

Marine Pests

A Threat to Port Phillip & Western Port Marine Protected Areas

A QUICK REFERENCE GUIDE



What are marine pests?

Marine pests are highly invasive animals and plants from other parts of the world that have become established in Victoria and cause significant damage to the health of our marine ecosystems.

Many of these invaders arrived in Victoria accidentally, as larvae in ballast water or as adult hitch-hikers in ships that visit the port.

What is at stake?

Over 90% of plants and animals living in Australia's southern waters are found nowhere else in the world. Victoria's system of 13 marine national parks and 11 marine sanctuaries protect 5.3% of Victorian state marine waters.

Port Phillip and Western Port region contain four marine national parks and four marine sanctuaries, being:

- Port Phillip Heads Marine National Park
- Yaringa Marine National Park
- French Island Marine National Park
- Churchill Island Marine National Park
- Point Cooke Marine Sanctuary
- Jawbone Marine Sanctuary
- Ricketts Point Marine Sanctuary
- Mushroom Reef Marine Sanctuary

For more information, call **13 1963** or visit: www.parks.vic.gov.au

- ✓ Native species
- ✗ Introduced species



What can I do?

Marine pests are spread by both natural means and with human help.

To help prevent the spread of marine pests:

- Use fresh water to thoroughly wash down boats, other watercraft, fishing gear, wetsuits, swimwear, and other marine equipment after use.
- Dry boats and marine equipment properly before moving to other areas.
- Be particularly vigilant when moving boats or equipment from Port Phillip and Western Port to other parts of Victoria.
- Apply appropriate anti-fouling paints to boat hulls as per instructions for use.

Report suspected sightings of marine pests to DEPI on **136 186**.

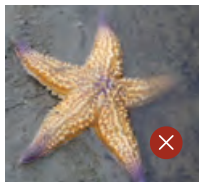
For more information visit: www.depi.vic.gov.au

Images: Parks Victoria, Museum Victoria, Fisheries Victoria, Museums Australia, NIMPIS, Kimberley Millers, Phil Watson



Status

Well established in Port Phillip but currently not present in other Victorian locations apart from Tidal River. Was discovered at San Remo and Inverloch but has been controlled.



Impacts

A highly voracious predator that feeds on a wide variety of native marine species including bivalves (eg. pippies and mussels), other molluscs, crabs and barnacles. Few known predators, reproduces quickly and rapidly spreads to new areas.

Identification features

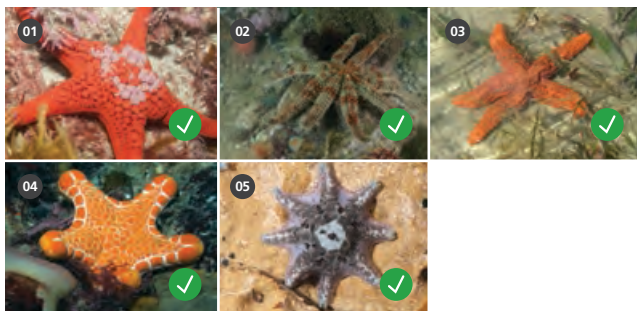
- Five broad arms with pointed tips that are often upturned.
- Varies in colour on the upper surface from yellow to purple, while underside is uniform yellow.
- Irregularly arranged pointed spines on upper surface of arms.
- Up to 50cm in diameter.

Native species

Native seastars are an important part of Victoria's marine environment and are protected in marine national parks and marine sanctuaries.

Removing the native Eleven Armed Seastar *Coscinasterias muricata*, one of the few known predators, can inadvertently assist in the survival of the Northern Pacific Seastar.

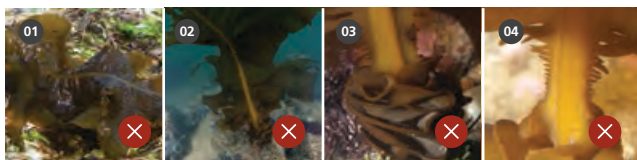
The following seastars are common to the Port Phillip and Western Port region:



1. Ocellate Seastar *Nectria ocellata*
2. Eleven-armed Seastar *Coscinasterias muricata*
3. Granular Seastar *Uniophora granifera*
4. Vermillion Seastar *Pentagonaster duebeni*
5. Common Seastar *Meridiastra calcar*

What can you do?

Sightings of suspected Northern Pacific Seastars outside of Port Phillip should be reported to the Department of Environment and Primary Industries on **136 186**.



