Government of **Western Australia**
Department of **Fisheries**

Have you seen these marine pests?




PROTECTING OUR WATERS FROM AQUATIC PESTS AND DISEASES

This dive guide can help you recognise and report key pest species that may arrive in Western Australia.

Introduced marine pests (IMPs) are marine plants and animals that have been introduced to Western Australia and can out-compete native species. IMPs are one of the most significant threats to global biodiversity and can damage the economy, environment, social amenity and human health.

IMPs can arrive in WA in various ways, including within vessel ballast water or attached to hulls. Once well established, IMPs are virtually impossible to eradicate. To increase the chances of a timely response and successful eradication, therefore preventing costly consequences for the State, early detection of newly arrived IMPs is essential.

Keep an eye out for new and unusual species in your area. If you think you have found or seen a marine pest:

1. **Photograph it** – from different angles, e.g. top, bottom, etc. Place an object for scale, or a ruler, if possible, next to the specimen and include photos of the location where you found it.
2. **Record it** – size, colour, depth and how and where it was found, using GPS readings if possible. Otherwise describe the area in which it was found in as much detail as possible.
3. **Collect it** – collect a sample in a plastic bag and refrigerate it or keep it on ice but *do not freeze it.*
4. **Report it** – contact **FishWatch** on **1800 815 507**, or use the free **WA PestWatch** app. (NOTE: If you collect samples please report it to FishWatch immediately).

To help stop the arrival of IMPs, follow these simple steps for a CLEAN vessel before you travel into or out of WA waters!

C **Check** your vessel is clean by regular inspection of the hull and niche areas like internal seawater systems. Inspect and clean gear – rinse with fresh water and allow to air dry.

L **Levels** of biofouling should be kept to a minimum (slime layer only), particularly on unpainted areas. All seawater should also be treated, pumped out before travel, or in deep water far away from land.

E **Environmentally-friendly** methods should be used to keep the hull clean – keep it out of the water, tarp it or clean it at a slipway, dry dock or on land, but not where pests and contaminants can get back into the water, without first checking with the relevant authorities.

A **Antifouling** paint should be renewed regularly and should be suitable for your vessel's intended activity.

N **Never** travel into or out of WA without first taking these steps, and keeping records of them and your voyage history in case of queries. If you are travelling within the State, it is also recommended you do this.

Photo: Ministry for Primary Industries, NZ.

Japanese kelp, a marine pest species, on a vessel hull in New Zealand.

Heavily biofouled vessel being cleaned.

Asian bag mussel, Asian date mussel (*Arcuatula senhousia*)

- Up to 30 mm long, small and easy to crush.
- Olive green/brown to bluish black with dark zigzag markings and radiating bands.
- Found in temperate to tropical waters, prefers soft sediments but occasionally found on hard surfaces such as artificial substrates.
- Can form ‘mats’ on soft sediments smothering seabed dwelling communities.
- Reported in Tasmania, Victoria, Cockburn Sound and Fremantle, and recently re-detected in the lower Swan River, Western Australia.

Asian green mussel (*Perna viridis*)

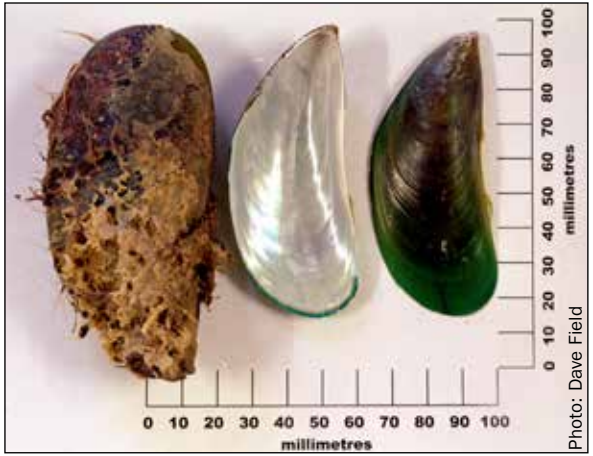
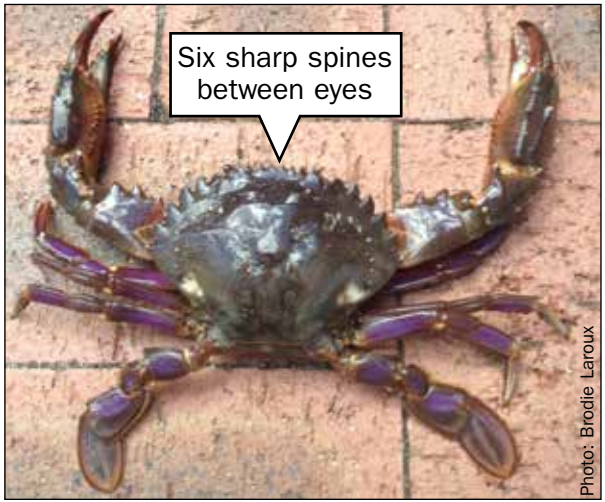


