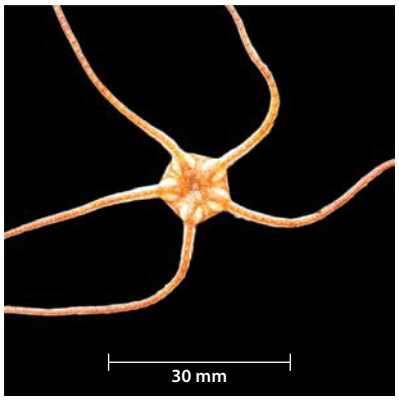
Clark AM and Courtman-Stock J. 1976. *The Echinoderms of Southern Africa*. London, British Museum (Natural History). pp. 190-191. (277pp.).

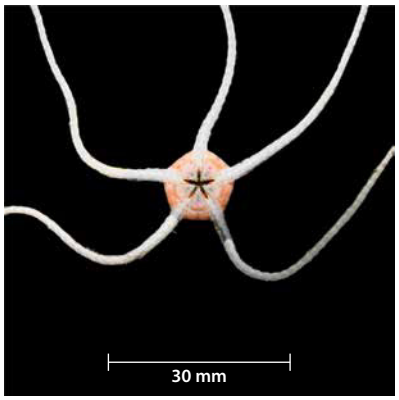
Olbers JM. 2016. *Taxonomy, Biodiversity and Biogeography of the Ophiuroidea of South Africa*. PhD dissertation, Department of Biological Sciences, University of Cape Town, South Africa. pp. 178-179. (434pp.).

Ophiura trimeni (Ophiu3)

Phylum:	Echinodermata
Class:	Ophiuroidea
Order:	Ophiurida
Family:	Ophiuridae
Genus:	*Ophiura (Ophiura)*
Species:	*trimeni*
Common name:	Orange stripe brittle star








Arm spines


Oral papillae

Distinguishing features
Disc scales covered in thin skin. Radial shields half disc radius, twice as long as wide, not touching. Mouth or oral slit usually wide open, oral papillae three, distalmost broadest, apical papillae pointed. Teeth three to five, same shape as apical papillae. Arm spines three, spines twice segment length, one segment length towards end of arms. Orange and white longitudinal striped arms. Patterned disc with orange and white shapes. Very small, fragile species. Very common and abundant.

Colour
Orange and white.

Size
Disc diameter up to 9 mm. Arms three to four times disc diameter in length.

Distribution
Endemic. West Coast, off Orange River to East Coast, Sodwana Bay; 165-1 647 m depth.

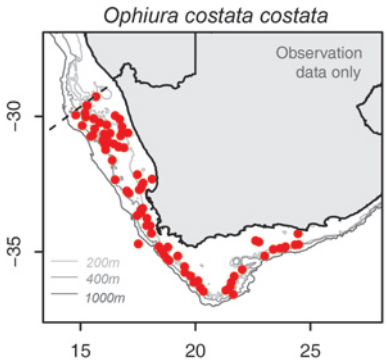
Similar species
None.

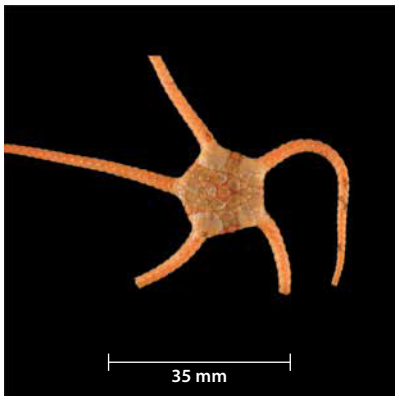
References
Clark AM and Courtman-Stock J. 1976. *The Echinoderms of Southern Africa*. London, British Museum (Natural History). pp. 194-195. (277pp.).

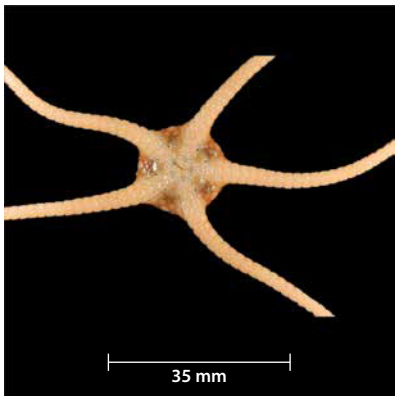
Olbers JM. 2016. *Taxonomy, Biodiversity and Biogeography of the Ophiuroidea of South Africa*. PhD dissertation, Department of Biological Sciences, University of Cape Town, South Africa. pp. 186-188. (434pp.).