1. *Undaria* washed up on the shore 2. A mature *Undaria* plant 3. Frilly sporophyll 4. Juvenile *Undaria* plant without sporophyll

Status

Well established in Port Phillip but currently not present in other Victorian locations, apart from Apollo Bay.

Impacts

Grows rapidly and forms dense underwater forests, outcompeting native kelp and algae for light and space, then dies back in summer, changing kelp habitat. It can quickly colonise disturbed areas with preference for solid surfaces such as rocks. There are few known predators.

Identification features

- Frilly sporophyll near the base of mature plant (near the holdfast).
- Mature plant only observed with sporophyll from early winter until late summer.
- Thick midrib/vein that runs down the middle of mature plants.
- Brown coloured; size usually up to 1m long, can grow up to 3m.

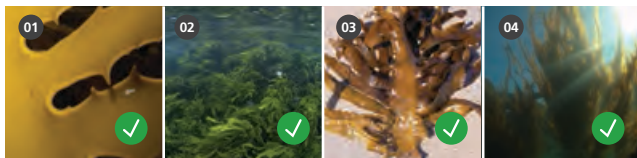
Native species

Kelp forests formed by large brown algae are important habitat on subtidal rocky reefs and provide food and shelter for a wide range of other species.

Common Kelp *Ecklonia radiata*

Key features:

- No midrib / middle vein or frilly sporophyll at the base.
- Rough blades, not smooth.
- Note that juvenile *E. radiata* is hard to distinguish between *U. pinnatifida*; *E. radiata* is more leathery.



1. Detailed image of *Ecklonia radiata* 2. A dense stand of *Ecklonia radiata* 3. *Ecklonia radiata* washed up on the shore 4. Giant Kelp *Macrocyctis pyrifera*

What can you do?

Sightings of suspected Japanese Kelp outside of Port Phillip should be reported to the Department of Environment and Primary Industries on **136 186**.



Status

Observed in Tidal River at Wilsons Promontory and in Western Port, yet to be detected in Port Phillip.

Impacts

Pacific Oysters alter habitats by covering substrates and forming reefs, and over growing native species. It is fast growing and is a filter feeder, competing with native species for food.

Identification features

- Outer shell is white-purple in colour including the interior.
- Can grow up to 15-20cm.
- Usually, one valve is entirely cemented to the substrate or rock surface.
- The shell is sharp with jagged edges with large, irregular, rounded, radial folds.



Pacific Oyster upper shell surface



Pacific Oyster wavy shell edges

Native species

Native shellfish including oysters are an important part of Victoria's marine national parks and sanctuaries and all are protected. The following oyster is native to the Port Phillip and Western Port region:

Native Flat Oyster / Southern Mud Oyster *Ostrea angasi*

Key Features:

- Triangular to round shaped shell that is coloured ash-grey to off-white and usually darker towards the hinge; inside the shell is white.
- Upper valve is thick, heavy and flat to concave, with an irregular margin (edge).
- Grows to a size of 10-18cm in length.



Native oyster

What can you do?

Sightings of suspected Pacific Oysters in Port Phillip should be reported to the Department of Environment and Primary Industries on **136 186**.

European Green Crab or European Shore Crab *Carcinus maenas*



Status

Widespread across Victoria and common in Port Phillip and Western Port. This crab has been present in Victoria since the 1800s.



Impacts

A voracious and aggressive predator with a broad diet, it out-competes native crabs for food and habitat. It is a major cause of mortality of native crabs and mollusc populations.

Identification features

- Four distinct notches in the carapace located on both sides of the eyes.
- Can grow up to 8cm across.
- Green coloured upper surface. The under surface colour varies, can be red, orange or green.
- Broad, triangular carapace that is deeply sculptured on top.
- The last pair of legs are pointed and not used for swimming.

Native species

Native crabs are important animals in marine national parks and sanctuaries and are protected within these areas. Some species that look similar include:

01 Sand Crab

Ovalipes australiensis

Key features:

- Distinctive purple spots towards rear of carapace.
- Swimming paddles on last pair of legs.
- Shell is coloured pale grey and up to 10cm wide.

- First walking legs have felt patch on inner side.
- Shell to 30mm wide and coloured yellow/brown with black spots.

02 Notched Shore Crab

Paragrapus quadridentatus

Key features:

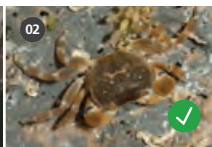
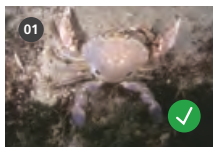
- A flat rounded carapace with a single notch.

