



**BIOSECURITY
NEW ZEALAND**

**KEEP OUR
MARINE ENVIRONMENT
FREE FROM PESTS**

KEEP WATCH
CALL BIOSECURITY NEW ZEALAND
0800 80 99 66





Exotic marine organisms can become pests and pose a major problem for New Zealand's coastal environment. If allowed to get out of control, they could easily overrun our natural ecosystems, displace native species, cause changes to important habitats and have a major general impact on our biodiversity.

They can also affect human health through their toxicity and other unpleasant characteristics, as well as influencing changes to the attractiveness and spiritual value of our coastal areas.

How do they get here?

Marine organisms are transported from their native regions around the world by fishing or marine equipment, in aquarium materials or sometimes by deliberate introduction. But most often, they move around on ships and smaller vessels attached to the hulls as fouling or in ballast water.

What can we do?

If you are working or spending time around our coasts, fishing, diving, boating or simply walking or swimming, you are encouraged to look out for any unusual organisms. The earlier they are noticed and brought to the attention of Biosecurity officials, the sooner they can be assessed and attempts made to control them.

How do we go about it?

The first part of this booklet shows examples of unwanted marine organisms that may become introduced to New Zealand. Biosecurity New Zealand looks out for these species at our borders and everyone has an obligation to report any suspected sightings of them. The details for making a report are given at the back of the booklet.

The second part of the booklet provides guidance on other actions you can take to try to reduce the rate of introductions and the spread around the New Zealand coast.

We need your help to keep our coastal areas free from these unwanted and sometimes harmful pests.

Look out for these invaders in our waters

Biosecurity New Zealand needs your help to keep a look out for new pests in our marine environment. We have identified six major pests that could cause serious problems if they were to invade our marine environment.



1

1 Mediterranean Fanworm

Sabella spallanzanii



2

2 European Shore (or Green) Crab

Carcinus maenas



3

3 Northern Pacific Seastar

Asterias amurensis



4

4 Chinese Mitten Crab

Eriocheir sinensis



5

5 Green Seaweed

Caulerpa taxifolia



6

6 Asian Clam

Potamocorbula amurensis

Mediterranean Fanworm

Sabella spallanzanii

Overview

The Mediterranean Fanworm is not yet found in New Zealand although it is found on the south and south-west coasts of Australia, and in Tasmania. It lives in the open seas at depths of 1-30 m and on hard substrates in shallow harbour areas. It prefers sheltered areas away from wave action. The fanworm has a rapid growth rate and can form high-density beds displacing other species that are already there and foul boats and other marine structures. This species could be a threat to our marine ecosystem and could cause problems for marine farmers and boat owners.

Mode of distribution

Adult fanworms could travel to New Zealand on the outside of a vessel's hull or in the seachests. Young fanworms could be carried here in a ship's ballast water.

Description

Size:

Tube length 90-400 mm, crown radioles 9-64 mm long.

Shape:

Cylindrical body, two groups of radioles – one spiral, the other forming a semicircle.

Construction:

The outer layer of tube is comprised of silt or mud and often has organisms growing on it.

Key features

Only **one** of the two groups of radioles making up the crown is in a spiral shape. The radioles are **webbed** for the first 5 mm. Turned down lappets are often **orange** in colour and the first ventral shield is the **widest**.

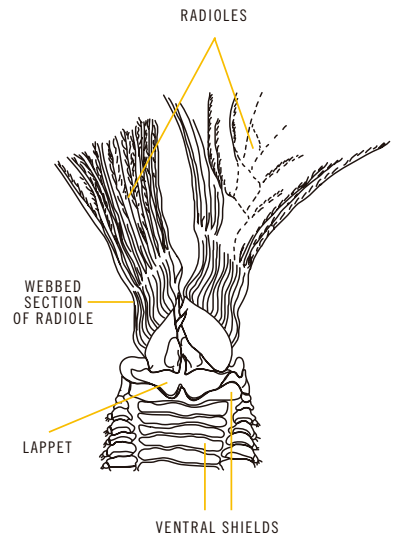


PHOTO: KAREN GOWLETT HOLMES

European Shore (or Green) Crab

Carcinus maenas



Overview

If this predator invades New Zealand it could reduce the number of different organisms we see in our marine environment and have a serious impact on our scallop and mussel industries. The European Shore Crab is found extensively outside its native range and adapts very well to new places. It is found in sheltered rocky shores mainly under large boulders between the high and low tide marks or buried in the sand on sheltered rocky foreshores. It eats other crabs, clams, limpets, barnacles, mussels and even young scallops.

Mode of distribution

The European Shore Crab could travel to New Zealand in a ship's seachests, ballast water or on fishing equipment.