Ophiura costata costata (Ophiu1)

Phylum:	Echinodermata
Class:	Ophiuroidea
Order:	Ophiurida
Family:	Ophiuridae
Genus:	*Ophiura (Ophiuroglypha)*
Species:	*costata costata*
Common name:	Rigid orange brittle star







Arm spines

Distinguishing features

Arms and disc inflexible (rigid), arms often broken. Disc pentagonal, disc scales distinct, thick, irregular, forming star shape on disc edged in darker orange colour. Radial shields longer than wide, oval, separated by scales. Mouth narrow or tightly closed. Arms fairly long when unbroken, can be more than four times disc diameter. Arm spines three, very short and appressed to arm.

Colour

Orange to orange-red.

Size

Disc diameter up to 23 mm. Arms often broken, but can be more than four times disc diameter.

Distribution

Endemic. West Coast, off Orange River to South Coast, Cape St Francis; 43-1 647 m depth.

Similar species

None.

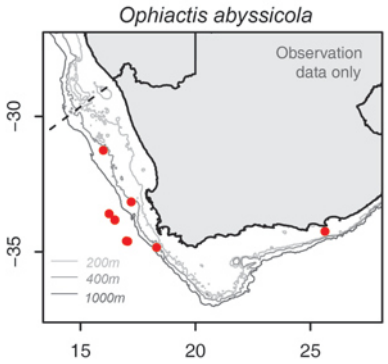
References

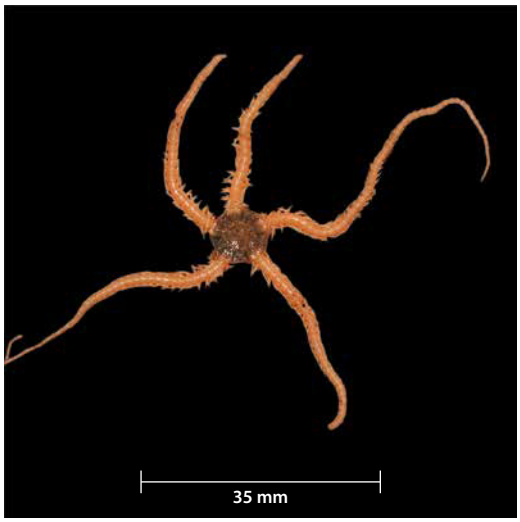
Clark AM and Courtman-Stock J. 1976. *The Echinoderms of Southern Africa.* London, British Museum (Natural History). pp. 195-196. (277pp.).

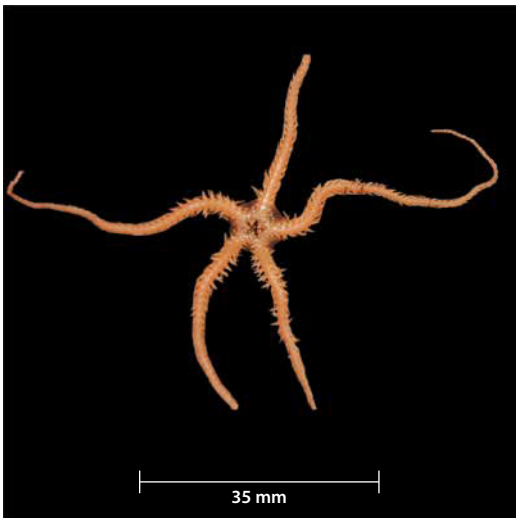
Olbers JM. 2016. *Taxonomy, Biodiversity and Biogeography of the Ophiuroidea of South Africa.* PhD dissertation, Department of Biological Sciences, University of Cape Town, South Africa. pp. 188-189. (434pp.).

Ophiactis abyssicola (OphAby)

Phylum:	Echinodermata
Class:	Ophiuroidea
Order:	Ophiurida
Family:	Ophiuridae
Genus:	*Ophiactis*
Species:	*abyssicola*
Common name:	Abyss brittle star







Distinguishing features

Disc round, sparsely scattered conical spines on disc, concentrated on margin. Radial shields naked, oblong to rectangular. Arms five, simple, long, moniliform (like string of beads) distally. Three to four arm spines, erect, may be pointed or blunt, cylindrical, middle spine longest, half to two times longer than segment.

Colour

Orange arms with darker purple, grey or brown disc; some specimens with a pinkish tinge.

Size

Disc diameter up to 8 mm. Arms three to eight times disc diameter in length.

Distribution

West Coast, off Cape Columbine to South Coast off Still Bay; 167-2 743 m depth.

