amazing antarctic asteroids

a guide to the starfish of the Ross Sea

Version 1, 2016

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For any advice on Asteroids you find, please email your photos and queries to Kate (kate.neill@niwa.co.nz)


*Remember to check the websites for updated versions!*
a typical species page layout

- **taxonomic name of species**
- **taxonomic authority** person(s) who first described this species
- **species classification** see species index for arrangement
- **depth range** common depth range around New Zealand
- **information** details on external and internal characters and habitat
- **species images** inset images show variations and/or closeup detail
- **body plan icon** highlighting the basic shape, or a special characteristic, that defines a group of these organisms
- **life history icon** highlighting geographic distribution
- **scale bar** indicating relative size of organism in the main image
- **quick id icons** highlighting shape, surface detail, habitat, and environment
- **scale of abundance**
- **distribution** section of coastline where species is most commonly found
- **key taxonomic references**
- **it could also be ...** some species are difficult to tell apart without more detailed information, so check the other species in the guide listed here to make sure that you have the correct species
- **It could also be ............** Batyaster forbesi above

It could also be ... 
Batyaster forbesi above.
about asteroids
starfish, sea stars

The Asteroidea are the group of echinoderms commonly known as starfish or sea stars. Many are star-shaped with a central disc, and five arms, however there are also many species with more than five arms. Arms may be long or short and the relationship between the sizes of the disc and the arms can be different between species. The bodies of starfish are made up of calcified plates which are either really obvious (like paving) or are partially or totally covered in skin, spines, and granules. Starfish can be distinguished from Ophiuroidea (brittle stars) by the presence of a canal or furrow on the underside of their arms. These furrows contain the tube feet which are usually in rows of two or four.

There are seven orders of starfish; members of six orders are currently included in this guide.

Paxillosida This large group are predominantly found in soft sediment habitats. They lack an anus and their tube feet lack suckers.

Valvatida A very large order of many families, the Valvatida are dominated by species with five arms and two rows of tube feet. They include many biscuit-like starfish with obvious marginal plates but also some longer armed forms.

Notomyotida This small order contains mostly deep sea members. They have flexible arms with internal muscle bands not found in other groups.

Spinulosida This small group lack pedicellariae, have a delicate skeleton and are covered in small spines.

Velatida Members of this order usually have thick bodies, large discs and short arms.

Forcipulatida The Forcipulatida are named after the forceps-like structure of the pedicellariae found in this group.
about Antarctica and the Ross Sea

The Antarctic continent surrounds the South Pole and is almost completely covered in ice. On the ice, human inhabitants of Antarctica are limited to people living on research stations scattered across the region, and animals are dominated by large, well known marine mammals such as penguins and seals. Under the ice however, marine life on the sea floor is rich and surprisingly diverse.

The Ross Sea is 3500 km south of New Zealand and lies in an indentation between west and east Antarctica. On the western side of the Ross Sea, McMurdo Sound is home to both the New Zealand (Scott Base) and American (McMurdo Station) research bases. The southern part of the sea is about 200 km from the South Pole and is covered by the Ross Ice Shelf. North of the ice shelf, the sea floor slopes steeply reaching depths of around 3000 m. There are several seamounts adjacent to the Ross Sea (e.g. Admiralty seamount and seamounts in the Scott Island chain) and also islands, including Scott Island and the Balleny Islands.

The area covered in this guide is approximately 65 to 80° S latitude and between 170 and 160° W longitude. In the distributions maps on each species page the ice shelf is shown in pale grey and the bathymetric lines are at 750 m and 1500 m depth.
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Acodontaster marginatus
Hymenaster spp.
Odontaster penicillatus
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Cheiraster (Luidiaster) gerlachaei Ludwig, 1903

Five arms, tapering evenly from small disc; upper surface covered with small, closely packed bunches of spines; all marginal plates bear enlarged, cone-like spines that sit at right angles to the arm. Tube feet have small suckers and are in two rows.

Reported from the South Atlantic Ocean (Bouvet Island and the Falkland Islands) and the Antarctic Ocean (Bellinghausen Sea, Antarctic Peninsula, Weddell Sea, Scotia Sea, Enderby Land, Prydz Bay, Adélie Land and the Ross Sea and adjacent areas).

It could also be..........  
Lophaster gaini

Five arms, marginal plates mostly vertical; upper and lower marginal plates are a similar size; no obvious enlarged spines on the marginal plates, plates appear smooth. Tube feet are pointed and in two rows.

