South Devon Estuaries Partnership
Encouraging sustainable use and enjoyment

South Devon AONB Estuaries Partnership

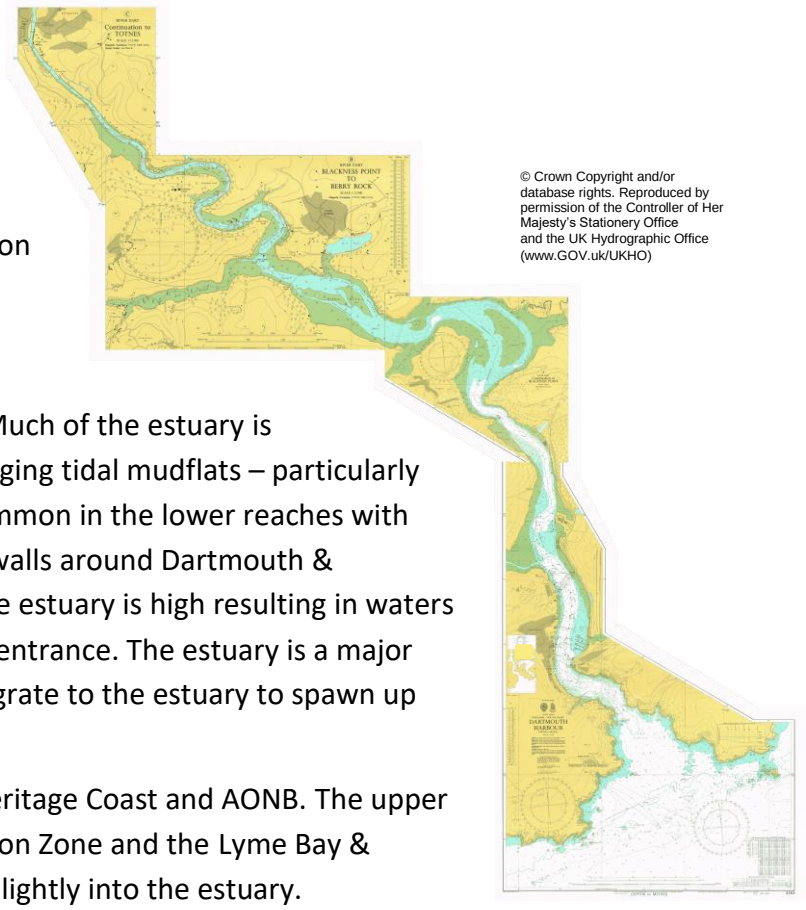
Dart Harbour

Dart Harbour & Estuary Marine Biosecurity Plan 2017- 2020

This local estuary biosecurity plan has been produced by the South Devon AONB Estuaries Partnership, the local relevant authorities, organisations, owners, users and community of the Dart Harbour & Estuary with support from Robin Payne and Sarah Brown from C2W.

Non-Native Species (NNS) are those that have been transported outside their natural range by human activity. This may be the deliberate movement of a species, for aquaculture* for example, but more frequently the accidental transport of species as 'hitchhikers' such as those attached to the hulls of vessels. When a NNS grows rapidly and starts to upset our environment, economy, health and the way we live they are often referred to as Invasive Non-Native Species. Whether an NNS becomes invasive or not is unpredictable and all pose some threat - in this document all are referred to as NNS.

Biosecurity means taking steps to ensure that good practices are in place to minimise the risk of spreading non-native species. A good biosecurity routine is essential, even where invasive non-natives are not thought to be present. No single business or sector has been targeted in this plan, as everyone has a vested interest and role to play in successful biosecurity. All actions within the plan are undertaken on a voluntary basis. * Aquaculture businesses are required to produce and operate to their own Biosecurity Plan by statute and include pathogenic microorganisms that can affect the quality of their shellfish for human consumption.