Similar species

Ophiothrix fragilis, Ophiothrix aristulata and *Ophiactis carnea*, but *Ophiactis abyssicola* is distinguished by conical spines on disc and naked radial shields.

References

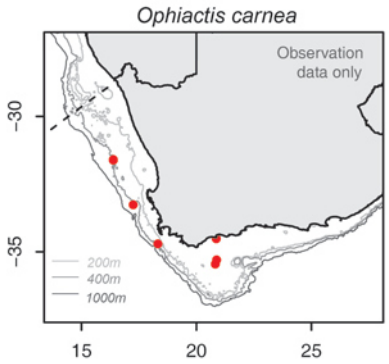
Clark AM and Courtman-Stock J. 1976. *The Echinoderms of Southern Africa.* London, British Museum (Natural History). p. 161. (277pp.).

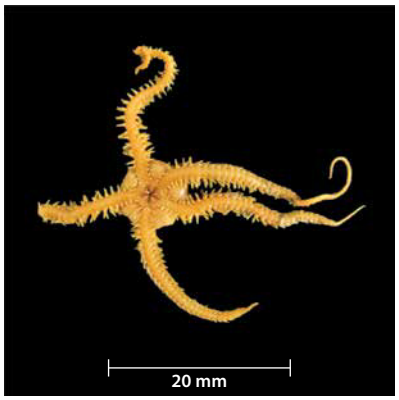
Clark HL. 1923. The echinoderm fauna of South Africa. *Annals of the South African Museum* 13(7): 221-438. pp. 232-233.

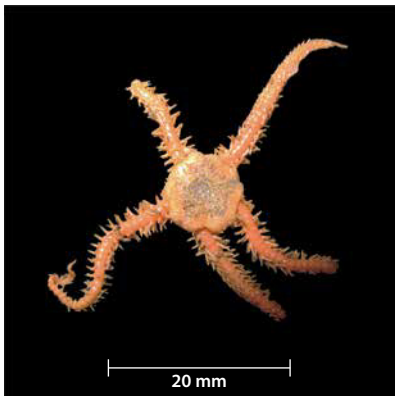
Olbers JM. 2016. *Taxonomy, Biodiversity and Biogeography of the Ophiuroidea of South Africa.* PhD dissertation, Department of Biological Sciences, University of Cape Town, South Africa. pp. 230-231. (434pp.).

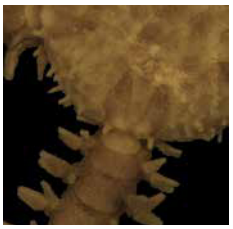
Ophiactis carnea (OphCar)

Phylum:	Echinodermata
Class:	Ophiuroidea
Order:	Ophiurida
Family:	Ophiuridae
Genus:	*Ophiactis*
Species:	*carnea*
Common name:	Fleshy brittle star









D-shaped radial shields

Distinguishing features

Arms five, simple. Disc round, covered in spines, sometimes with darkened area or blotch in centre of disc visible. Radial shields naked, elongated D-shaped, moderate in size. Three to five arm spines.

Colour

Reddish brown to pink, brown or orange, sometimes with white patches.

Size

Disc diameter up to 6 mm. Arms five to six times disc diameter in length.

Distribution

West Coast, beyond Lambert's Bay, off Cape Town to East Coast, Cape St Lucia; intertidal to 220 m depth.

Similar species

Ophiothrix fragilis and *Ophiactis abyssicola*, but *Ophiactis carnea* has D-shaped radial shields.

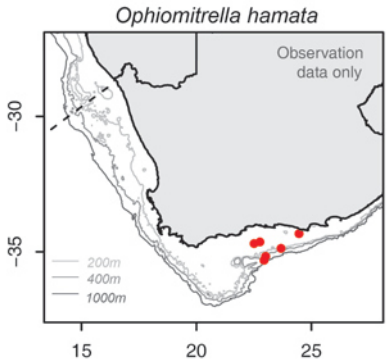
References

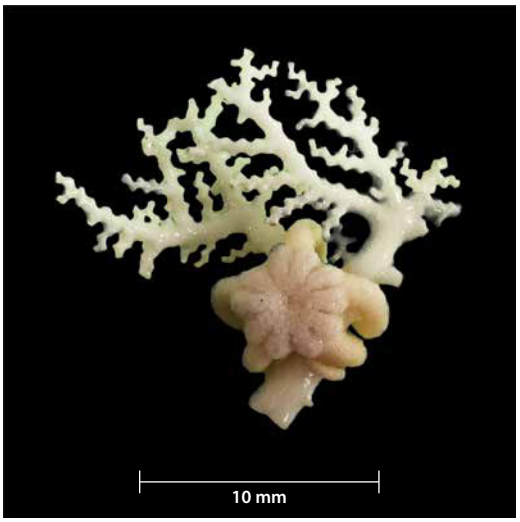
Clark AM and Courtman-Stock J. 1976. *The Echinoderms of Southern Africa*. London, British Museum (Natural History). pp. 161-162. (277pp.).