Reported from the southern Indian Ocean (Kerguelen Islands and Heard & McDonald Islands) and the Antarctic Ocean (South Shetland Islands, South Orkney Islands and the Ross Sea and adjacent areas).
Leptychaster flexuosus (Koehler, 1920)

Five arms; small, rounded disc; arms very long and slender, triangular in cross-section, with blunt tips; marginal plates have no enlarged spines; superomarginal plates smaller than inferomarginal plates. Tube feet pointed and in two rows.

Reported from the South Atlantic Ocean (Bouvet Island), southern Indian Ocean (Kerguelen Islands) and the Antarctic Ocean (Antarctic Peninsula, Weddell Sea, Davis Sea, Adélie Land and the Ross Sea and adjacent areas).

Large disc; five arms triangular and not well differentiated from disc; marginal plates have no enlarged spines; upper marginal plates smaller than lower marginal plates; in between each arm both marginal series are on bottom surface of the disc. Tube feet pointed and in four rows.

Reported from the South Atlantic Ocean (Bouvet Island), southern Indian Ocean (Kerguelen Islands) and the Antarctic Ocean (Antarctic Peninsula, Weddell Sea, Scotia Sea, Adélie Land and the Ross Sea and adjacent areas).
Psilaster charcoti (Koehler, 1906)

Five arms; upper surface covered in closely packed groups of spines; marginal plates mostly vertical; upper and lower marginal plates are of similar height; several enlarged spines on each marginal plate, spines lie almost parallel to the plates, plates appear shaggy, tube feet pointed and in two rows.

Reported from the South Pacific Ocean (Chile and Macquarie Island), South Atlantic Ocean (Argentina, Bouvet Island and the South Atlantic Deep), southern Indian Ocean (Crozet Islands) and the Antarctic Ocean (Amundsen Sea, Bellinghausen Sea, Antarctic Peninsula, Weddell Sea, Scotia Sea, Prydz Bay, Adélie Land and the Ross Sea and adjacent areas).

It could also be...........

Bathybiaster loripes obesus
Small bodied starfish, about 2 cm in diameter; disk highly arched; five arms, all very short; upper surface of scale-like plates covered in small granules; lower surface is covered in spines.

Reported from the Antarctic Ocean (Antarctic Peninsula, Weddell Sea, Scotia Sea, Davis Sea, Adélie Land and the Ross Sea and adjacent areas).
**Tremaster mirabilis**  
*Verrill, 1879*

Five arms, extremely short and not differentiated from disc; body arched; upper surface with scale-like plates and five slits around centre of disc.

Reported from the Arctic Ocean, Barents Sea, North Atlantic Ocean (Bahamas, Cuba, Caribbean Sea, Greenland, Gulf of Saint Lawrence, Iceland, Kattegat, Labrador Sea, Norway and Nova Scotia), South Atlantic Ocean (Uruguay, Argentina and the Falkland Islands), South Pacific Ocean (Chile, New Zealand EEZ, Macquarie Ridge and the South Pacific Abyssal Province), southern Indian Ocean (Crozet Islands, Kerguelen Islands and Heard Island) and the Antarctic Ocean (Scotia Sea and the Ross Sea and adjacent areas).

Five arms, no superomarginal plates; inferomarginal plates are well spaced and bear a ‘tuft’ of spines; tufted plates joined to furrow plates by two distinct ridges. Tube feet have large suckers and occur in two rows.

Reported from the South Atlantic Ocean (Bouvet Island) and the Antarctic Ocean (Antarctic Peninsula, Weddell Sea, Scotia Sea, Queen Maud Land, Enderby Land, Prydz Bay, Davis Sea, Adélie Land and the Ross Sea and adjacent areas).

*It could also be...........
Lophaster gaini*
There are four species of Perknaster reported from the Ross Sea (Perknaster antarcticus, P. densus, P. sladeni, and a single record of P. aurantiacus). They are difficult to tell apart without a microscope, so characters and distributions below are for the genus.

Upper skeleton reduced with isolated plates, often greatly reduced in larger specimens; five arms; bodies fleshy; spines may be single, grouped or covered in skin; tube feet have a distinct sucking disc and occur in two rows.

