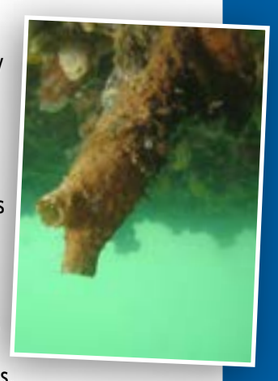
Watch out for these marine pests!

Clubbed tunicate/leathery sea squirt, *Styela clava*

Status in New Zealand:
Established.

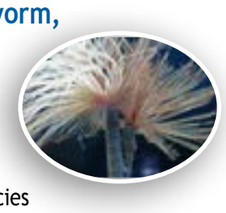
Why is this a threat?
Fast growing nuisance fouler of vessels, marine farms and fishing equipment. Competes with native species for food and space.



Key features:
- Tubular, club-shaped body that tapers to a stalk.
- Leathery, bumpy, often wrinkled outer skin.
- Brown-coloured.
- Two short siphons or holes on end.
- Up to 16cm long.
- Often thickly covered with other marine fouling growth.
- Grows as single individuals.

Where are they found?
- Attaches to hard surfaces in sheltered areas away from wave action.
- Found on rocks, oyster and mussel shells and seaweed.
- Commonly attaches to man-made structures such as boat hulls, wharves and mussel lines.
- Low intertidal zone (area between high and low tides) to 25m depth.

Mediterranean fanworm, *Sabella spallanzanii*



Status in New Zealand:
Established.

Why is this a threat?
Competes with native species for food/space. Can have a negative impact on establishment of some species and on nutrient flow. Forms dense beds that can foul fishing equipment or aquaculture structures.

Key features:
- Spiral fan of feeding tentacles on top of leathery tube.
- Fan is white banded with pale fawn/orange or brown.
- Tube is tough and flexible, dull grey brown coloured and up to 40cm.
- Tube is often muddy in appearance with other organisms growing on it.
- Commonly forms clumps of several individuals, creating a canopy of feeding fans.

Where are they found?
- Attaches to hard surfaces including rocks, concrete, and seabed organisms such as mussels and oysters.
- Has been found on boat hulls and wharf and marina structures.
- Sheltered temperate waters up to 30m depth.

Aquarium caulerpa, *Caulerpa taxifolia*

Status in New Zealand:
Not detected.

Why is this a threat?
Aggressive weed that can spread and smother other algae, seagrasses and invertebrate communities. Out-competes native species for food/light and produces toxic compounds. Vast beds can destroy native species diversity and fish habitat.

Key features:
- Bright green seaweed.
- Horizontal runners reach up to 9m.
- Runners give rise to many upright fronds which are flattened with a smooth and distinct mid-rib.
- Fronds up to 1cm wide and up to 15cm long (up to 60cm in deep water).
- Pinnules (or individual leaves) attach to mid-rib directly opposite one another.

Where are they found?
- Up to 100m depth, but usually between 3-35m.
- Rock, sand, mud and seagrass beds.
- Exposed and sheltered estuaries, coastal lagoons and bays.
- Tolerates a wide range of water temperatures.
- It is an offence to import, grow or spread this weed.

Asian clam, *Potamocorbula amurensis*

Status in New Zealand:
Not detected.

Why is this a threat?
Reduces planktonic food sources, causing decline in abundance and diversity of native species, and decline or collapse of commercial fisheries and farmed shellfish. Reaches extremely high densities, altering the soft sediment community structure of an area by changing the sediment structure and reducing the space available for other species.

Key features:
- Has distinctive overbite - the two shells are uneven in size.
- Shell dirty white, tan or yellow in colour, frequently with brown staining.
- Thin and smooth shell (older shells may be wrinkled at edges).
- Generally 2-3cm in length, but can be as small as 0.5cm.

Where are they found?
- Most often on mixed sand and mud substrates.
- Clams are partially buried in soft material.
- Mostly subtidal, but also intertidal.
- Can live in most freshwater upper estuarine creek areas through to full marine habitats.
- Subtropical to cold temperate waters.

Chinese mitten crab, *Eriocheir sinensis*

Status in New Zealand:
Not detected.

Why is this a threat?
Burrowing weakens banks and causes accelerated erosion. High densities can block water intakes in irrigation and water supply schemes. Crab hosts liver fluke (*Paragonimus* sp.) that is harmful to human health. Consumes both plants and animals. Damage to fishing nets and catch.

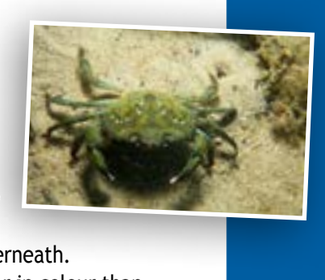
Key features:
- Hairy "mittens" on front claws - unlike any NZ crab.
- Mitten claws have white pincer tips.
- Four spines or serrations on each side of the shell.
- Distinct notch between eyes.
- Light-brown to olive green shell, up to 10cm across.

Where are they found?
- Burrows into sand, mud or clay banks.
- Adults inhabit the bottom and banks of freshwater rivers and tidal creeks, before migrating to brackish and saltwater to reproduce.
- Larvae develop into juveniles in marine coastal areas then migrate up rivers and creeks.
- Able to survive in highly polluted habitats.