Olbers JM. 2016. *Taxonomy, Biodiversity and Biogeography of the Ophiuroidea of South Africa*. PhD dissertation, Department of Biological Sciences, University of Cape Town, South Africa. pp. 232-233. (434pp.).

Ophiomitrella hamata (OphHam)

Phylum:	Echinodermata
Class:	Ophiuroidea
Order:	Ophiurida
Family:	Ophiuridae
Genus:	*Ophiomitrella*
Species:	*hamata*
Common name:	Coal stack brittle star





Distinguishing features
Very small species, disc round and covered with short blunt stumps. Radial shields oval in shape, short. Five arms, usually curled under disc or attached to coral or sea fan. Five arm spines, longest not exceeding segment length.

Colour
Light purple or white.

Size
Disc diameter up to 4 mm. Arms three times disc diameter in length.

Distribution
Endemic. South Coast, off Mossel Bay to East Coast, Durban; 63-900 m depth.

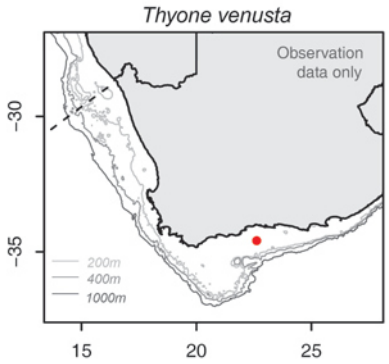
Similar species
None known, although may be confused with *Astrothorax waitei* which also attach to sea fans and other biogenic species.

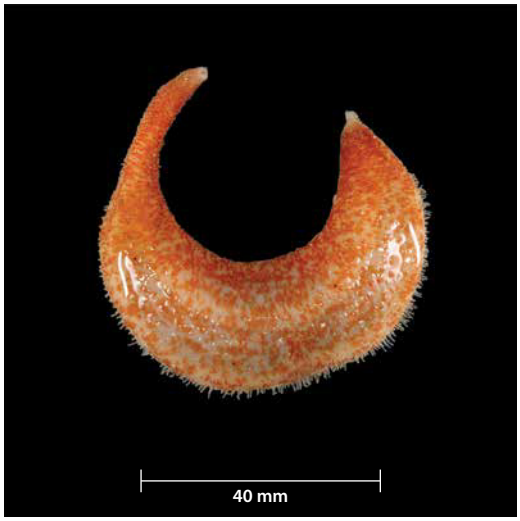
References
Clark AM and Courtman-Stock J. 1976. *The Echinoderms of Southern Africa*. London, British Museum (Natural History). p. 170. (277pp.).

Olbers JM. 2016. *Taxonomy, Biodiversity and Biogeography of the Ophiuroidea of South Africa*. PhD dissertation, Department of Biological Sciences, University of Cape Town, South Africa. pp. 301-302. (434pp.).

Thyone venusta (ThyVen)

Phylum:	Echinodermata
Class:	Holothuroidea
Order:	Dendrochirotida
Family:	Thyonidae
Genus:	*Thyone*
Species:	*venusta*
Common name:	Orange and white speckled sea cucumber





Distinguishing features
U-shaped body, cylindrical, with posterior end turned upward. Skin smooth, but appears 'hairy' due to numerous scattered fine tube feet (podia). Speckled orange and white colour, darker dorsally.

Colour
White, speckled with orange.

Size
90-100 mm in length, width 8-10 mm.

Distribution
South Coast of South Africa, extending to southern East Coast.

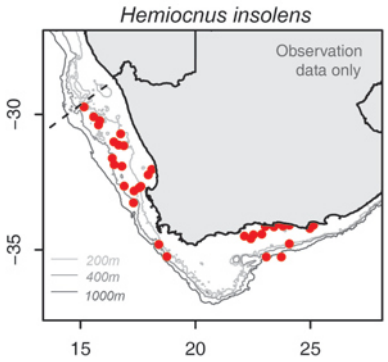
Similar species
Juvenile *Thyone aurea* on West Coast, which are more uniform orange/pink in colour and not U-shaped.