Reported from the South Pacific Ocean (Chile), South Atlantic Ocean (Uruguay, Argentina, Bouvet Island and the Falkland Islands), southern Indian Ocean (Crozet Islands, Kerguelen Islands and the Prince Edward Islands) and the Antarctic Ocean (Antarctic Peninsula, Weddell Sea, Scotia Sea, Queen Maud Land, Enderby Land, Davis Sea, Adélie Land and the Ross Sea and adjacent areas).

It could also be........
Lysasterias spp.

**Pergamaster triseriatus** H.E.S. Clark, 1963

Five arms; hard, flat body; upper surface of flat plates encircled by small plates; lower surface covered in granules. Tube feet in two rows with distinct sucking discs.

Reported from the Ross Sea and adjacent areas.


Acodontaster capitatus (Koehler, 1912)

Five arms; marginal plates mostly vertical, only a small part seen from the upper surface; upper surface covered in closely packed stalked granules which obscure the outlines of the plates; a single, large tooth-like spine in the corner of each oral angle; tube feet in two rows with small sucking discs.

Reported from the South Atlantic Ocean (Argentina and Bouvet Island) and the Antarctic Ocean (Antarctic Peninsula, Weddell Sea, Scotia Sea, Queen Maud Land, Enderby Land, Prydz Bay, Adélie Land and the Ross Sea and adjacent areas).

It could also be………. Perknaster spp.
Acodontaster conspicuus (Koehler, 1920)

Five arms; upper and lower surface covered in granules; marginal plates mostly horizontal; large, conspicuous, raised three or four-valved pedicellariae present adjacent to the furrow and sometimes on the upper surface; a single, large tooth-like spine in the corner of each oral angle; tube feet in two rows with small, indistinct sucking discs.

Reported from the South Atlantic Ocean (Bouvet Island and the Falkland Islands) and the Antarctic Ocean (Antarctic Peninsula, Weddell Sea, Scotia Sea, Queen Maud Land, MacRobertson Land, Prydz Bay, Davis Sea, Adélie Land and the Ross Sea and adjacent areas).

It could also be………..
Acodontaster hodgsoni
Acodontaster marginatus
Five arms; marginal plates mostly horizontal; upper surface covered in granules; lower surface covered in granules, with spines occurring closer to the mouth; pedicellariae only occur on the lower surface, are few and formed from several spines; a single, large tooth-like spine in the corner of each oral angle and one (or two) slightly enlarged spines on either side of the primary oral spine; tube feet in two rows with small sucking discs.

Reported from the southern Indian Ocean (Crozet Islands, Heard Island, Kerguelen Islands and the Prince Edward Islands), South Atlantic Ocean (Bouvet Island) and the Antarctic Ocean (Antarctic Peninsula, Weddell Sea, Scotia Sea, Queen Maud Land, Enderby Land, Prydz Bay, Davis Sea, Adélie Land and the Ross Sea and adjacent areas).

It could also be..........
Acodontaster conspicuus
Acodontaster marginatus
Acodontaster marginatus (Koehler, 1912)

Five arms; upper and lower surfaces covered in granules; marginal plates mostly horizontal; most of the inferomarginal plates have an enlarged spine; a single, large tooth-like spine in the corner of each oral angle; tube feet in two rows with small sucking discs.

Reported from the Antarctic Ocean (Antarctic Peninsula, Weddell Sea, Prydz Bay and the Ross Sea).

It could also be ...........

Acodontaster conspicuus
Acodontaster hodgsoni
**Odontaster meridionalis** (E. A. Smith, 1876)

Five arms; plates on upper and marginal surfaces bearing several blunt, club-shaped spines grouped on small, raised columns; marginal plates obvious and mostly vertical in position; one large, glassy-tipped spine on each oral plate, pointing away from the mouth; tube feet in two rows.

Reported from the southern Indian Ocean (Crozet Islands, Heard Island, Kerguelen Islands and the Prince Edward Islands), South Atlantic Ocean (Bouvet Island) and the Antarctic Ocean (Antarctic Peninsula, Weddell Sea, Scotia Sea, Prydz Bay, Adélie Land and the Ross Sea and adjacent areas).