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The site

The Dart Estuary, including several tributaries, lies on of Devon and opens into Start Bay. It is a ria-type estuary, running through steep-sided valleys from Totnes to Dartmouth and empties through a very narrow entrance into a bay known as The Range. Much of the estuary is subtidal and sedimentary with narrow strips of fringing tidal mudflats – particularly within the tributaries. Hard substrata are more common in the lower reaches with steep bedrock in The Range and artificial harbour walls around Dartmouth & Kingswear. The relative input of freshwater into the estuary is high resulting in waters that are less than fully marine from just inside the entrance. The estuary is a major nursery area for bass and salmon and sea trout migrate to the estuary to spawn up river.

Most of the estuary lies within the South Devon Heritage Coast and AONB. The upper estuary is being considered as a Marine Conservation Zone and the Lyme Bay & Torbay Special Area of Conservation extends very slightly into the estuary.

The area of the estuary itself is predominantly owned by the Duchy of Cornwall and let to the Dart Harbour & Navigation Authority to manage as a trust port; the harbour has a long history and now supports a significant fishing fleet, several open marinas and facilities for mainly recreational vessels – slipways, moorings, pontoons, pump-out, boat storage, bunkering & maintenance boatyards, and active watersports. There are many slipways around the estuary – public, private and historically used areas of foreshore – most popular for small craft launching for active watersports within the estuary.

Dart Estuary - Most Unwanted

Those Already Here - Marine Non-Native Species to Live With



Carpet sea squirt (Didemnum vexillum) was first recorded in 2008 in Holyhead and has at several locations in the UK. It forms pale orange, cream or off-white colonies of extensive thin sheets and can form long pendulous outgrowths. Colonies can rapidly overgrow other fauna and occupy a substantial proportion of available space. It can achieve very extensive coverage of the seabed, smothering species such as mussels and oysters.

Common cord grass (*Spartina anglica*) is a hybrid of a native species and an American species. First recorded around 1890 and widely planted as a binder of tidal mud-flats and saltmarshes in many estuaries in England and Wales - has also spread through natural colonisation. Common cord-grass can form dense monoculture stands leading to a loss of wintering habitat for waders and wildfowl.





Slipper limpet (*Crepidula fornicata*) is native to North America and arrived in England in the late 19th Century and is now well established on the southern coasts of England and Wales. It can smother seabed species, alter seabed habitat structure dramatically and compete for food and space with other filter-feeding species including mussels and oysters.

Wakame (*Undaria pinnatifida*) is a fast-growing brown kelp native to the NW Pacific with fronds reaching 1-3m. The blade has a distinct midrib. Tolerant of a wide range of temperatures and salinities and grows well in estuarine conditions. It is particularly prevalent along the S coast of England. It competes for space with native kelp species and may be a nuisance fouling jetties, vessels, moorings and buoys.





Orange-tipped sea squirt (*Corella eumyota*) is native to the Southern hemisphere was first discovered in 2004 and has spread rapidly around the UK. It is a solitary sea squirt, 2-4 cm long, which often attaches to hard substrates such as cobbles, boulders, ship hulls and shells of mussels and oysters. It may threaten oyster and mussel farms through fouled gear and by smothering and outcompeting cultures.

Pacific oyster (*Magallana gigas*) is native to Japan and SE Asia. Introduced to the UK in the 1960s for commercial purposes, feral populations have established in SE and SW England and Wales. Pacific oyster is an ecosystem engineering species, altering habitats and ecosystems through reef formation having a negative impact on native biodiversity. They can foul artificial structures and make shores hazardous because of the sharpness of their shells.





Devil's tongue weed (*Grateloupia turuturu*) is a large red alga from the NW Pacific with broad slippery blades and a very small holdfast. Present in the UK since 1969 and now spreading more aggressively. It grows on artificial and natural hard substrata, including rock pools, shells and stones where its large size and high reproductive output mean it can out-compete many native types of seaweed.