European shore crab, *Carinus maenas*

Status in New Zealand:
Not detected.

Why is this a threat?
Highly adaptable invasive species. Voracious predator - eats mussels, crabs, oysters, limpets, barnacles and worms, also juvenile crabs and shellfish, including scallops. Potential to significantly alter ecosystems causing mortality in native crab and shellfish populations.



Key features:
- Adult shell width up to 8cm.
- Five spines or spikes on each side of shell.
- Adult colour varies from green top and yellowish underside, to red/orange mottled above and orange or partly red underneath.
- Juveniles generally lighter in colour than adults.
- Three rounded teeth or lobes between the eyes
- No swimming paddles on legs.

Where are they found?
- All types of protected and semi-protected marine and estuarine habitats, including mud, sand, rocky substrates and seagrass beds.
- From the intertidal to 60m deep. Predominantly a shore to shallow water species.

Japanese kelp, *Undaria pinnatifida*

Status in New Zealand:
Established.

Why is this a threat?
Rapidly forms dense stands that overgrow and exclude native seaweed species. Nuisance fouling can cause problems and increased costs for aquaculture.

Key features:
- Brown to yellow green coloured kelp, 1-3m length.
- Frilly sporophyll near base of mature plants.
- Strap-like midrib in mature plants.
- Smooth thin blades or leaves that stop well short of base.

Where are they found?
- Grows best in cold temperate ocean waters.
- Low intertidal to approximately 20m depth.
- Highest density occurs between 1 and 3m depth.
- Grows on any hard surface including rocky shores and reefs and artificial structures such as wharves, vessel hulls and aquaculture equipment.
- Tolerates a wide range of wave exposures, from sheltered marinas to open coast.

Northern Pacific seastar, *Asterias amurensis*

Status in New Zealand:
Not detected.

Why is this a threat?
Voracious predator of native species and economically important farmed shellfish. Potentially serious impacts on aquaculture, fisheries and wild shellfish populations.

Key features:
- Five arms with pointed, upturned tips.
- Yellow/orange, often with purple markings on top - yellow underneath.
- Arms covered with numerous unevenly-arranged small spines.
- Generally 12cm to 24cm across, but can grow to 40-50cm.

Where are they found?
- Grows best in cold temperate ocean waters.
- Down to 200m depth - usually shallower than 25m.
- Mud, sand or pebbles, or artificial structures including wharf piles and mussel lines.
- Prefers sheltered waters - estuaries, bays, rock pools.

Asian paddle crab, *Charybdis japonica*

Status in New Zealand:
Established.

Why is this a threat?
Aggressive crab that can out-compete native crabs for space and food. Threat to aquaculture as it preys on shellfish. Can carry White Spot Syndrome virus which can infect native and farmed prawns, crabs and lobsters.

Key features:
- Six spikes on each side of shell.
- Five spines on upper surface of front claw.
- Flattened swimming paddles on back legs.
- Adult shell width up to 12cm.
- Shell colour ranges from off-white and pale green, through olive green to deep chestnut brown with purplish markings.
- Aggressive behaviour when threatened.

Where are they found?
- Firm sand or muddy fine sand bottoms.
- Estuarine and marine areas.
- 0-15m depth.

Pyura, *Pyura doppelgangera*

Status in New Zealand:
Established.

Why is this a threat?
Forms dense populations or mats, and can survive in a wide geographical range. Could displace important native NZ species, including green shell mussels.

Key features:
- Hard sack-like body with brown or reddish-brown leathery skin.
- Sand and shell material or algae may be incorporated into outer skin.
- Flat upper surface surrounded by a ridge, and two siphons close together that project slightly above the flat surface.
- Adults 15cm or more in height (max 30cm) and approximately 3-5cm diameter.
- Underwater, a distinctive "cross" may be visible in siphon openings.

Where are they found?
- Rocky intertidal, or rocky surfaces in the shallows.
- Forms a mat over rocks that is often clearly visible at low tide.

Australian droplet tunicate, *Eudistoma elongatum*

Status in New Zealand:
Established.

Why is this a threat?
Unsightly fouling of coastal environments and coastal marine infrastructure. Fouling nuisance for marine farming.

Key features:
- White or cream coloured cylindrical tubes or "tunics".
- Generally 5-20mm in diameter.
- Tubes generally 5-30cm long, but can reach 1.5m.
- The white tunics contain many small individual organisms and can sometimes appear orange-flecked due to the bright orange larvae within them.

Where are they found?
- Sheltered bays and harbours.
- Attached to any hard surfaces present, including rocky outcrops, cobbles, pebbles, shell pieces and artificial structures, e.g. wharf piles and oyster racks.
- Low intertidal to subtidal.
- Generally submerged just below the waterline, but can often be seen at low tide.

How you can help

If you come across a suspect marine animal or plant, or a mass death or illness event in marine life, report it as soon as possible to MPI by calling the Exotic Disease and Pest Hotline **0800 80 99 66**. It is free to call and open to calls 24/7.

Collect: In the short term, keep all samples of marine plant or animal life shaded, cool and wet by containing (in a plastic bag or other container) with a small amount of seawater.

Contact: MPI on 0800 80 99 66. When the investigator contacts you, you will be given further instructions about the specific handling and preservation required for any samples collected. The investigator will also arrange pre-paid packaging and give instructions on how and where to submit specimens for examination or identification.

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