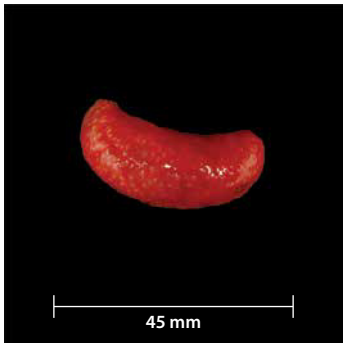
References
Thandar AS and Rambaran R. 2015. On some sea cucumbers (Echinodermata: Holothuroidea) from off the south and west coasts of South Africa collected by the South African Environmental and Observation Network (SAEON). *Zootaxa* 3999 (1): 41-61.

Species identification by Ahmed Thandar.

Hemiocnus insolens (PseIns)

Phylum:	Echinodermata
Class:	Holothuroidea
Order:	Dendrochirotida
Family:	Cucumariidae
Genus:	*Hemiocnus*
Species:	*insolens*
Common name:	Red-chested sea cucumber (sometimes other colours)





Distinguishing features
Small, solid sea cucumber distinguished by its bright colours red or yellow, although white variations are also common, especially on the West Coast. Solid, slightly gelatinous texture. Tube feet scattered all round. Ten irregularly branched tentacles. Usually occurs in dense colonies, especially on the West Coast.

Colour
Usually bright red, yellow or white, but can vary.

Size
25-60 mm in length.

Distribution
Endemic. West and South Coasts of South Africa as far east as Port Elizabeth. Intertidal to 110 m.

Similar species
Pseudocnella sykion and *P. sinorbis* in shallow intertidal waters.

References
Mjobo S and Thandar AS. 2016. A new genus and a new species in the sea cucumber subfamily Colochirinae (Echinodermata: Holothuroidea: Dendrochirotida: Cucumariidae) in the Mediterranean Sea. *Zootaxa* 4189 (1): 156-164.

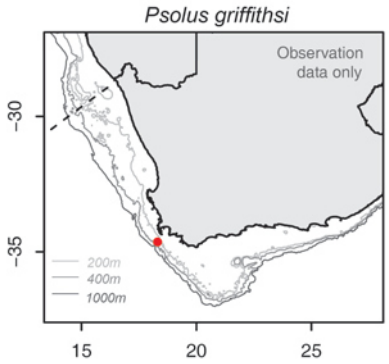
Thandar AS. 2008. Additions to the holothuroid fauna of the southern African temperate faunistic provinces, with descriptions of new species. *Zootaxa* 1697: 1-57.

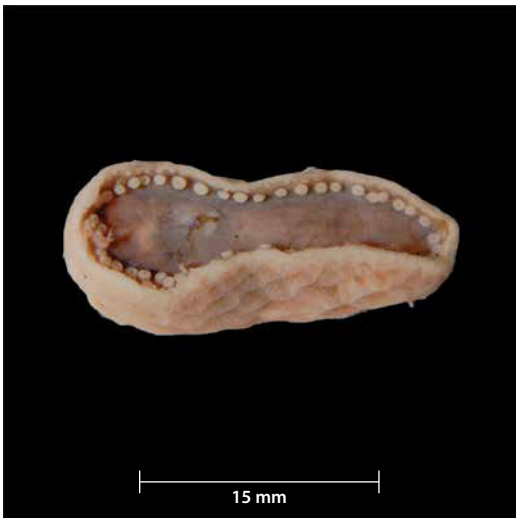
Thandar AS and Rambaran R. 2015. On some sea cucumbers (Echinodermata: Holothuroidea) from off the south and west coasts of South Africa collected by the South African Environmental and Observation Network (SAEON). *Zootaxa* 3999 (1): 41-61.

Species identification by Ahmed Thandar.

Psolus griffithsi (PsoGri)

Phylum:	Echinodermata
Class:	Holothuroidea
Order:	Dendrochirotida
Family:	Psolidae
Genus:	*Psolus*
Species:	*griffithsi*
Common name:	Scaled sea cucumber





Distinguishing features
Distinct species identifiable by the dorsal scales covering the body and the sucker-like ventral surface forming a sole. Scales overlapping and covered with minute granules. Tentacles are bushy when visible. Tube feet (podia) present on ventral sole in two rows; outer row minute and inner row much larger.

Colour
Beige scales with orange/brown centres, ventral sole grey to brown.

Size
20-25 mm length.