Description

Size:

Up to 8 cm across the body though more commonly 5-6 cm.

Shape:

The body is broad at the front with a narrower but blunt rear forming a triangular shape.

Colour:

The young crabs vary in colour but are usually olive green, while the upper surface of the adult crabs is distinctly dark green. The adults also often have yellow/ orange patches.

Key features

The shore crabs have **10** well-developed spines on the front edge of the body, five on either side of the rostrum. The broad **triangular body** shape and the **absence** of swimming paddles on the last pair of legs are also notable features of this crab. Finally, it will generally show **no aggression** when handled.

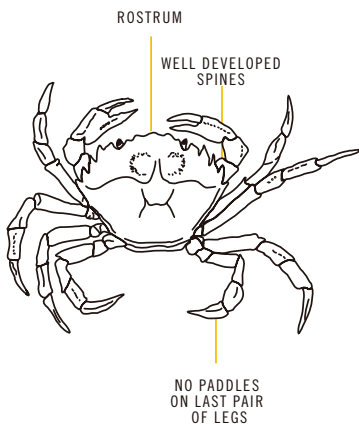


PHOTO: KAREN GOWLETT HOLMES

Northern Pacific Seastar

Asterias amurensis

Overview

If this seastar arrives in New Zealand it could have a serious impact on our aquaculture industry and our marine environment generally. The Northern Pacific Seastar is currently found in huge numbers in southern parts of Australia. It feeds on wild and farmed shellfish and a wide variety of other marine animals. It is normally found in shallow water but can be found as deep as 200 m. It prefers muddy, sandy or pebbly surfaces. You would not normally see it on reefs or in areas with high wave action.

Mode of distribution

Northern Pacific Seastars could reach New Zealand in ballast water (larvae) in seachests (spawning adults) or as juveniles on the outside of a vessel's hull.

Description

Size:

Up to 46 cm across.

Colour:

Varies from yellow to purple/red.

Topside:

Arms covered with numerous unevenly arranged small spines with jagged ends.

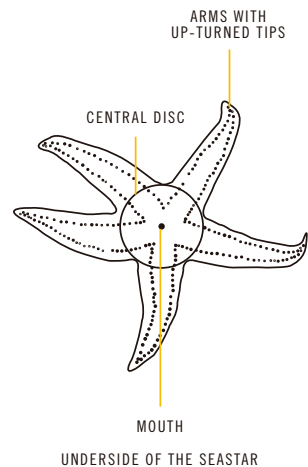
Underside:

On each arm the spines are in a single line along the groove where tube feet lie, joining fan-like at mouth.

Key features

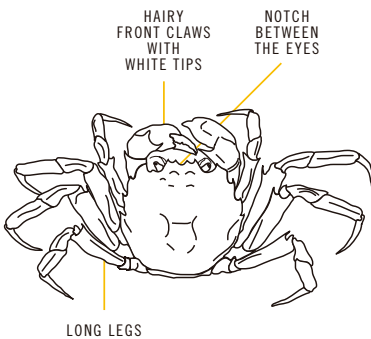
Northern Pacific Seastars have **five** arms which have **pointed** and often **up-turned tips**. The arms join onto a **central disc** and have clumps of small **chisel-like** spines along each side.

PHOTO: KAREN GOWLETT HOLMES



Chinese Mitten Crab

Eriocheir sinensis



Overview

If the Chinese Mitten Crab invaded New Zealand waters it could pose a serious threat to both our marine biological communities and the stability of our river banks. This crab is native to the rivers and estuaries of China and Korea along the Yellow Sea. The young crabs grow and develop in freshwater. When adults, they migrate to the sea to reproduce and die. They burrow into river banks and can cause accelerated erosion and slumping. They have also been known to block water intakes in irrigation and water supply schemes. They carry a lung fluke that infects humans.

Mode of distribution

Chinese Mitten Crabs could arrive in New Zealand as young animals in a ship's ballast water or as adults in a vessel's seachests. It is also a food source in some cultures and so could be introduced deliberately.

Description

Size:

Adult up to 80 mm wide, juvenile up to 20-25 mm wide.

Colour:

Light brown.

Body shape:

Smooth and rounded.

Key features

The front claws of the crabs that are 25 mm or wider are **hairy** with **white tips**. Their legs are twice as long as the width of their body and they have a **notch between the eyes**.

PHOTO: THE NATIONAL HISTORY MUSEUM

Green Seaweed

Caulerpa taxifolia

Overview

This species readily invades new places and is now found on the northern coast of Australia. If it arrived in New Zealand it could cause serious problems to our marine ecosystem. It is found at depths of 3–35 m on rock, sand or mud in sheltered or moderately wave-exposed areas. It smothers other plant life in the area it invades and reduces the habitat available for fish and other animals.