Photo: Dave Field


Photo: Jaxshells

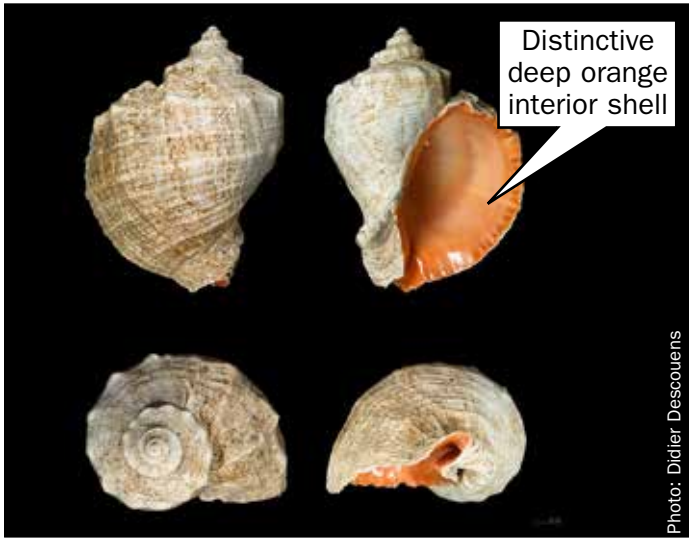
- Adults commonly 80-100 mm long.
- Bright green to greenish brown with a smooth exterior and concentric growth lines. Juvenile shells can be vivid green or brown with zigzags.
- Found in tropical to warm temperate, lower estuarine to marine waters, from the low tide mark to 40 m.
- Differs to the closely related New Zealand green-lipped mussel (*Perna canalicula*) in having less curved side margins.
- Inhabits hard substrates (e.g. vessels, artificial structures, wharves, aquaculture equipment, intake pipes, buoys, mooring ropes) with a preference for floating surfaces.
- Not known to be established in Australia, but has been found on vessel hulls (Western Australia, Northern Territory, Queensland) and port infrastructure (Queensland).

Asian paddle crab (*Charybdis japonica*)



- Shell up to 120 mm wide with six spines on each side of shell.
- Six sharp spines between the eyes.
- Shell colour varies from mottled cream and purple, pale to olive green and yellow to deep chestnut.
- Last set of legs are shaped like paddles for swimming.
- Found in temperate to tropical, estuarine and marine waters.
- Subtidal waters at depths up to 20 m.
- Mobile – found on or buried in firm, fine sand or mud.
- Not known to be established in Australia but a very small number of specimens have been caught in Adelaide and the Swan River, Mandurah and Dampier, Western Australia.

Asian rapa whelk (*Rapana venosa*)



- Up to 180 mm long, large heavy shell with a short spire.
- Outer shell a dull grey to red brown colour with a black interrupted vein-like pattern all over.
- Inside shell a very distinctive deep orange colour.
- Found in temperate and tropical waters, on subtidal sandy bottoms, rocky breakwaters and shallow subtidal areas.
- No reported findings in Australia.

Black-striped mussel (*Mytilopsis sallei*)


Photo: NT Fisheries


Photo: NT Fisheries


Photo: Biofouling Solutions

- Up to 25 mm long, small, smooth and easy to crush.
- Dark brown/black to white.
- Shells sometimes zigzagged or striped.
- The animal's two shells are unequal in size, one overlapping the other.
- Form dense clusters and rarely seen as single individuals.
- Found in subtropical to tropical, estuarine and marine waters.
- Fouls wharf pylons, marinas, vessel pipes and aquaculture farms.
- Not known to be established in Australia, but once found in abundance and eradicated from Darwin marinas.

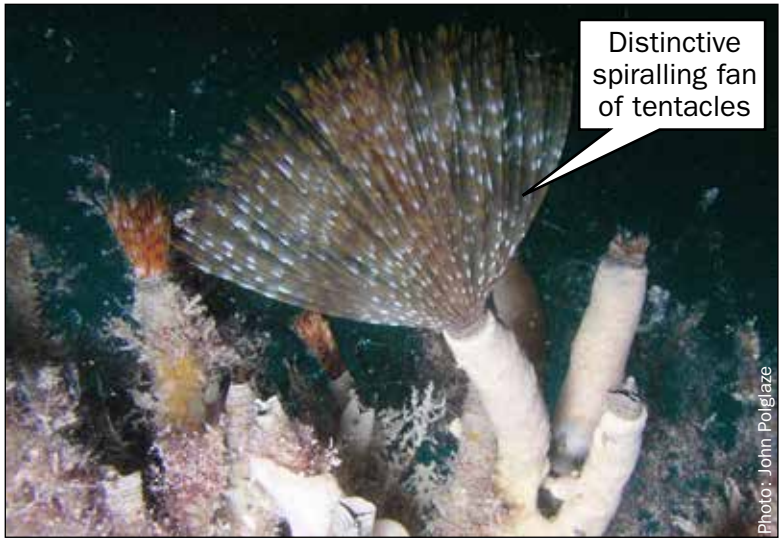
Chinese mitten crab (*Eriocheir sinensis*)

Photo: Christian Fischer

Photo: Stephan Gollasch, GoConsult

- Round smooth shell up to 100 mm wide.
- Distinctive hairy ‘mittens’ on claws unlike any native crab.
- Four spines or serrations on each side of shell and distinct notch between eyes.
- Shell colour yellow to brown and sometimes purple.
- Found in temperate waters, spends most of life in freshwater, migrates to the ocean to breed.
- Burrows into mud on river banks, estuaries and coastal waters.
- Highly prolific species that can quickly overrun and dominate aquatic environments.
- No reported findings in Australia.