Red ripple bryozoan (Watersipora subatra) is a rapid growing but fragile bryozoan with colonies up to several cm across of 1mm individuals arranged as a sheet - colonies orange-red, especially at outer edges. Attaches to all hard surfaces in shallow water, including natural rocky shores, harbour and marina structures. A foulant nuisance that is tolerant to copper antifouls, allowing other less copper-tolerant fouling species to settle on top.



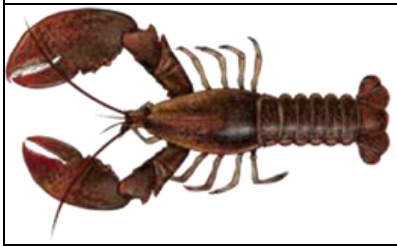
Those Most Likely to Arrive the Future - Marine Non-Native Species to Look Out For



Wireweed (*Sargassum muticum*) is a distinctive olive-brown seaweed originating from Japan. It is often over 1m long and its lateral branches hang like washing from a line when held out of the water. It is distributed widely around the UK. Wireweed competes with native seaweeds and sea grasses through rapid-growth, shading and abrasion. It can be a hazard to boating due to entanglement of propellers

Chinese mitten crab (*Eriocheir sinensis*) was first introduced to the Thames Estuary in 1935, and is now established in several sites throughout England and Wales. Breeding adults and juveniles occur in lower estuarine salinities – then, as they develop, migrate upstream into brackish and freshwater systems. A voracious predator that will consume a range of native species, impacting on invertebrate and fish populations. Adult crabs burrow into river banks causing bank collapse, increasing erosion and river turbidity.





American lobster (*Homarus americanus*) is native to the E coast of N America and Canada and first recorded in the UK in 1988. Probably arrived through the escape of live food imports. An aggressive and adaptive species which can out-compete native European lobsters, and other economically and environmentally important species, such as the brown crab. In addition, American lobsters hybridise with European lobsters.

Asian shore crabs (*Hemigrapsus sanguineus and H. takanoi*) are native to the NW Pacific. Both species were first identified in the UK in 2014 They are small squarish shaped crabs with three carapace 'teeth' behind well-spaced eyes. They occur on muddy and rocky shores and in sheltered estuaries and port areas, they have also been found in oyster reefs. They can out-compete the native shore crab and could have a negative impact on prey species such as juvenile mussels and oysters.



Pathway, Risk and Biosecurity Actions - this section sets out the likely pathways for non-native species introduction to the Dart Harbour & Estuary, the range of vessels and other vectors which could carry them – both into or out of the estuary. A brief analysis of the pathway and likelihood gives a high, medium or low risk rating. Biosecurity actions propose appropriate and achievable actions to minimise this risk given current knowledge, local management capacity and resources.

Pathway/Vector	Detail/Activity	Analysis and Risk Assessment	Biosecurity Actions	Comments
Cruise & naval ships	Ballast water transfer Hull fouling transfer	MEDIUM	Require vessel biosecurity plan as a condition of port entry	Cruise & naval ships – harbour actively attracts a number of cruise & naval ships each year
Freight shipping	Ballast water transfer Hull fouling transfer	LOW	Require vessel biosecurity plan as a condition of port entry	Few freighters enter harbour
Fishing vessels	Fouled nets and gear Disposal of by-catch Ballast water Frozen sea water Hull fouling	MEDIUM	Monitor vessel fouling – advise crew of biosecurity risk and moor vessel in freshwater stream until cleared Discourage local discard of waste Consider improved management of open hull maintenance within estuary	Vessels may visit various harbours and fish in many grounds – requires further industry led biosecurity awareness and actions
Recreational vessels (power and sail) including yachts, motor cruisers, day sailor/trailer launched boats and kayakers	e.g. yachts, cruisers Hull fouling Shellfish food waste In-water hull cleaning	MEDIUM	- Encourage biosecurity awareness and active vigilance by all users – Harbour Guides, noticeboards, slipway information, clubhouses, RYA & BCU membership news. - Manage DIY & open vessel hull maintenance – insist all debris collected and removed to landfill. - Promote Check, Wash & Dry campaign with relevant groups & regattas	Yachts mainly S coast, Channel Is., France, but some worldwide Includes transfer between water bodies on equipment and clothing e.g. kayaks, dive gear, jet-skis, fishing gear
Live fish and Shellfish export	Vivio tank water INNS contaminated shellfish	MEDIUM	Investigate biosecurity of live fish transport system – seek industry assistance to tighten as required General awareness raising	EU & international export Live wrasse capture for fish farming
Aquaculture - shellfish	Oyster bags Import/export of live stock	MEDIUM	Follow industry led biosecurity plan	

