



# Seastars of Tasmania

Tasmania is home to three rare seastars that are not found anywhere else in the world. All three are under threat and are fully protected under the Tasmanian *Threatened Species Protection Act 1995*.

## Stars of the sea

Seastars are possibly the most widely recognised of all marine animals. They are exclusively marine and there are 1,154 different species known in Australia. Many seastars inhabit shorelines and are often seen above the low tide mark. Their beautiful bright colours make them a familiar sight on our coastlines.

## Discovering seastars

Seastars are radially symmetrical, meaning that if sliced like a pizza each piece would look the same as the next. Their body shape generally follows a pattern of five arms extending from a central disc. However, many species have evolved striking variations to this basic pattern.

## Suction cups for feet

Seastars have developed a unique way of moving around. They have hundreds of water filled tubes, called tube feet, projecting from the underside of their arms. In many species the tube feet act like suction cups, allowing the seastar to adhere to the rock surface. The strength of this suction enables some seastars to withstand very strong currents and ocean surges.

## A stomach on the outside!

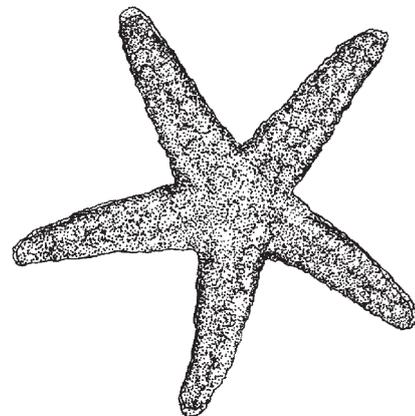
Seastars crawl along the sea-bed or the rocky shoreline searching for food. Their mouth is on the underside in the centre of the body. Seastars do not have teeth and cannot bite. Instead they extend their jelly-like stomach out of their mouth to envelop their food. The stomach then excretes an enzyme similar to our own gastric juices, which digests the food. The seastar can then absorb the food and pulls its stomach back inside itself when it has finished feeding.

## Regeneration

Some seastars have the amazing ability to regenerate themselves from a severed body part. Cutting these seastars in half will result in two seastars! Regenerating seastars tend to be carnivorous (flesh eating) species. Biscuit and pentagonal-shaped seastars, which are mostly herbivorous (vegetarian), usually lack this incredible ability.

## Important members of the coastal community

Seastars are voracious feeders on a wide range of plants and animals. Many are carnivorous and some even feed on other seastars! Both the carnivorous predators and the herbivorous grazers play an important role in regulating the populations of their food source.



## Tasmania's rare seastars

Southeastern Tasmania is home to three rare seastars that are endemic to this region, meaning they are only found here. All three are listed as threatened species.

1. *Parvulastra vivipara* (formerly *Patiriella vivipara*) (The live-bearing seastar)
2. *Smilasterias tasmaniae* (no common name)
3. *Marginaster littoralis* (no common name)

## The live-bearing seastar - *Parvulastra vivipara*

The live-bearing seastar is one of the smallest seastars in the world, adults are generally only 15 - 20 mm across, but can reach a maximum size of 30 mm. They have five short arms in a rounded-pentagonal shape and are a uniform apricot in colour.