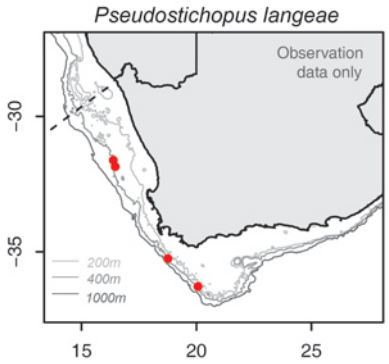
Distribution
Endemic. West Coast of South Africa.

Similar species
Psolus agulhasicus.

References
Thandar AS. 2009. New species and a new record of sea cucumbers from deep waters of the South African temperate region (Echinodermata: Holothuroidea). *Zootaxa* 2013: 30–42.

Pseudostichopus langeae (Mesoth)

Phylum:	Echinodermata
Class:	Holothuroidea
Order:	Aspidochirotida
Family:	Synallactidae
Genus:	*Pseudostichopus*
Species:	*langeae*
Common name:	Sand covered sea cucumber



Distinguishing features
Cylindrical body form with ventral surface slightly flattened and dorsal surface slightly arched. Thick, leathery and smooth body wall, usually encrusted with sand grains, broken shells, coral debris, echinoid spines and foraminifera, but no pteropod shells or sponge spicules. Tiny tube feet (podia) mostly along dorso-lateral edges. Retains firm shape out of water. Mouth located on ventral surface with between 18 and 20 peltate (leaf- or shield-shaped) projecting tentacles, cream to brown in colour. Anus located sub-ventrally in a distinct pygal (posterior) furrow.

Colour
Skin is covered in sand grains, but when the encrustations are washed off, the skin is opaque, off-white to cream in colour.

Size
Up to 70 mm in length, 8-10 mm diameter.

Distribution
Endemic. West and South Coasts of South Africa, ranging in depth from ± 100-400 m.

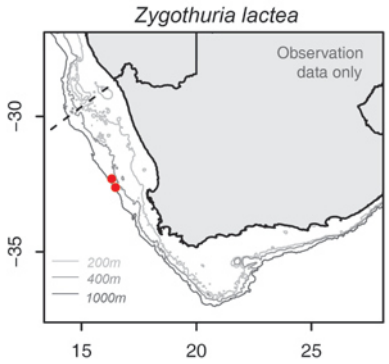
Similar species
Pseudostichopus echinatus from the East Coast.

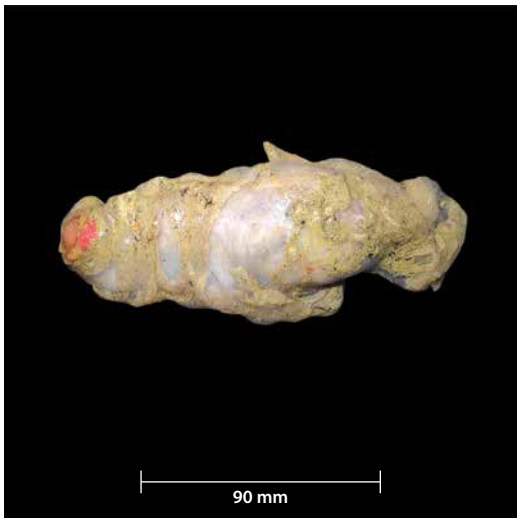
References
Thandar AS. 2009. New species and a new record of sea cucumbers from deep waters of the South African temperate region (Echinodermata: Holothuroidea). *Zootaxa* 2013: 30–42.

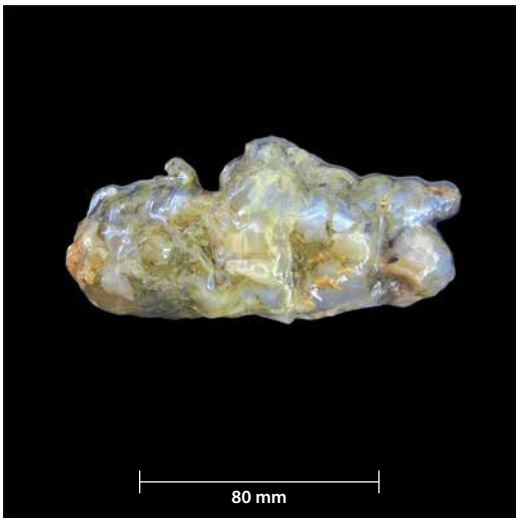
Species identification by Ahmed Thandar.