Pathway/Vector	Detail/Activity	Analysis and Risk Assessment	Biosecurity Actions	Comments
Marine Engineering including boat maintenance	In-water cleaning Slipway cleaning	HIGH MEDIUM	Promote hull maintenance best practice – removing all debris to landfill where this occurs	Dart Harbour presently have no policy on open system hull cleaning / maintenance
Port infrastructure – Walls/breakwaters/jetties/ piers/slipways	Construction and maintenance, importation of materials Dredging Dredged material disposal	MEDIUM	- Highlight risk within AONB Planning Guidance re. construction barges etc. - Promote use of natural materials within hard developments that encourage a high health natural marine community. - Include biosecurity restrictions within construction & dredging operations and contracts.	Higher risk - use of slow moving vessels in construction or dredging, often from outside the local water body Consider NNS within dredged material disposal
Relocation of structures and equipment	Movements or disposal of pontoons, barges, buoys, anchor chains, underwater equipment	LOW	Promote use and maintenance of antifoulant coatings of structures where the fouling community needs control & cannot mature*	*Mature native fouling communities naturally restrict recruitment sites available for NNS
Live release	Deliberate release of unwanted live food / bait / aquarium discards	MEDIUM LOW	Raise awareness of biosecurity risks of releasing live NNS into local waters – (may also impact local genetic provenance) – relevant media e.g. Harbour Guide / Notices	Reports of unused stock of the American lobster, *Homarus americanus* having been thrown overboard from cruise ships. Examples of Buddhist release of same species Local 'fly tipping' of post-processed shell
Marine debris and litter	Tidal and ocean currents	LOW – part of natural dispersal / migration process	Add to general litter risk message Highlight biosecurity risk within beach clean event – warn against refloating of fouled flotsam	Many small species such as bryozoans, barnacles and tube worms can survive on small plastics. Plastic litter can travel long distances e.g. from N America

HELP TO STOP THE SPREAD OF MARINE NON-NATIVE SPECIES

Simple Biosecurity Actions and Measures for all who use the Dart Harbour and Estuary



'**CHECK – CLEAN – DRY**': Non-native species cannot survive long term desiccation.

- **Check** all vessels (dinghies, trailer-sailors, jet skis, kayaks) and equipment (trailers, dive gear etc.) which can be removed from the water
- **Clean** them thoroughly
- **Dry** completely before using again

See www.nonnativespecies.org/checkcleandry and @CheckCleanDryGB for further details

When recovering a trailer, dinghy, PWC or RIB, drain water from every part of the boat and all equipment that can hold water

For boats kept in the water permanently, hull fouling is the main means of transfer. Clean yacht hulls well away from the water and collect all scrapings and dispose of to landfill.

If you must use a scrubbing grid, only scrub off the fouling and not the underlying paint. Collect all scrapings and dispose of to landfill.

Select a wash-down facility that collects residues and wash down water.

Make sure that the hull of your yacht has an effective anti-foul and renew on a regular basis. Keep propellers, bow thrusters and anodes clear of fouling.