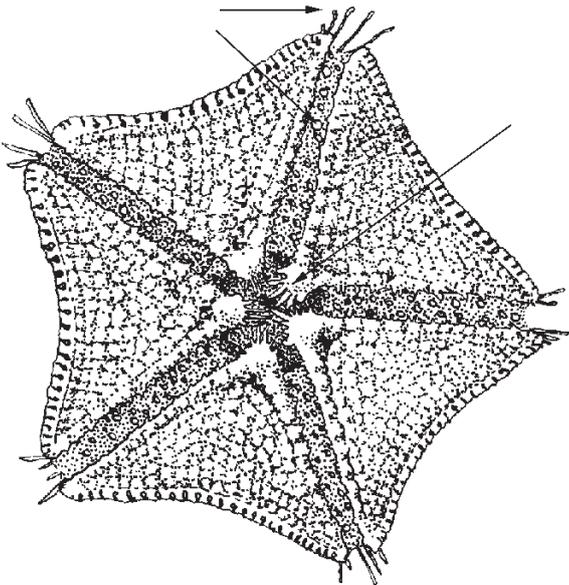
### Live young

Most seastars produce eggs, which hatch into free-swimming larvae that eventually settle to the bottom and grow into adult seastars. The live-bearing seastar is one of only three species in the world that gives birth to live young. They are hermaphroditic, meaning each individual is both male and female. They fertilise themselves and the young (up to five at a time) develop in a sac inside the parent. When they are ready, the young emerge from an opening on the parents' back and crawl off onto the rocks. The young seastars, at only 1-6 mm across, are tiny miniatures of their parents.

### Restricted distribution

The live-bearing seastar is restricted to the southeastern coast of Tasmania. Unlike other species whose larval young may be dispersed great distances by ocean currents, live-bearing seastars are restricted to their parental locations.

They live in rocky crevices and are often attached to the underside of rocks where they feed on microscopic algae. They prefer calmer, sheltered waterways because they are slow moving and can be easily dislodged from rock surfaces.



## How rare are they?

*Parvulastra vivipara* was first discovered in the Pitt Water area in 1968. Since then they have been found at six other locations, all in southeastern Tasmania. Colonies vary in size from as few as 20 to many thousands.

## *Smilasterias tasmaniae*

*Smilasterias tasmaniae* is chocolate brown with fawn tips. It grows to 40 mm across. This seastar prefers to live around or just below the low tide mark.

### Not many left...

*Smilasterias tasmaniae* is extremely rare. It only occurs at five localities on the western side of Bruny Island. Each site probably contains less than 30 animals.

The species was described in 1990 from museum specimens collected at Recherche Bay, Catamaran in 1929 and from specimens collected at Lighthouse Bay, Bruny Island in 1977.

Only about 50 animals have been observed in the wild. Little is known about their biology and behaviour. It is hoped that future research will shed some light on this very rare species.

## *Marginaster littoralis*

*Marginaster littoralis* is only 25 mm across and is a beautiful teal-green colour with a pale off-white margin around its edge. This seastar is similar in shape to the live-bearing seastar. It has five short arms in a rounded-pentagonal shape and its body surface is covered in obvious tiny plates.

### Possibly extinct...

It may already be too late for this species of seastar. *Marginaster littoralis* is possibly extinct as it has not been seen for over ten years. It was described from specimens collected from Powder Point (the explosives jetty), Cornelian Bay Point, and the Derwent River near Hobart. It was found in shallow water living among the stones and seaweed.

## Threats

The three threatened seastar species are especially vulnerable to the following threats:

### Habitat disturbance

This is a major threat to these seastars as their numbers are already low and their distributions very restricted. Seastars generally need rocky areas to adhere to so they are very susceptible to increases in sand or silt deposition. Coastal developments such as jetties and breakwaters alter the shoreline, changing water currents and the way silt or sand is deposited.

## Pollution

Herbivorous seastars feed on specific types of algae. Changes in nutrients or water quality can alter the types of algae that grow in a specific area. Therefore, these seastars are particularly susceptible to declining water quality and increases or decreases in nutrients from pollution.

## Collection for aquaria

It is possible that some seastars may have been collected for aquariums. All three of these seastar species are listed on the Tasmanian *Threatened Species Protection Act 1995*.

It is illegal in Tasmania to collect, disturb or interfere with them in any way. In some cases a permit from the Parks and Wildlife Service may be obtained.

## Introduced species

Introduced seastars such as the Northern Pacific seastar, *Asterias amurensis*, compete with our native seastars for space and food. Some introduced species even prey upon our native seastars. Native species have also been confused with introduced species and removed by well-meaning people.