It could also be...........  
*Odontaster validus*

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*Odontaster penicillatus* (Philippi, 1870)

- **Class Asteroidea**
  - **Order Valvatida**
  - **Family Odontasteridae**
- **Morphology**
  - Five short arms; body pentagonal; plates on upper and marginal surfaces bearing several pointed spines grouped on small, raised columns; marginal plates very obvious and horizontal in position; one large, glassy tipped spine on each oral plate, pointing away from the mouth; tube feet in two rows.
- **Surface**
- **Substrate**
- **Habitat**
  - Reported from the South Pacific Ocean (Chile, New Zealand EEZ and Macquarie Ridge), southern Indian Ocean (Crozet Islands, Kerguelen Islands and the Prince Edward Islands), South Atlantic Ocean (Uruguay, Argentina, Bouvet Island and the Falkland Islands) and the Antarctic Ocean (Antarctic Peninsula, Weddell Sea, Scotia Sea, Adélie Land and the Ross Sea and adjacent areas).

**Odontaster validus** Koehler, 1906

Five arms; plates on upper and marginal surfaces bearing several pointed spines grouped on small, raised columns; marginal plates only slightly obvious and vertical in position; one large, glassy tipped spine on each oral plate, pointing away from the mouth; tube feet in two rows.

Reported from the South Pacific Ocean (Chile), southern Indian Ocean (Crozet Islands, Heard Island and the Prince Edward Islands), South Atlantic Ocean (Argentina, Bouvet Island and the Falkland Islands) and the Antarctic Ocean (Antarctic Peninsula, Weddell Sea, Scotia Sea, Prydz Bay, Davis Sea, Adélie Land and the Ross Sea and adjacent areas).

It could also be..........
**Odontaster meridionalis**
**Glabraster antarctica** (E.A. Smith, 1876)

(Previously known as Porania antarctica glabra)

Five short arms; large fleshy rounded body; upper surface may carry some enlarged spines; enlarged spines on margins; lower surface fleshy with no spines; tube feet occur in two rows and have sucking discs.

Reported from the South Pacific Ocean (Chile and Macquarie Island), southern Indian Ocean (Crozet Islands, Kerguelen Islands and Heard Island), South Atlantic Ocean (Argentina, Bouvet Island and the Falkland Islands) and the Antarctic Ocean (Amundsen Sea, Bellinghausen Sea, Antarctic Peninsula, Weddell Sea, Scotia Sea, Queen Maud Land, Enderby Land, Prydz Bay, Davis Sea, Adélie Land and the Ross Sea and adjacent areas).


**Lophaster gaini** Koehler, 1912

Five arms; both series of marginal plates with ‘tufts’ of spines, superomarginal ones smaller than inferomarginal ones, but definitely larger than the ‘tufts’ of the plates of the upper surface; furrow spines in two series, one parallel to the furrow, the other series at an angle to it.

Reported from the Antarctic Ocean (Weddell Sea, Scotia Sea, Adélie Land and the Ross Sea and adjacent areas).

It could also be………..
*Cuenotaster involutus*

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**Paralophaster antarcticus** (Koehler, 1912)

(Previously known as *Myoraster antarcticus*)

Five arms; plates with small columns bearing 30–40, small, closely packed spines; plates of upper marginal series slightly larger than those of the upper surface; plates of lower series the largest. Tube feet in two rows with sucking discs.

Reported from the Southern Indian Ocean (Crozet Islands, Kerguelen Islands and Heard Island), South Atlantic Ocean (Argentina and Bouvet Island) and the Antarctic Ocean (Antarctic Peninsula, Weddell Sea, Scotia Sea, Queen Maud Land, Prydz Bay, Davis Sea, Adélie Land and the Ross Sea and adjacent areas).

It could also be ............

*Paralophaster godfroyi asperatus*

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**Paralophaster godfroyi asperatus** (Koehler, 1920)

Five arms; plates on the upper surface spaced apart in a net-like pattern; spines on upper marginal series about 20 per plate and needle-shaped; plates of upper marginal series are the same size as those on the upper surface and smaller than the lower marginal series. Tube feet in two rows.

Reported from the Antarctic Ocean (Enderby Land, Queen Mary Land and the Ross Sea and adjacent areas).

It could also be...........
*Paralophaster lorioli* (not common, not covered in this guide)
*Paralophaster antarcticus* (particularly juveniles)


Eight (sometimes ten) arms; plates on upper surface spaced apart, they bear bunches of spines on small columns; the marginal plates also bear slightly larger bunches of spines on small columns; tube feet in two rows with small, sucking discs.

Reported from the Southern Indian Ocean (Kerguelen Islands) and the Antarctic Ocean (Ross Sea and adjacent areas).

It could also be..........

Solaster longoi (not common, not covered in this guide)
Crossaster pencillatus (not common, not covered in this guide)
Peribolaster macleani Koehler, 1920

Five arms, very short; upper surface covered with a membrane that bears bundles of spines that are webbed together into little cone-like structures; tube feet in rows of four.