Look out for vessels with high level of hull biofouling, advise the boat owner of the biosecurity risk and inform the harbourmaster

Follow best practice and encourage others to do the same. Go to the Green Blue www.thegreenblue.org.uk and to www.nonnativespecies.org for advice

Keep vigilant, you don't need to be an expert to spot something new or unusual. Report any suspicions on invasive species sightings to the harbourmaster or water bailiffs. Send records of sighting to iRecord - www.brc.ac.uk/irecord/enter-non-native-records or Sealife Survey - www.mba.ac.uk/recording

Download Non-Native Species identification cards from the Marine Biological Association www.mba.ac.uk/shohttp://www.mba.ac.uk/sites/default/files/downloads/ID NNS English.pdfre_thing/documents/Marine_cards_2015.pdf [15MB]

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Keeping a watchful eye – Site monitoring and surveillance

Everyone can play a part in looking out for marine non-native species; you don't need to be a marine biologist. Don't aim to identify every species, concentrate on the "ten most unwanted" on Page 2. Become familiar with the NNS already present. Report any major changes in their abundance. Look out for anything new especially unusual growth patterns, areas which have obviously quickly been taken over or which just don't look 'normal'. **Take photos, a grid reference, estimate the quantity/area covered and report to the Harbourmaster**. You can also record your sighting using the iRecord website www.brc.ac.uk/irecord or Sealife Survey - www.mba.ac.uk/recording . Think about combining monitoring for NNS as part of other routine checks and inspections which you may already be involved in.

What to do if there's an incident or breach of biosecurity

Some biosecurity threats may need a co-ordinated response from the relevant authorities. Anyone can help by raising the alarm in these cases and providing the authorities with information about the threat. The most likely incidents are the arrival or a vessel with heavy biofouling from a distant location. Here is some guidance on what to do if you spot a suspect vessel or species.

Biosecurity Threat	What to do
Unplanned or unexpected arrival of a vessel within the estuary which poses a high risk of introducing NNS or discovery significant marine debris with extensive bio-fouling	Collect any information on you can on the vessel (name, type, location in harbour, port of origin/recent port visits) Make a simple assessment of the level of biofouling Alert relevant authorities and the Harbourmaster
Discovery of a new NNS on the unwanted list or suspicious marine growth	Photograph specimen. Record location and approximate size of area affected. If feasible keep specimen in a pot/bucket of seawater for expert to examine. Report to Harbourmaster.

Key Contacts

Contact	Responsible for
AONB	Coordination of South Devon Estuaries Management Plan, Estuary Biosecurity Plans and Estuary Forums - Nigel.Mortimer@SouthDevonAONB.org.uk – 01803 861465
CEFAS	Management of aquaculture – Fish Health Inspectorate fhi@cefas.co.uk – 01305 206700
D&SIFCA	Management of a sustainable marine environment & inshore fisheries - www.devonandsevernifca.gov.uk
Duchy of Cornwall	Estuary Fundus owner – www.duchyofcornwall.org
EA	Protect & enhance the environment - Water Quality - nick.whatley@environment-agency.gov.uk
GB NNSS *	Non-Native Species Secretariat - alertnonnative@ceh.ac.uk www.nonnativespecies.org
Harbourmaster	Harbour moorings, navigational safety and estuary management info@DartHarbour.org 01803 832337
MMO	Marine planning, licensing, fisheries management, monitoring & enforcement, protecting the marine environment - claire.bowers@marinemanagement.gsi.gov.uk – 02080 266018
NE	Statutory marine conservation advice - Jan.Maclennan@NaturalEngland.org.uk – 02080 267450

* Contact for escalation of significant NNS invasions (- biodiversity, - aquaculture)

Further Advice

Distribution information on species from the National Biodiversity Network www.nbnatlas.org

The Green Blue for biosecurity advice http://thegreenblue.org.uk/Boat-Users/Antifoul-and-Invasive-Species

Great Britain Non Native Species Secretariat www.nonnativespecies.org including their marine and biosecurity pages Biosecurity in the field , NNS Information Portal and Identification sheets