Zygothuria lactea (MesLac)

Phylum:	Echinodermata
Class:	Holothuroidea
Order:	Aspidochirotida
Family:	Mesothuriidae
Genus:	*Zygothuria*
Species:	*lactea*
Common name:	Slimy deep-water sea cucumber







Distinguishing features
Very slimy, soft body wall with folded outer skin that readily disintegrates off main body. Has 20 pink to orange-coloured tentacles visible at mouth. Tube feet greatly reduced and difficult to detect.

Colour
Light brown to mud-coloured outer skin layer, with pale pink to white body wall.

Size
Up to 140 mm in length.

Distribution
Deeper waters – three individual specimens captured at 369, 617 and 907 m on West coast of South Africa.

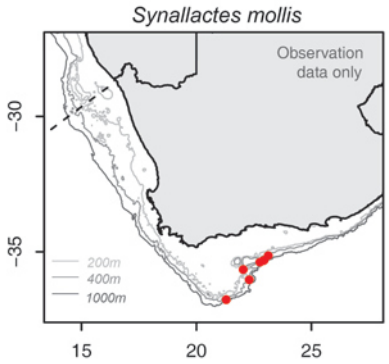
Similar species
Mesothuria murrayi on the East Coast.

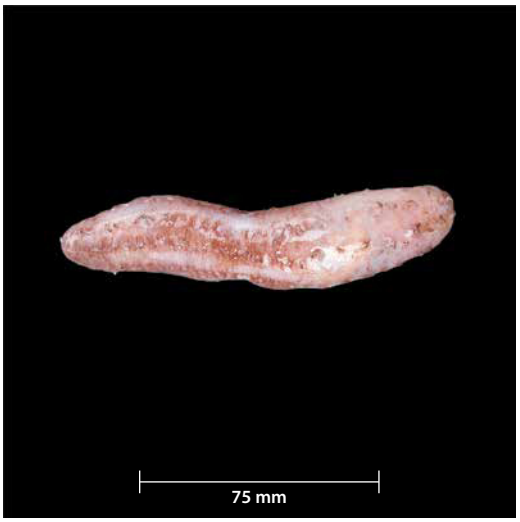
References
Thandar AS and Rambaran R. 2015. On some sea cucumbers (Echinodermata: Holothuroidea) from off the south and west coasts of South Africa collected by the South African Environmental and Observation Network (SAEON). *Zootaxa* 3999 (1): 41-61.

Species identification by Ahmed Thandar.

Synallactes mollis (SynMol)

Phylum:	Echinodermata
Class:	Holothuroidea
Order:	Aspidochirotida
Family:	Synallactidae
Genus:	*Synallactes*
Species:	*mollis*
Common name:	South coast purple sea cucumber





Distinguishing features
Gelatinous, slimy body wall with thin outer brown skin layer (frequently torn) covering pale purple body wall beneath. Maintains shape on trawl deck but not rigid. Tube feet variable in size, decreasing in size posteriorly. A double ring of 16 to 22 tentacles present.

Colour
Brown outer skin to purple body wall with darker tube feet.

Size
Up to 120-185 mm in length.

Distribution
Endemic. South Coast of South Africa.

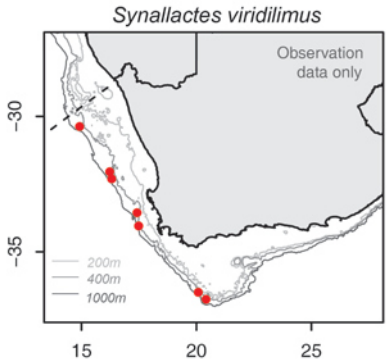
Similar species
Synallactes viridilimus, which is larger in size and usually occurs on West Coast.

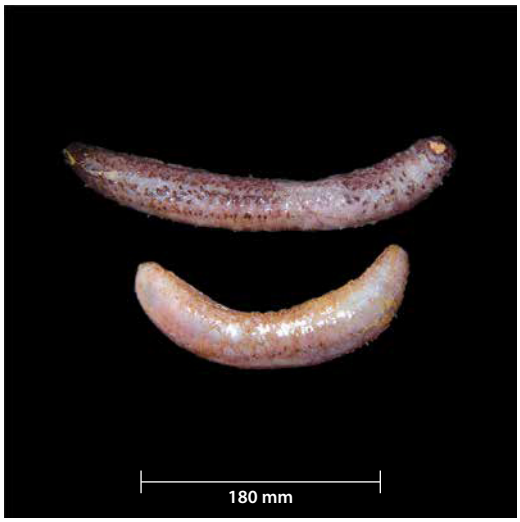
References
Thandar AS and Rambaran R. 2015. On some sea cucumbers (Echinodermata: Holothuroidea) from off the south and west coasts of South Africa collected by the South African Environmental and Observation Network (SAEON). *Zootaxa* 3999 (1): 41-61.

