

Non-native Invertebrates



Darwin's barnacle, *Elminius modestus* is a small sessile barnacle, 5-10 mm in diameter, with four shell plates which form a low, conical body shape with a diamond shaped opening. This barnacle is distributed around most coasts of England and Wales, a few areas of Scotland and some Scottish islands including the Outer Hebrides. It is native to Australasia and was first recorded in Britain in the 1940s.

Darwin's barnacle competes with native species for space and appears to have entirely displaced native barnacle species in some places. Economically the main impact is the cost of removing fouling from vessels and equipment.

The Japanese skeleton shrimp, *Caprella mutica* has established populations in the North Sea, the west coast of Scotland, in the Irish Sea and English Channel; and has been found off the north-west coast of Lewis.

It is often found attached to seaweeds, ropes, buoys, boat hulls and floating pontoons. In the summer months, high densities of Japanese skeleton shrimp have reportedly blocked water intakes on pumps for the feeding systems at caged fish sites.



There are some very invasive non-native marine species which have been found in UK coastal waters which are subject to species alerts.

If you find either quagga mussels, *Dreissena rostriformis bugensis* or carpet sea-squirts, *Didemnum vexillum* it should be reported to the Non-native Species Secretariat.



Everyone using coastal waters is responsible for helping to avoid the spread of non-native species on their clothes, equipment and everything else that comes into contact with water.

Information on biosecurity and the Check-Clean-Dry procedure is available on the Non-native Species Secretariat website.

www.nonnativespecies.org/checkcleandry

For more information about species described in this leaflet please visit the Outer Hebrides Biological Recording website:

www.ohbr.org.uk/invasive-non-native-species

Some of the non-native marine species can be difficult to identify and distinguish from our native species. If you require assistance please contact Outer Hebrides Biological Recording via the website.



Outer Hebrides Biological Recording

Photographs © Chris Johnson

Marine Non-native Invasive Species

Non-native species (sometimes referred to as alien species) are those that have been introduced, either intentionally or unintentionally, to areas outside of their natural range. They can become invasive and cause serious environmental damage, altering local ecology and out-competing native species. They can also have a serious impact on economic activities such as the aquaculture, fishing, renewable energy and tourism industries, and recreational activities such as boating, fishing and other water-based leisure pursuits.

They arrive in our coastal waters on boats (on bio-fouled hulls and in ballast water), via the movement of man-made structures such as oil rigs or wind turbines or with the transport of fish, shellfish and seaweed for aquaculture and the food industry. It is also possible that the spread and impact of non-native species will be driven by climate change.

Not all the non-native species become invasive, however, early detection is crucial if we're to try to remove or control an invasive species. They are extremely hard to remove once they are established. So it's vital to try to prevent their arrival and establishment, to be aware of the problems and to be able to recognise those which are likely to cause problems.

This leaflet illustrates the species which have been found in the coastal waters of the Outer Hebrides and encourages you to be aware of the problems associated with arrival of non-native species.

Non-native Seaweeds

A small number of non-native seaweeds have been found in the coastal waters of the Outer Hebrides. So far most have not proved to be invasive.

Wireweed, *Sargassum muticum*, is the species most likely to have a significant impact and its presence is being monitored. It was initially introduced to France on oysters either from Canada or Japan. It was first found on the Isle of Wight in 1973 and recorded in the Outer Hebrides in 2013. It is a fast-growing species which can spread at the rate of approximately 30 km per year.



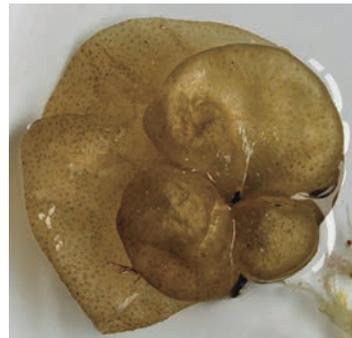
Wireweed can be a problem in harbours, shallow waters and on beaches, with detached plants forming large floating masses which can block propellers and intakes. It can also foul oyster beds and fishermen's nets and competes with native plants such as sea grasses.



There are four other species which have the potential to become a problem, but are currently benign.



Green sea-fingers, *Codium fragile fragile* is found in rock pools in the mid to lower tidal zones. It is largely confined to the south coast of England and west coast of Scotland, but there are a handful of records from the Outer Hebrides. It has had a significant impact on native marine flora where algal diversity is low. Here the diversity is high and it has not yet occurred in densities high enough to cause problems.



Oyster Thief
Colpomenia peregrina

An olive-green coloured alga which forms a thin-walled hollow sphere, 3-9 cm in diameter, with a dry papery texture.

It is usually epiphytic, growing on a variety of seaweeds in mid to lower shore rock pools and in the shallow subtidal region, particularly in sheltered areas.

Introduced to France from the USA with imports of oysters at the end of the 19th century; it was first recorded in southern England in 1907 and has been recorded in the Outer Hebrides since the 1970s.

Red algae often have complex life cycles and can exhibit different morphological forms. Two non-native species: *Bonnemaisonia hamifera* and *Asparagopsis armata* have been found in the coastal waters of the Outer Hebrides in the filamentous tetraspore phase.



Harpoon weed, *Asparagopsis armata* was first recorded in Britain and Ireland in the 1940s probably originating from alien populations already established in Europe. It has been reported to form blooms during winter in the north-west Mediterranean with a consequential economic impact on the local fishing industries.

Bonnemaisonia hamifera



The filamentous form occurs in shaded rock pools on the lower shore and in the subtidal zone.

Native in the Pacific it was first recorded in the UK in the late 19th century. It is now so widespread and abundant in Europe that it can be regarded as fully established, with no possibility of eradication. However, there have been no negative impacts on native marine flora or marine based industries.