03 Rock crab

Nectocarcinus species

Key features:

- Shell covered in fine hairs.
- Pincers/fingers of claws are black/darker.
- Last pair of legs not swimming paddles.
- Shell up to 8cm wide.



What can you do?

Although considered a serious marine pest, due to widespread occupation in Victoria, there is little that can be done to control the Green Crab.



Status

Well established in Port Phillip but not yet observed in Western Port.

Impacts

Can form dense colonies and competes with native filter feeding organisms for food and space. Can cause ecological changes, particularly by removing plankton, reducing nutrients in the ecosystem. This poses a high risk to soft sediment communities. There are no known predators.



Identification features

- Large tube dwelling worm with a crown of feeding tentacles formed in two layers. Only one layer of the tentacles is distinctly spiralled.
- The fan colour varies from distinct orange, white and red bands to pale fawn throughout with distinct bands.
- A long flexible leathery tube that can grow over 30cm.
- Crown can be completely withdrawn into tube if worm is disturbed.

Native Species

There are many native fan worms (*Sabellastarte spp*) that can be distinguished by the following features:

- Feeding tentacles have crowns with symmetrical circular whorls.
- Fans are white or purple, with orange, purple or brown bands.
- Usually grows as a solitary worm, rather than in clumps.
- Shorter tube, grows up to 5cm long.



What can you do?

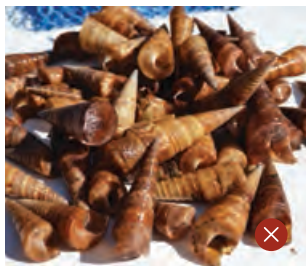
Sightings of suspected European Fan Worms in Western Port should be reported to the Department of Environment and Primary Industries on **136 186**.



Status This species is widespread in areas in East Gippsland and at Wilsons Promontory. Not known in the bays.

Impacts

New Zealand Screw Shells are filter feeders and compete with native species for food. They densely cover the sea floor with live and dead shells which prevents the ability of native screw shells to inhabit the area. Few known predators.



Identification features

- Variable in colour from yellowish to reddish or purple-brown with a faintly marbled pattern or darker brown streaks on the surface.
- Strongly pointed and grows up to 9cm long and 2.5cm wide, with up to 18 whorls.
- Shell surface is closely (but irregularly) spiralled.
- Animal body is yellow-green in colour.

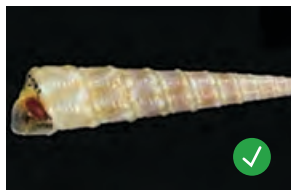
Native species

Native screw shells are important scavengers in both shallow and deep marine environments.

The following native screw shells are common to the Port Phillip and Western Port region:

Gunn's Screw Shell

Gazameda gunnii



Key features:

- Grows to 7cm in length, more commonly 3-4cm.

Mud Whelk

Velacumantus australis



Key features:

- Dirty grey coloured shell with ridges.
- Grows up to 4.5cm in length.

What can you do?

Please report sightings in Port Phillip and Western Port to the Department of Environment and Primary Industries on **136 186**, describing the location such as a gps reference.

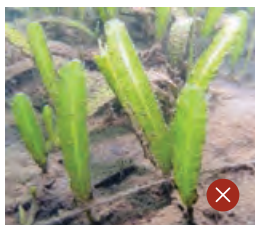


Status » Potential major threat

Well established in NSW and SA but not yet present outside of aquariums in Victoria.

Impacts

Highly invasive plant that, smothers other algal species, seagrasses and immobile invertebrate communities such as mussels. This species can cover thousands of hectares preventing other native species of algae from growing.



Pinnules pointing upwards and attach directly opposite

Identification features

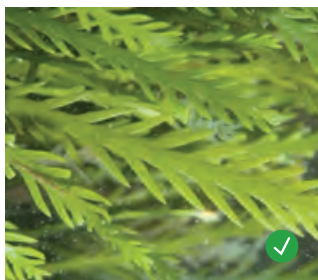
- Light green in colour with upright leaf like fronds that arise from a horizontal stolon / branch.
- The fronds are flat, and have a midrib.
- The fronds have little branches that extend out from the midrib in an opposite arrangement (as opposed to alternating) and point upwards.
- Frond diameter is 6-8 mm; frond length is 3-15cm long in shallow areas and up to 60cm in deeper water.

Native species

The following native Caulerpa are commonly observed in Port Phillip and Western Port:

Key features:

- Branches that extend outwards from the midrib are arranged alternately (not oppositely).