Mode of distribution

This seaweed is used in the marine aquarium trade. Its most likely path of introduction to New Zealand would be by accident (eg, from the dumping of a hobbyist's aquarium into the sea) or possibly from the outflow of a marine pet supplier's holding tanks.

Description

Size:

Fronds between 3–15 cm long in shallower lighter conditions and 40–60 cm in deeper water. Stolon diameter of 1.5–1.8 mm but less than 2.8 mm.

Shape:

Horizontal tubular stolon with fronds protruding at right angles. The fronds are flat.

Colour:

Green.

Key features

The **flattened** fronds are an important feature to look for. Another important characteristic of Green Seaweed is the fact that the fronds get **narrower** as they near the top of the frond.

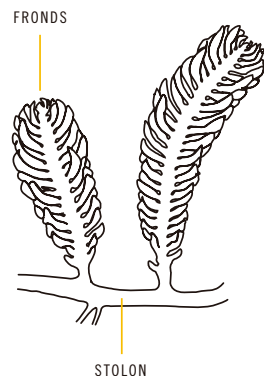
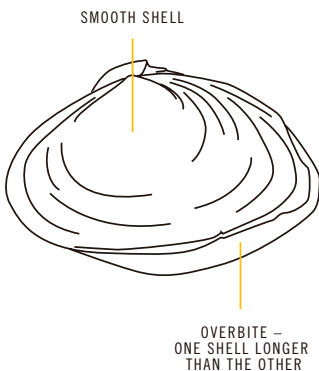


PHOTO: COURTESY OF THE AUSTRALIAN INSTITUTE OF MARINE SCIENCE

Asian Clam

Potamocorbula amurensis



Overview

If this pest invades it could reduce the number of different clam and bivalve species in our marine environment. It inhabits a wide range of substrate types, temperature and salinity gradients and may reach population densities of more than 25,000 per square metre. The native range of this clam is China, Japan and Korea although it has now invaded parts of the west coast of the United States.

Mode of distribution

The young Asian Clams can travel here in a boat's ballast water while the adults can attach to fishing equipment and can invade as fishing vessels move around the world.

Description

Size:

Generally 2-3 cm in length. Can be as small as 0.5 cm.

Visibility:

Normally 1/2-2/3 of the shell is exposed above the substrate.

Colour:

Dirty white (white, tan or yellow).

Key features

This clam has a **smooth unsculptured** shell. One of the clam's two shells is slightly longer than the other, causing the clam to have a slight **overbite**. The portion of the shell exposed above the surface of the sediment is generally **brown** in colour because of sediment that has adhered to the outside of the shell. Sometimes barnacles or other similar organisms can also stick to the exposed portion of the shell.

PHOTO: COURTESY OF THE U.S. GEOLOGICAL SURVEY

If you have seen any of these pests
we want to hear from you!

If you have seen, or even think you have seen, any of these invaders, please collect samples in the following way:

1. For anything other than seaweed, place the sample in a plastic bag and freeze it.
2. If it is a weed sample, liberally spread salt over the plant, leave it overnight, drain off the liquid, resalt and place it in a plastic bag.

Please get your sample to Biosecurity New Zealand as soon as possible. If you need any assistance, please call us and we'll be happy to help you.

**Contact Biosecurity New Zealand TOLLFREE on
0800 INVADERS or 0800 80 99 66**

For more information visit our Website: www.biosecurity.govt.nz

Glossary

Ballast Water – Water carried in a vessel to maintain stability while at sea. This water is discharged at port when a new cargo is taken on board.

Seachest – A cavity around the water intake area of a vessel. Organisms can attach in these areas and grow relatively undisturbed.

Steps you can take to help stop marine pests spreading

- **Don't release aquarium fish, plants or other live aquatic organisms into our oceans or inland waterways.**
- **Don't spread aquatic pests on fishing or aquaculture gear.**
- **Don't voyage to another region with a fouled hull.**
- **Always maintain a clean hull and good antifouling routine.**

Don't release live material into the marine environment

If you have a marine aquarium, you can help prevent the spread of marine pests by simply following these rules:

- Don't release any exotic species (fish, invertebrates or seaweeds) into the marine environment.
- Don't release native species into new locations.
- Always dispose of tank water into a treated sewage system **NOT** directly into the sea or a river.



STOP THE SPREAD:
PROTECT OUR WATERS FROM AQUATIC PESTS.
DO NOT RELEASE PLANTS AND FISH INTO
WATERWAYS.