Species identification by Ahmed Thandar.

Synallactes viridilimus (PurCuc)

Phylum:	Echinodermata
Class:	Holothuroidea
Order:	Aspidochirotida
Family:	Synallactidae
Genus:	*Synallactes*
Species:	*viridilimus*
Common name:	Purple sea cucumber





Distinguishing features
Large gelatinous body, often slimy. Thin body wall. Mouth with 20 peltate (leaf- or shield-shaped) crown of tentacles, orange to yellow in colour. Upper tentacles in single row, lower tentacles in double row. Ventro-lateral tube feet (podia) more prominent and longer than mid-ventral tube feet.

Colour
Brown to pale purple in colour. Tube feet darker purple.

Size
Up to 450 mm in length.

Distribution
Endemic. West Coast of South Africa.

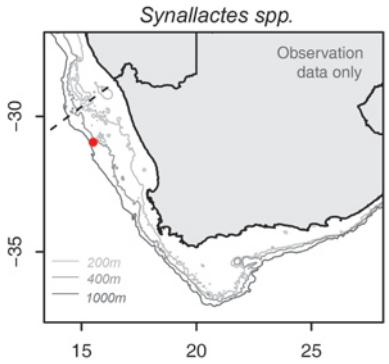
Similar species
Synallactes mollis is smaller in size and usually occurs on the South Coast.

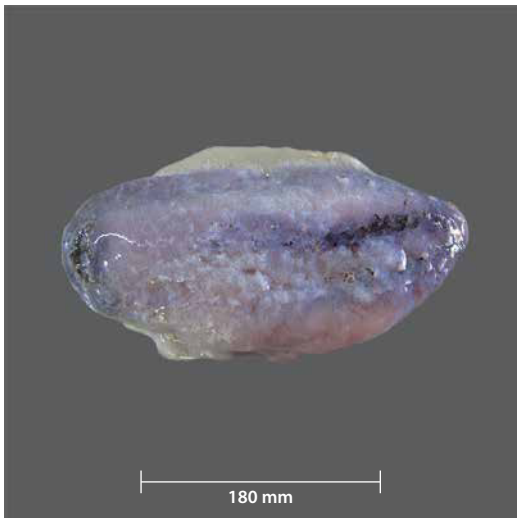
References
Thandar AS and Rambaran R. 2015. On some sea cucumbers (Echinodermata: Holothuroidea) from off the south and west coasts of South Africa collected by the South African Environmental and Observation Network (SAEON). *Zootaxa* 3999 (1): 41-61.

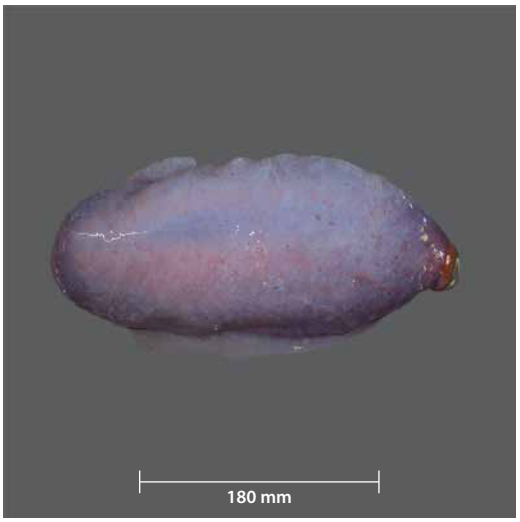
Species identification by Ahmed Thandar.

Synallactes sp. (Synall)

Phylum:	Echinodermata
Class:	Holothuroidea
Order:	Aspidochirotida
Family:	Synallactidae
Genus:	*Synallactes*
Species:	sp.
Common name:	Large lilac sea cucumber







Distinguishing features
Large gelatinous body wall coated in substantial slime that is readily rubbed off along with body wall tissue. Retains shape out of water, but body wall tissue not very robust to handling and is easily damaged. Only one specimen recorded to date.

Colour
Pale purple/lilac colour with darker oral and anal areas.

Size
Approximately 300 mm in length.

Distribution
Only one specimen recorded from trawl 710 m depth on West Coast of South Africa.

Similar species
Benthodytes spp.

References
Tentative generic identification by Ahmed Thandar, but may be a species of *Benthodytes*. Further taxonomic study is required, hence all specimens found should be retained.