European fan worm (*Sabella spallanzanii*)



- Flexible, leathery tube up to 400 mm long and often covered in clay, mud and small organisms.
- Distinctive spiraling fan of tentacles up to 200 mm long.
- Tentacles have brightly-coloured bands from white to orange or brown to purple.
- Found in temperate waters at depths up to 30 m.
- Tubes attach to hard surfaces including artificial structures and shells in soft sediment – may also attach to seagrass.
- Can form large ‘meadows’ on the sea floor.
- Established in Tasmania, Victoria, New South Wales, South Australia and parts of Western Australia.

European green crab, European shore crab (*Carcinus maenas*)

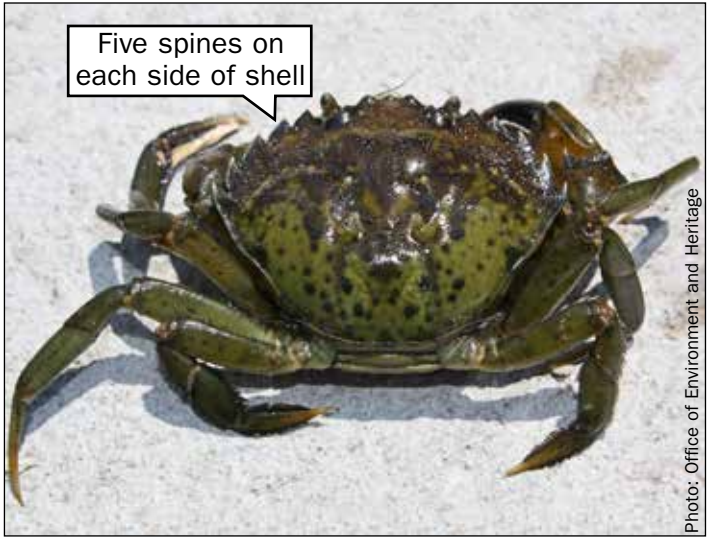


Photo: Office of Environment and Heritage

Photo: CSIRO

- Up to 90 mm long, but usually around 65 mm, broad triangular-shaped smooth shell.
- Five spines on each side of shell.
- Adults green/brown colour tending to red/orange on the undersides of larger animals.
- Last pair of legs sharp and slightly flattened at tips – no swimming paddles.
- Found in temperate and tropical waters in depths of up to 60 m.
- Prefers bays and estuaries but found on all types of shores.
- Tolerates temperatures up to 30°C.
- Established in Tasmania, Victoria, South Australia and New South Wales with a single specimen reported from the Swan River, Western Australia.

Japanese kelp, Wakame (*Undaria pinnatifida*)

- Mature plants commonly grow to 0.5-1 m, but up to 3 m long.
- Green/brown with a prominent mid-rib.
- When sexually mature, plants may have a frilly growth near the base of the stalk.
- Smooth thin fronds with marginal ‘leaves’ and naked stalk.
- Found in cool temperate coastal waters on hard substrates from lower intertidal areas to depths of 20 m.
- Established in Tasmania, Victoria and New Zealand.

New Zealand screwshell (*Maoricolpus roseus*)

- Up to 90 mm long, but usually around 60 mm, smooth conical tapered shell.
- Brown, fading to purple/white colour with age.
- Found in temperate waters, low intertidal and subtidal ground to depths of 130 m.
- On or partially buried in sand, mud or gravel, as well as crevices.
- Densely blankets the sea floor with live and dead shells.
- Established in Tasmania, Victoria and New South Wales. Native to New Zealand.

Northern Pacific seastar (*Asterias amurensis*)

- Mature at around 100 mm, but can grow up to 500 mm in diameter.
- Five arms with pointed, often upturned tips.
- Yellow/orange colour with purple markings, yellow underneath.
- Found in cool temperate waters but is able to adapt to warmer waters.
- Intertidal to depths of 25 m in estuaries, bays and rock pools.
- Found on soft sediment, artificial structures, rocky reefs and in seagrass beds.
- Established in Tasmania and Victoria.

WA Pestwatch

Help us by using WA PestWatch to report suspected aquatic pests – visit WA PestWatch on our website or search for the free WA PestWatch app.

WA PestWatch

ANDROID APP ON Google play

Available on the App Store

Further information

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