Don't transfer organisms on gear or boats

Marine pests are often spread when a trailer boat is taken from one area to another. For example, a trailer boat used in Auckland's Waitemata Harbour can easily pick up organisms introduced by visiting ships and transfer them to the Manakau Harbour.

This is a serious problem

If you are a marine farmer, commercial or recreational fisher, professional or recreational diver, you can play your part to help protect the environment that sustains your business or pleasure.

Before launching in a new location:

- Rinse down boats, trailers and all gear thoroughly before moving to a new location.
- Remove any marine debris such as seaweeds, marine invertebrates.
- Drain or thoroughly rinse areas where seawater might pool.
- If possible, allow the boat to dry for several days before moving.



**PROTECT OUR WATERS FROM
AQUATIC HITCHHIKERS:**
REMOVE ALL WATERWEED FROM
BOATS, BOAT TRAILERS, PROPELLERS,
ANCHORS, FISHING GEAR, NETS,
JETSKIS AND JET UNITS.

Commercial fishing and aquaculture equipment

- Avoid inter-regional equipment transfer.
- If transfer is unavoidable, try to allow 1 month air-drying in a well ventilated area before transfer.
- When immediate transfer is unavoidable, rinse equipment thoroughly with fresh water and remove all debris.
- If equipment has visible fouling growth, always remove from the water, clean thoroughly, and allow to air dry for several days before transfer.
- When storing equipment in high humidity locations (i.e. rope in bags) keep out of water for at least 3 months.

Recreational fishers

- Rinse all gear thoroughly with fresh water.
- Remove all marine debris such as seaweeds, marine invertebrates.
- Avoid transferring live bait to new locations.

Divers

- Rinse and soak gear in fresh water, preferably rinse with a wetsuit cleaning product.
- Remove all marine debris such as seaweeds, marine invertebrates.
- Allow to air-dry where possible.

Don't transfer organisms on permanently in-water vessels

If you operate a yacht, launch or fishing boat, you can help stop the spread of marine pests by cleaning before you leave on a voyage to another part of New Zealand or overseas.

Before you sail:

- Have your boat slipped for removal of all fouling and preferably reapply antifouling paint.
- If you are unable to slip your boat, diver cleaning will help although it is not as thorough.
- Be sure to clean areas that retain seawater and sediment. Flush with fresh water.



AQUACULTURE – HARVESTING BARGE AND MUSSEL BUOYS – SHOULD AVOID TRANSFER TO OTHER REGIONS



DIVING GEAR SHOULD BE CLEANED BETWEEN USES



CLEANING A YACHT'S HULL IN A HAUL-OUT FACILITY



HULL CLEANING SHOULD BE DONE IN A BOAT MAINTENANCE FACILITY THAT HAS A TREATMENT SYSTEM FOR WASTE DISCHARGES



GRIDS SHOULD ONLY BE USED FOR BRUSHING OFF SLIME LAYER



CLEANING THE SLIME LAYER BY REGULAR BRUSHING OF THE HULL

Special areas on your boat that harbour marine pests

- The hull.
- Keel and stabilisers, particularly areas where the hull has rested during antifouling.
- Intakes and outlets (skin fittings).
- Propellers and shafts.
- Grates and rope guards.
- Rudders, shafts, casings and rudder recesses.

Always maintain a regular hull cleaning routine

- Don't allow fouling to build up on your boat's hull. This can be avoided by ensuring the hull is coated with an antifouling paint that is replaced at the interval recommended by the paint manufacturer, or when paint has been scraped off or damaged. The usual period for reapplication for pleasure craft is one year.
- The antifouling paint used should be suitable for the type and use made of your boat. Factors considered are speed of travel, time kept at mooring or berth and material composing the hull. Be sure to strictly follow the manufacturer's instructions.
- It is recommended that hull cleaning in preparation for repainting be carried out in a boat maintenance facility that has treatment systems that will ensure fouling waste is not discharged back into the marine environment. Alternatives are to ensure there are no discharges back into the sea or waterways, or at a minimum, all material is collected and disposed of in a land based refuse site.
- Most importantly, to ensure fouling does not build up between antifouling applications, you need to regularly brush off slime layers. This may also increase the effectiveness of the antifouling coat. Purpose-made brushes with an extendable arm and floating head are available for cleaning a floating vessel from the wharf side.

If your vessel has travelled to another country since last being slipped and antifouled, you should use a facility with proper discharge treatment systems to prevent introducing new organisms to New Zealand waters.



HELP PROTECT OUR MARINE ENVIRONMENT
CALL BIOSECURITY NEW ZEALAND
0800 INVADERS or 0800 80 99 66



KEEP WATCH
CALL BIOSECURITY NEW ZEALAND
0800 80 99 66