South Devon AONB Estuaries Partnership

Salcombe Harbour & Kingsbridge 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 Salcombe Harbour & Kingsbridge 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 a 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 yet 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.

The site - The Salcombe Harbour – Kingsbridge Estuary lies on the south coast of Devon. It a ria-type estuary with seven main creeks through relatively steep-sided valleys. The inlet is sheltered from the open sea by a submerged sand bar at the entrance. The lower estuary is characterised by rocky shores and sandy bays while the upper reaches are predominantly intertidal mudflat. The particularly low volume of freshwater input results in marine conditions throughout much of the inlet. Extensive seagrass beds occur and the inlet is a major bass nursery.

The entire inlet is a marine Site of Special Scientific Interest for its rich diversity of marine habitats and communities and lies within the South Devon Heritage Coast and AONB. Much of the inlet is a Local Nature Reserve and the adjacent coastal Special Area of Conservation and Marine Conservation Zone both extend into the inlet. It is an important feeding ground for over-wintering and passage wildfowl and waders. The inlet has a very long history of study, survey and sampling by the local Marine Biological Association and others.

The inlet itself is predominantly owned by the Duchy of Cornwall and let to the Local Authority to manage as a municipal harbour; the harbour has a long history and now supports a significant crabbing fleet and industry, and facilities for mainly recreational vessels – slipways, moorings, pontoons, pump-out, closed hull maintenance system, boat storage, bunkering, maintenance boatyards and active water sports. There are two large public slipways - popular for trailered craft launching, both for active water sports within and out with the inlet. The harbour is a designated ‘Ecoport’ and has a long history of conservation management.
### Salcombe Harbour – Kingsbridge Estuary – Most Unwanted!

**Those Already Here - Marine Non-Native Species we have to Live With**

<table>
<thead>
<tr>
<th>Common cord grass (<em>Spartina anglica</em>)</th>
<th>Slipper limpet (<em>Crepidula fornicata</em>)</th>
</tr>
</thead>
<tbody>
<tr>
<td>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.</td>
<td>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.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Wakame (<em>Undaria pinnatifida</em>)</th>
<th>Orange-tipped sea squirt (<em>Corella eumyota</em>)</th>
</tr>
</thead>
<tbody>
<tr>
<td>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.</td>
<td>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.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pacific oyster (<em>Magallana gigas</em>)</th>
<th>Devil’s tongue weed (<em>Grateloupia turuturu</em>)</th>
</tr>
</thead>
<tbody>
<tr>
<td>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.</td>
<td>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.</td>
</tr>
</tbody>
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<thead>
<tr>
<th>Wireweed (<em>Sargassum muticum</em>)</th>
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<tbody>
<tr>
<td>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.</td>
<td></td>
</tr>
</tbody>
</table>
**Those Most Likely to Arrive the Future - Marine Non-Native Species to Look Out For**

<table>
<thead>
<tr>
<th><strong>Species</strong></th>
<th><strong>First Recorded</strong></th>
<th><strong>Habitat</strong></th>
<th><strong>Impact</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Carpet sea squirt</strong> (<em>Didemnum vexillum</em>)</td>
<td>2008 in Holyhead</td>
<td>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.</td>
<td></td>
</tr>
<tr>
<td><strong>Chinese mitten crab</strong> (<em>Eriocheir sinensis</em>)</td>
<td>1935 in the Thames Estuary</td>
<td>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.</td>
<td></td>
</tr>
<tr>
<td><strong>American lobster</strong> (<em>Homarus americanus</em>)</td>
<td>1988 in the UK</td>
<td>Native to the E coast of N America and Canada. 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.</td>
<td></td>
</tr>
<tr>
<td><strong>Asian shore crabs</strong> (<em>Hemigrapsus sanguineus and H. takanoi</em>)</td>
<td>2014 in the UK</td>
<td>Native to the NW Pacific. 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.</td>
<td></td>
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</tbody>
</table>
Pathway, Risk and Biosecurity Actions - this section sets out the likely pathways for non-native species introduction to the Salcombe Harbour-Kingsbridge 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.

