

A DIVER'S GUIDE

TO IDENTIFYING AND RECORDING 10 OF
NORTHERN IRELAND'S MARINE INVASIVE SPECIES



CEDAR

CENTRE FOR ENVIRONMENTAL
DATA & RECORDING

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WHY SUBMIT A RECORD?

Invasive species pose a significant threat to our native biodiversity.

By reporting an invasive species, you contribute to our knowledge of their presence and distribution in our waters. This information is crucial for understanding the rate at which invasive species are spreading and can enable the implementation of strategies to protect areas from new invasions.

HOW TO SUBMIT A RECORD IN NORTHERN IRELAND

1. Open and complete CEDaR's Invasive Species Recording Form or alternatively, submit a record via the iRecord app. See QR codes below.
2. If you are not sure of the exact location of the species, it should be set as the dive entry point.
3. To allow for your record to be verified, ensure you submit a clear photograph of the species in-situ.
4. Once validated by an expert, your record will be collated on CEDaR's database and will appear on the NBN Atlas Northern Ireland.



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HELP STOP THE SPREAD

Please follow the steps below to help stop the spread of invasive species.

When it comes to invasive species, prevention is better than cure. Diving gear, boats and trailers can all carry invasive species from one dive site to the next. To prevent the introduction of harmful invasive species and to protect the native biodiversity at our dive sites, follow the Check Clean Dry protocol after each dive.



Check all water-exposed equipment for plant or animal matter and dispose of this in a bin on land.

Check BCD and drysuit pockets, along with propellers and trailers.

Drain BCD bladders and all water from the boat and the outboard engine at the site.



As is common practice after a dive, clean all dive gear down with freshwater.

If possible, use the hottest water from the hot water tap.

Pay particular attention to the BCD bladder, the boat, anchor chains, ropes and hard to reach areas on the trailer.



Dry equipment for at least 48 hours before moving to another waterbody.

Drying can help kill microscopic life stages and invasive species that are not visible to the naked eye.

AUSTRALIAN TUBE WORM

Ficopomatus enigmaticus



ORIGIN: Australasia



Tubes have flared collar-like rings at regular intervals

When feeding, the worm extends its feather-like tentacles

Aggregations form a reef-like structure



The worm inhabits a white, chalky, upright tube

The tubes grow around 10cm tall and 1-3mm in diameter

IMPACTS

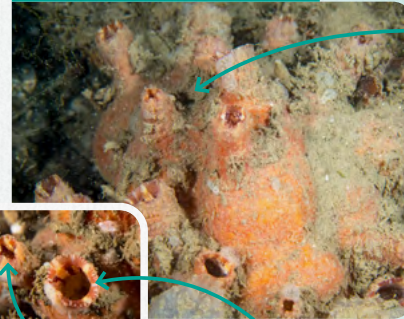
A nuisance fouling species, blocking pipes and settling on watercraft. Aggregations can form reefs, impacting the physical processes of the ecosystem.

Photo credits: Top left David Fenwick, MBA and bottom right Christine Wood, MBA.

COMPASS SEA SQUIRT

Asterocarpa humilis

ORIGIN: Australasia, South Atlantic



Parallel stripe markings can still be observed on partly closed siphons

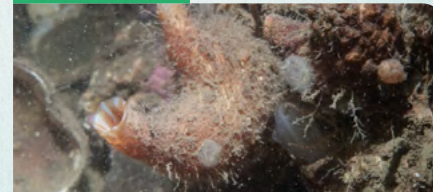
Attached to the substrate by a broad base

Orange-red coloured body, growing up to 3cm in length



2 fluted siphons with 4 prominent cream coloured lines, interspersed with finer lines, resembling compass-like markings

SIMILAR SPECIES



Pyura microcosmus is a native sea squirt. The siphons are longer and lack the finer interspersed white markings that the compass sea squirt bears.

IMPACTS

Can foul artificial structures such as oyster and mussel aquaculture gear.

Photo credits: ©Bernard Picton CCBY4.0



CREEPING SEA SQUIRT

Perophora japonica



ORIGIN: North West Pacific (Japan)



A colonial sea squirt made up of globular individuals

Globular individuals linked by stolons (a root-like structure)

Buds can break off and form new colonies

Between Summer and Autumn, colonies bear bright yellow star-shaped buds

SIMILAR SPECIES



The native dwarf ascidian, *Perophora listeri*, is similar but lacks the yellow buds of the creeping sea squirt.

IMPACTS

Can foul artificial structures such as oyster and mussel aquaculture gear.

JAPANESE WIREWEED

Sargassum muticum

ORIGIN: North West Pacific (Japan)



Branches have small flattened toothed leaflets and small spherical gas bladders that allow the seaweed to float

The main stipe (stem-like structure) is round

An olive-brown coloured seaweed

In mature individuals, the main stipe bear regularly alternating secondary branches

SIMILAR SPECIES

Similar to some native *Cystoseira* species but these are much smaller and branch irregularly.