Reported from the Antarctic Ocean (Weddell Sea, Queen Maud Land, Prydz Bay, Davis Sea, Adélie Land and the Ross Sea and adjacent areas).

It could also be……….

*Pteraster stellifer*


Geographical and depth distributions described here are based on available data for Hymenaster caelatus, *H. crucifer*, *H. edax*, *H. sacculatus* (OBIS) and *Hymenaster* sp. They are similar in appearance, and the diagnostic characters given below are for the genus.

Five arms, short; disc large and flat; disc covered in membrane which is carried above the surface of the disc on the tips of spines; hole in centre of disc surrounded by flaps of skin; furrows wide, tube feet in rows of four.

Reported from the South Pacific Ocean (South Pacific Abyssal Province), South Atlantic Ocean (South Atlantic Deep) and the Antarctic Ocean (Antarctic Peninsula, Weddell Sea, Scotia Sea, Adélie Land and the Ross Sea and adjacent areas).

The depth range of this species is from 1620 – 3380 m (OBIS: 581 – 3514 m).

*It could also be............*

*Pteraster stellifer*
Five arms, short; disc cushion-like; disc covered in membrane which is carried above the surface of the disc on the tips of spines; hole in centre of disc surrounded by flaps of skin; furrows wide, tube feet in rows of four.

Reported from the South Pacific Ocean (Chile, Macquarie Island and the South Pacific Abyssal Province), South Atlantic Ocean (Uruguay, Argentina, Bouvet Island and the Falkland Islands) and the Antarctic Ocean (Amundsen Sea, Antarctic Peninsula, Weddell Sea, Scotia Sea, Queen Maud Land, Prydz Bay, Davis Sea, Adélie Land and the Ross Sea and adjacent areas).

Also known as Pteraster (Apterodon) stellifer.

It could also be ...........
Hymenaster spp.
Geographical and depth distributions described here are based on available data for *Henricia smilax*, *Henricia* sp. and *Rhopiella hirsuta*. They are very similar in appearance, and the diagnostic characters given below are for the family.

(Ross Sea Echinasteridae) Disc small; arms five, elongate with bluntly rounded tips; spines or spinelets small and all of a similar size, often partially buried in skin; furrow narrow and the plates lining it often have angular margins; papulae widely distributed; tube feet in two rows; no pedicellariae.

Reported from the Southern Indian Ocean (Crozet Islands, Kerguelen Islands and Heard Island), South Atlantic Ocean (South Atlantic Deep) and the Antarctic Ocean (Antarctic Peninsula, Scotia Sea, Queen Maud Land, Prydz Bay, Adélie Land and the Ross Sea and adjacent areas).

It could also be..........

*Pedicellaster hypernotius*

*Smilasterias* spp.


**Diplasterias brandti** (Bell, 1881)

Five arms; arms usually chubby; small disc; upper surface covered in similar sized spines that may not be obvious; a wide, fleshy channel between the upper and lower marginal plates; tube feet in four rows.

Reported from the South Pacific Ocean (Chile), South Atlantic Ocean (Uruguay, Argentina, Bouvet Island, Falkland Islands and the South Atlantic Deep) and the Antarctic Ocean (Bellinghausen Sea, Antarctic Peninsula, Scotia Sea, Queen Maud Land, Prydz Bay, Adélie Land and the Ross Sea).

*It could also be ..........*

*Diplasterias brucei*

Diplasterias brucei Verrill, 1870

Five arms; small disc; clear series of carinal plates running down the centre of the upper surface of each arm; upper and lower marginal plates all bear prominent spines; a wide, fleshy channel between the upper and lower marginal plates; some larger specimens become very fleshy.

Reported from the South Pacific Ocean (Chile), southern Indian Ocean (Crozet Islands, Heard Island and the Prince Edward Islands), South Atlantic Ocean (Argentina) and the Antarctic Ocean (Antarctic Peninsula, Weddell Sea, Scotia Sea, Queen Maud Land, Enderby Land, Prydz Bay, Davis Sea, Adélie Land and the Ross Sea).

It could also be...........

Diplasterias brandti


There are three species of *Lysasterias* reported from the Ross Sea (*L. adeliae*, *L. joffrei* and *L. perrieri*). They are difficult to tell apart without a microscope, so characters and distributions below are for the genus.