Caulerpa remotifolia

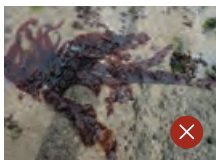
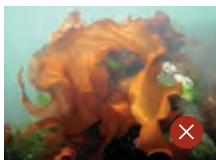


Caulerpa scalpelliformis

What can you do?

Aquarium Caulerpa is not yet in Victoria, but it is very important to report suspected sightings of the algae to the Department of Environment and Primary Industries **136 186**.

These four marine pests are harder to identify due to their similarity to native species



1. Red Algae *Grateloupia turuturu*

Status Confirmed within Point Cooke Marine Sanctuary however the range within Port Phillip is unknown.

Impacts

The large size of the plant shades out native algae on the reef. It grows rapidly in summer and dies back in winter causing large change in the availability of food for grazers such as snails.

Identifying features

A large red algae with thin blades often with smaller bladelets at the base of the plant. It is slippery to the touch. Grows to 3m in length during summer.

Correct identification

This species is hard to identify. A taxonomic expert is required to formally confirm it using a microscope.

What can you do to help?

Report suspected sightings to DEPI on **136 186**.

2. Dead Man's Fingers *Codium fragile ssp. fragile*

Status Widespread in Port Phillip, known to inhabit San Remo and Newhaven in Western Port.

Impacts

It grows rapidly, shades out native algae and can regenerate from a broken fragment enabling easy transfer from one area to another.

Identifying features

A green spongy seaweed with cylindrical branches that attach to subtidal rocky reef or other hard surfaces.

Correct identification

Due to the similarity to native *Codium*, it can only be confirmed by checking a sample under a microscope.



What can you do?

Report sightings outside of the known range to the Department of Environment and Primary Industries on **136 186**.

3. Asian Date Mussel

Musculista senhousia

Status Found in Western Port in Yaringa and French Island Marine National Parks; not known in Port Phillip Marine Protected Areas.

Impacts

Date mussels can form dense mats that dramatically alter the natural sea floor habitat, changing both the physical environment and the types of species that survive there.

Identifying features

Olive green to brown in colour with zig zag markings or radial lines. The shell is easily crushed. Grows to 3cm, commonly 1-2.5cm. Preferred habitat is under soft sediment, lying in a vertical position with the posterior end slightly protruding.

What can you do to help?

Keep an eye out for this pest buried in soft sediment. Immediately report sightings in Port Phillip Marine Protected Areas, noting the exact location to DEPI on **136 186**.



4. Cord Grass *Spartina anglica* and *Spartina x townsendii* sp

Status Found in Lake Connewarre in Barwon Heads and at the mouth of Bass River and in drain outlets near Tooradin in Western Port.

Impacts

Spartina aggressively invades native saltmarsh, mangroves and mudflats, rapidly binding sediments and altering the mud habitat, excluding other species. Spreads by seeds and from plant parts and can cover thousands of hectares.

Identifying features

Light green grass with long leaves that are smooth and hairless. Leaf blades are flat or folded and taper to a fine hard point. Leaves grow up to 45cm long and 1.5cm wide. A 2-3mm long ligule (collar of dense hairs) forms at the base of the leaves. Initially grows in clumps but can spread into extensive swards.



What can you do?

Immediately report sightings in Port Phillip and Western Port, other than Tooradin and Bass River, to the Department of Environment and Primary Industries on **136 186**.

A call to action – marine pest activities you can attend



Many marine community groups across Victoria conduct regular pest surveys and removal programs. The aim of these activities is to better understand the problems caused by marine pests as well as reducing their impacts on native species in marine protected areas. Due to the large numbers of pests present in the bays these activities are focussed on reducing harm caused by pests, rather than trying to eradicate a pest completely from the wider marine waters.

Within Port Philip, Marine Care members at both Jawbone Marine Sanctuary in Williamstown, and at Point Cooke Marine Sanctuary, invite the wider community to get together to conduct Northern Pacific Seastar surveys and removal activities. Volunteers, along with support from Parks Victoria rangers hand collect as many sea stars as possible to reduce their effects on native species in the park.

At Popes Eye in the Port Phillip Heads Marine National Park near Queenscliff tour operators and volunteers work with rangers to remove seastars from the reef to prevent them from becoming established and affecting local marine life.

If you would like to find out more about marine pest surveys and removal activities contact Parks Victoria on **13 1963**.



Northern Pacific Seastars collected from Jawbone Marine Sanctuary



Volunteers emptying catch bags full of Northern Pacific Seastars

Should I remove pests from the bay?

- Pest removal programs conducted within marine national parks and sanctuaries must be undertaken with the supervision of a ranger or trained Marine Care volunteer with a permit, to reduce the accidental removal of native species.