## How you can help?

### Minimise disturbance

Seastars often shelter under rocks in tide-pools. Visitors to rocky coastlines need to take care not to interfere with the habitats of seastars. Something as simple as throwing stones into the water is removing the very hiding place that seastars need for shelter. The best way to care for these animals is to leave them alone. Also remember to put rocks back gently where you found them when exploring on rocky coasts.

### Minimise pollution

Caring for the coast and marine environment is an excellent way to protect seastars and all other sea creatures. Pollution of the marine and coastal environment often comes from the gutters in the streets and the various drains and sinks in and around your own home. Avoid pouring pollutants down the sink and use only biodegradable detergents. Remember, "think of the link, the sea and your sink!"

## Correct identification

If you are involved in the removal of introduced seastars, ensure that your identification is correct. Remember, do not cut an introduced seastar up to destroy it as it will possibly regenerate into more than one animal.

If you see any of these threatened seastars in their natural environment, do not disturb them, remember they are protected species.

## Report any sightings

You can help these rare and special animals by reporting any sightings to Marine and Coastal Research Tasmania on 6267 4193 / 4302 or the Parks and Wildlife Service, Threatened Species Unit on 6233 6139.

Remember to look out for Tasmania's more common seastar species like the eleven armed seastar (*Coscinastris muricata*) and the mosaic or cushion seastar (*Patiriella calcar*) when visiting the coast.

## Further reading

Dartnall, A.J. (1970). Australian seastars of the genus *Patiriella* (Asteroidea, Asterinidae). *Proceedings of the Linnean Society of New South Wales*. **96 (part 1)**: 39-49

Materia, C.J. (1994). The status of the Tasmanian seastar *Marginaster littoralis* Dartnall, 1970. *Wildlife Report* **94/8**. Parks and Wildlife Service, Tasmania.

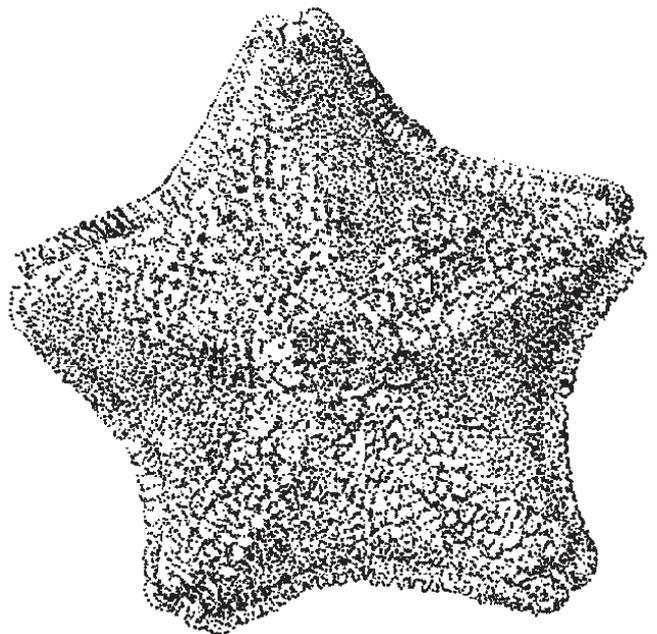
Materia, C.J. (1994). A study of native Asteroids in South eastern Tasmania. *Wildlife Report* **94/9**. Parks and Wildlife Service, Tasmania.

Prestedge, G.K. (1998). The distribution and biology of *Patiriella vivipara* (Echinodermata: Asteroidea: Asterinidae): a seastar endemic to southeast Tasmania. *Records of the Australian Museum*. **50**: 161-170

Rowland, M. (2001). Education and Monitoring Program for the Endangered Tasmanian Seastar - *Patiriella vivipara*. *Marine and Coastal Research Tasmania*.

## For more information

Contact the Marine and Coastal Research Tasmania Ph: 6267 4302, or Biodiversity Conservation Branch, DPIPW Ph: 6233 6556.



**Internet: [www.parks.tas.gov.au](http://www.parks.tas.gov.au)**

Threatened Species – Seastars



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