(Ross Sea *Lysasterias*) Upper skeleton reduced with very few plates; five arms; upper surface covered in thick, pustular skin; enlarged spines sometimes present on side of arms, but not obvious; tube feet have distinct sucking discs and occur in four rows.

Reported from the South Atlantic Ocean (Bouvet Island) and the Antarctic Ocean (Antarctic Peninsula, Weddell Sea, Scotia Sea, Queen Maud Land, Prydz Bay, Davis Sea, Adélie Land and the Ross Sea and adjacent areas).

It could also be...........

*Perknaster* spp.


**Notasterias armata** *(Koehler, 1911)*

Five arms; enlarged spines in rows on upper surface; large, crossed pedicellariae can often be seen with the naked eye and have a single tooth on each jaw.

Reported from the Southern Indian Ocean (Kerguelen Islands), South Atlantic Ocean (Bouvet Island) and the Antarctic Ocean (Amundsen Sea, Antarctic Peninsula, Queen Maud Land, Enderby Land, Prydz Bay, Adélie Land and the Ross Sea and adjacent areas).

**It could also be.........**

*Notasterias stolophora*

*Notasterias bongrainii* (not common, not covered in this guide)


Five arms; enlarged spines in rows on upper surface; similar in appearance to *Notasterias armata*, but crossed pedicellariae are much smaller; tube feet in four rows with sucking discs.

Reported from the Antarctic Ocean (Antarctic Peninsula, Weddell Sea, Scotia Sea, Queen Maud Land, Adélie Land and the Ross Sea and adjacent areas).

It could also be...........
*Notasterias armata*
*Notasterias bongrainii* (not common, not covered in this guide)
Eleven arms (sometimes 10–12); small disc; upper surface with single spines; these spines with one or two large pedicellariae at the base; pedicellariae have a large, strong base and two interlocking teeth; tube feet with distinct sucking discs occur in two rows in a wide furrow.

Reported from the Antarctic Ocean (MacRobertson Land and the Ross Sea and adjacent areas).

It could also be...........
Saliasterias brachiata
Nine (sometimes 10) arms; plates of the upper surface have three to six spines wreathed with skin and rosettes of small pedicellariae; marginal plates not very distinct; tube feet in two rows close to the disc, sometimes four rows closer to the arm tips.

Reported from the Antarctic Ocean (Scotia Sea, Davis Sea, Adélie Land and the Ross Sea and adjacent areas).

It could also be...........

Psalidaster mordax


Large, about 48 arms, arms distinct from disc, and regularly banded with raised rings.

Reported from the Southern Indian Ocean (Crozet Islands, Kerguelen Islands and Heard Island), South Atlantic Ocean (Bouvet Island and the Falkland Islands) and the Antarctic Ocean (Weddell Sea, Scotia Sea, Davis Sea, Adélie Land and the edge of the Ross Sea and adjacent areas).
Pedicellaster hypernotius  Sladen, 1889

Five arms; small, with diameter less than five cm; upper surface is a grid of small plates and membranous areas; upper surface covered in small (< 1 mm) pedicellarie; slightly enlarged spines on lower marginal series. Tube feet in two rows with distinct sucking discs.

Reported from the Southern Indian Ocean (Kerguelen Islands), South Atlantic Ocean (South Atlantic Deep) and the Antarctic Ocean (Amundsen Sea, Bellinghausen Sea, Antarctic Peninsula, Weddell Sea and the Ross Sea and adjacent areas).

It could also be………..
juvenile Smilasterias spp.

Geographical and depth distributions described here are based on available data for *Smilasterias* sp. and a single specimen of *Smilasterias triremis* from OBIS. They are very similar in appearance, and the diagnostic characters given below are for the genus.

Five arms, distinct from disc and constricted at base adjacent to disc; disc small; upper surface with rows of small spines; furrows wide, tube feet in rows of two.

Reported from the South Pacific Ocean (Macquarie Island and the South Pacific Abyssal Province), southern Indian Ocean (Crozet Islands, Kerguelen Islands and Heard Island) and the Antarctic Ocean (Antarctic Peninsula, Scotia Sea and the edge of the Ross Sea and adjacent areas).

It could also be..........

*Echinasteridae* spp.