IMPACTS

Can outcompete native seaweeds. Can impact tourism, forming dense stands, fouling marinas and causing entanglement issues



LEATHERY SEA SQUIRT

Styela clava



ORIGIN: North West Pacific (Korea)



At the free end, there are two visible siphons that bear brown stripes

The surface is a tough leathery texture with folds and swellings

Juveniles lack the stalk but have the same surface texture as the adults

A long, thin, club-shaped brown solitary sea squirt

Can grow up to 120mm in length

At one end, the sea squirt is attached to the substrate by a narrow stalk

IMPACTS

Can heavily foul artificial structures. Density and abundance can threaten viability of aquaculture.

Photo credits: Bernard Picton

ORANGE-TIPPED SEA SQUIRT

Corella eumyota

ORIGIN: Australasia, South Atlantic



Siphons can have an orange tip, but not always

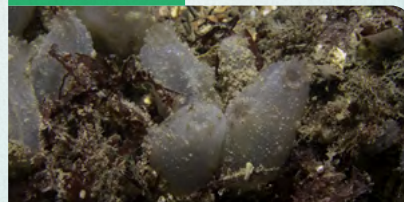
The sediment filled gut forms a smooth curve at the hind end

A smooth and slightly translucent sea squirt, usually found growing on its side

One siphon at the top and another lower down to the right hand side

Can form aggregations

SIMILAR SPECIES



Similar to the European sea squirt *Ascididella aspersa*, which is usually found growing upright, is less smooth and has a meandering gut.

IMPACTS

Could block intake pipes and significantly foul aquaculture gear, competing with target species. Could affect the abundance of shallow water suspension feeding invertebrates.

Photo credits: John Bishop, MBA (top), Bernard Picton CC-BY-4.0 (bottom, photo has been cropped).



PACIFIC OYSTER

Magallana gigas

NOTE: When submitting a record of this species, please note if the shell is empty or if the animal is alive.

ORIGIN: North West Pacific (Japan)



The surface of the shell is rough and has pronounced raised ribs

The margin of the shell is wavy

The shells are generally elongated and oval in shape

A bivalve mollusc, with the lower half usually cemented to a solid substrate

Can form dense, upright intertidal reefs

SIMILAR SPECIES



Similar to the native oyster, *Ostrea edulis*. Although shell shape varies for both species, depending on the habitat, generally, the native oyster is almost circular not elongated and oval.

IMPACTS

Can form dense reefs that exclude other intertidal species and alter ecosystems. Forming sharp edges, reefs can impact intertidal recreational activities.

RED RIPPLE BRYOZOAN

Watersipora subatra

ORIGIN: North West Pacific (Japan)



Often forming rounded lobes, with frills and upright sections, particularly when back to back growth occurs

Older colonies get darker towards the centre

A colonial bryozoan that forms encrusting colonies, spanning several cm in diameter



Each elongated individual has a black circle (the operculum) at one end - this is a key diagnostic feature for this species

Colonies are made up of 1mm sized elongated individuals

IMPACTS

Can colonise and overgrow native fouling communities. Tolerant to mercury and copper in antifouling paints, colonising boat hulls and creating habitat for other fouling species.

SLIPPER LIMPET

Crepidula fornicata

NOTE: When submitting a record of this species, please note if the shell is empty or if the animal is alive.

ORIGIN: North West Atlantic (USA)



The shell surface has irregular growth lines

Pink and white streaked shells, sometimes with brown patches

They can aggregate, forming stacks, with the largest individual at the bottom

A mollusc with a domed kidney shaped shell



Underside of the shell is cream-white in colour and has a distinctive shelf-like structure

IMPACTS

Can impact aquaculture, leading to restrictions on stock movement. Stacks can prevent other species from settling and disrupt water flow.

Photo credits: John Bishop, MBA

WAKAME

Undaria pinnatifida

ORIGIN: North West Pacific (Japan)



A strap-like midrib runs up the centre of the kelp

The kelp blade looks torn and is divided into finger-like projections

A brown kelp growing up to 3m long

The holdfast is small and root-like (the structure that anchors the kelp)

Mature individuals kelp bear distinctive reproductive frills above the holdfast

SIMILAR SPECIES

Could be confused with native kelp species such as furbelows or sugar kelp, but these species lack a midrib or dabberlocks, which has a distinct mid rib but lacks the torn blade and reproductive frills of wakame.

IMPACTS

Can compete with native kelp species for space and resources. Impacts aquaculture due to associated costs of handling and marketing fouled shellfish.

Photo credits: John Bishop, MBA

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