*Pedicellaster hypernotius*

### Body Plan

<table>
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<tr>
<th>Icons</th>
<th>Body Plan</th>
<th>biology</th>
<th>notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Starfish" /></td>
<td>Starfish</td>
<td>Asteroid Echinoderm, Sea Star</td>
<td></td>
</tr>
</tbody>
</table>

### Life History

<table>
<thead>
<tr>
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<th>Life History</th>
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<tbody>
<tr>
<td><img src="image" alt="Antarctic Globe" /></td>
<td>Antarctic</td>
<td>Ross Sea and the Southern Ocean at latitudes less than approximately 55 degrees south</td>
<td>Southern hemisphere</td>
</tr>
<tr>
<td><img src="image" alt="Widespread Globe" /></td>
<td>Widespread</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Morphology

<table>
<thead>
<tr>
<th>Icons</th>
<th>Morphology</th>
<th>biology</th>
<th>notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Margins" /></td>
<td>Margins</td>
<td>An obvious series of marginal plates which may or may not bear spines</td>
<td>5 arms</td>
</tr>
<tr>
<td><img src="image" alt="5+ Arms" /></td>
<td>5+ arms</td>
<td>&gt; 5 arms, may be between 6 and 12</td>
<td>5 long or short arms, sometimes 4 or 6 if damaged</td>
</tr>
<tr>
<td><img src="image" alt="Granular" /></td>
<td>Granular</td>
<td>Surface covered in small-medium granules</td>
<td>Soft</td>
</tr>
<tr>
<td><img src="image" alt="Leathery" /></td>
<td>Leathery</td>
<td>Thick skin, tough, flexible, slightly elastic</td>
<td>Spiney</td>
</tr>
<tr>
<td><img src="image" alt="Paxillate" /></td>
<td>Paxillate</td>
<td>Surface carries paxillae which are small pillar-like projections with a cluster of spines on top</td>
<td>Spined</td>
</tr>
<tr>
<td><img src="image" alt="Plates" /></td>
<td>Plates</td>
<td>Bony units layered on the outer body wall</td>
<td>Transparent</td>
</tr>
<tr>
<td><img src="image" alt="Reticulate" /></td>
<td>Reticulate</td>
<td>A network of plates and fleshy areas</td>
<td>Warty</td>
</tr>
</tbody>
</table>

### Substrate

<table>
<thead>
<tr>
<th>Icons</th>
<th>Substrate</th>
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</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Mud" /></td>
<td>Mud</td>
<td>Very fine muddy and silty sediments derived from terrigenous rocks, soils and clays</td>
<td>Rubble</td>
</tr>
<tr>
<td><img src="image" alt="Rock" /></td>
<td>Rock</td>
<td>Hard substrate such as mudstone, sandstone, basalt, compressed carbonates</td>
<td>Shell, stone, and pebble rubble</td>
</tr>
</tbody>
</table>

### Habitat

<table>
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<th>Habitat</th>
<th>biology</th>
<th>notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Subtidal" /></td>
<td>Subtidal</td>
<td>Exposed shoreline zone between high and low tides, including rock flats, pools, overhangs, crevices, organisms exposed to wave action, temperature extremes, full illumination, and desiccation</td>
<td></td>
</tr>
</tbody>
</table>
glossary

antipodean naturally occurring in New Zealand and Australia, and may include seamounts and ridges to the north
asteroidea scientific name for a starfish or sea star
banded stripes of two or more colours
bank seabed raised into a bank of compacted rubble and other carbonate materials including shell, kina and asteroid hash; associated organisms are exposed to wave surge and currents, and subdued illumination
blunt not sharp, rounded ends
carinal plates the row of plates that runs down the center of the upper surface of each arm, may be prominent and bear spines
covered rock sand and rubble spread over underlying hard substrata; associated organisms are attached to basement rock susceptible to inundation and scouring from wave surge and currents, and subdued illumination
diameter the distance across the widest point of a circle
discoid circular in shape, distinctively flattened
endemic naturally occurring in New Zealand, but not elsewhere
environment physical, chemical, ecological, behavioural and other conditions experienced by an organism
eurybathic can live or be found at many depths
firm requires some pressure to compress
fleshy feels like skin or edam cheese, dense
furrow the channel on the underside of starfish arms that contains the tube feet
glassy-tipped spine spine with a shiny, translucent tip resembling glass
gonad reproductive structure
granular surface covered in small- to medium-sized rounded or angular granules, giving a sand-papery texture owing to calcareous or siliceous minerals in or on the surface of an organism
habitat the environment and local situation in which an organism lives
hard solid to the touch, not compressible, rigid
indents underwater caves, shelves and overhangs, organisms that live there may experience wave surge, subdued illumination, or near darkness
interstices the gaps and spaces between things, e.g. rocks, sand-grains or seaweed holdfasts
intertidal exposed shoreline zone between high and low tides, including rock flats, pools, overhangs, crevices; organisms that live there are exposed to wave action, temperature extremes, full illumination, and desiccation
introduced species first described beyond New Zealand waters, now occurring in New Zealand and other locations, invasive, adventive
jaw the oral plate
lateral side of an animal
leathery thick, tough, flexible, slightly elastic
marginal plates usually two series of plates that run around the margins of a starfish, the upper marginal series (superomarginal plates) and the lower marginal series (inferomarginal plates)
margins edge of a surface
morphology form and structure, shape
mottled variable, blotchy, patterning of several colours
mud very fine silty sediments derived from terrigenous rocks, soils and clays
naked surface unadorned by spines or granules, usually smooth
native naturally occurring in New Zealand, but may also occur naturally elsewhere
oral related to the mouth of an animal
oral plate the plate that occurs in the angle of the mouth, where two furrows meet
pustular skin skin covered in small swellings similar to blisters or pimples
pedicellariae small pincer-like structures found on starfish; thought to have a defensive function
radius distance between the edge and centre of a circle
range extension since first described in New Zealand, this species has been recorded elsewhere
refuge safe place to hide from predators
reticulate net-like or has a lacy framework of thickened calcified skeleton
rock hard substratum such as mudstone, sandstone, basalt, compressed carbonates
rough irregularly pitted and ridged surface, often tough
rubble shell, stone, and pebble rubble
sand small coarse grains of worn silica, rock, and shell
seabed composed of a variety of sedimentary substrata including coarse gravels, shell hash and sands to finer sand, mud, and silts; associated organisms are susceptible to inundation and scouring from wave surge and currents, and subdued illumination
soft easily compressible, elastic
spined, spinose surface covered with spines (echinoderms)
stellate star-shaped
subtidal: zone below the low tide, including rock flats, slopes, walls, crevices, overhangs, boulder fields; associated organisms are exposed to wave surge, currents and subdued illumination

translucent: lets light through body wall or surface of organism, but not enough to perceive distinct details through it

transverse: across the short axis of the body wall

tube feet: small, flexible appendages that are found in the furrow and are involved in starfish locomotion

ventral: lower surface or underside of an animal

wall: underwater cliff or slope; associated organisms are exposed to wave surge, currents and subdued illumination

warty: bearing small flattened bumps or tubercles

widespread: species recorded globally

acknowledgements

Many of the specimens examined in this guide are from the NIWA Invertebrate Collection. They include older DSIR/NZOI material and significant collections over the last 12 years funded by: The Ministry of Primary Industries (previously Ministry of Fisheries) for TAN0402 (A biodiversity survey of the western Ross Sea and Balleny Islands in 2004 undertaken by the National Institute of Water & Atmospheric Research and financed by the former New Zealand Ministry of Fisheries) and TAN0602 (as part of the project ‘Antarctic Geophysical & Scientific Studies’ funded by the former New Zealand Ministry of Fisheries). Collections from TAN0802 were collected as part of the New Zealand International Polar Year – Census of Antarctic Marine Life, Ross Sea Biodiversity voyage 2008. We gratefully acknowledge project governance provided by the Ministry of Fisheries Science Team and the Ocean Survey 20/20 CAML Advisory Group (Land Information New Zealand, New Zealand Ministry of Fisheries, Antarctica New Zealand, Ministry of Foreign Affairs and Trade, and National Institute of Water and Atmosphere Ltd).

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further reading


**Online sources**


OBIS datasets used (partial):
MNH Invertebrate Zoology Collections (Smithsonian Institute-Invertebrate). Department of Invertebrate Zoology, Research and Collections Information System, NMNH, Smithsonian Institution. See: http://www.mnh.si.edu/rc/db/collection_db_policy1.html


Rigby, P.R., Konar, B., Kato, T., Iken, K., Chenelot, H., Shirayama, Y. (2005) Natural Geography In Shore areas (NaGISa), Dataset (NaGISa). NaGISa OBIS Dataset ver.1

SMITHSONIAN ANTARCTIC INVERTEBRATES WEBSITE, http://invertebrates.si.edu/antiz/taxon_view.cfm?mode=advancedSearch&name=aSTEROIDEA&rank=&phylum=&match=substring