<table>
<thead>
<tr>
<th>Pathway/Vector</th>
<th>Detail/Activity</th>
<th>Analysis and Risk</th>
<th>Biosecurity Actions</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cruise ships</td>
<td>Ballast water transfer</td>
<td>LOW</td>
<td>General biosecurity awareness – focus on ship’s launches</td>
<td>Cruise ships – harbour too shallow but may anchor outside and ferry passengers in by launch Some low-level ferry traffic between Dartmouth</td>
</tr>
<tr>
<td></td>
<td>Hull fouling transfer</td>
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<tr>
<td></td>
<td>Hull fouling transfer</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Freight shipping</td>
<td>Ballast water transfer</td>
<td>LOW</td>
<td>General biosecurity awareness</td>
<td>Indirect risk from Plymouth docks</td>
</tr>
<tr>
<td></td>
<td>Hull fouling transfer</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Fishing vessels</td>
<td>Fouled nets and gear</td>
<td>MEDIUM</td>
<td>Discourage local discard of waste Discourage open hull maintenance within estuary</td>
<td>Vessels may visit various harbours and fish in many grounds – requires further industry led biosecurity awareness and actions</td>
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<tr>
<td></td>
<td>Disposal of by-catch</td>
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<tr>
<td></td>
<td>Ballast water</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Frozen sea water</td>
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<tr>
<td></td>
<td>Hull fouling</td>
<td></td>
<td></td>
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<tr>
<td>Recreational vessels (power and sail) including yachts, motor cruisers, day sailor/trailer launched boats and kayakers</td>
<td>e.g. yachts, cruisers</td>
<td>MEDIUM</td>
<td>- Encourage biosecurity awareness and active vigilance by all users – Harbour Guides, noticeboards, slipway information, clubhouses, RYA &amp; BCU membership news. Manage DIY &amp; open vessel hull maintenance – insist all debris collected and removed to landfill. Promote Check, Wash &amp; Dry campaign with relevant groups &amp; regattas</td>
<td>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</td>
</tr>
<tr>
<td></td>
<td>Hull fouling</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Shellfish food waste</td>
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<tr>
<td></td>
<td>In-water hull cleaning</td>
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<tr>
<td>Live fish and Shellfish export</td>
<td>Vivio tank water</td>
<td>MEDIUM</td>
<td>Investigate biosecurity of live fish transport system – seek industry assistance to tighten as required General awareness raising</td>
<td>EU &amp; international export Live wrasse capture for fish farming</td>
</tr>
<tr>
<td></td>
<td>INNS contaminated shellfish</td>
<td></td>
<td></td>
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<tr>
<td>Aquaculture - shellfish</td>
<td>Oyster bags</td>
<td>MEDIUM LOW*</td>
<td>Follow industry led biosecurity plan</td>
<td>* cultured area in ‘tick-over’ due to local water quality issues</td>
</tr>
<tr>
<td></td>
<td>Import/export of live stock</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pathway/Vector</td>
<td>Detail/Activity</td>
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<tr>
<td>Marine engineering - including boat maintenance</td>
<td>In-water cleaning Slipway cleaning</td>
<td>HIGH MEDIUM</td>
<td>Promote hull maintenance best practice – removing all debris to landfill where this occurs</td>
<td></td>
</tr>
<tr>
<td>Port infrastructure – Walls/breakwaters/jetties/ piers/slipways</td>
<td>Construction and maintenance, importation of materials Dredging Dredged material disposal</td>
<td>MEDIUM</td>
<td>- 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 &amp; dredging operations and contracts.</td>
<td>Higher risk - use of slow moving vessels in construction or dredging, often from outside the local water body Consider NNS within dredged material disposal</td>
</tr>
<tr>
<td>Relocation of structures and equipment</td>
<td>Movements or disposal of pontoons, barges, buoys, anchor chains, underwater equipment</td>
<td>LOW</td>
<td>Promote use and maintenance of antifoulant coatings of structures where the fouling community needs control &amp; cannot mature*</td>
<td>*Mature native fouling communities naturally restrict recruitment sites available for NNS</td>
</tr>
<tr>
<td>Live release</td>
<td>Deliberate release of unwanted live food / bait / aquarium discards</td>
<td>MEDIUM LOW</td>
<td>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</td>
<td>Reports of unused stock of the American lobster, <em>Homarus americanus</em> having been thrown overboard from cruise ships. Examples of Buddhist release of same species Local ‘fly tipping’ of post-processed shell</td>
</tr>
<tr>
<td>Marine debris and litter</td>
<td>Tidal and ocean currents</td>
<td>LOW – part of natural dispersal / migration process</td>
<td>Add to general litter risk message Highlight biosecurity risk within beach clean event – warn against refloating of fouled flotsam</td>
<td>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</td>
</tr>
</tbody>
</table>
HELP TO STOP THE SPREAD OF MARINE NON-NATIVE SPECIES

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


- **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](http://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 or slipway, only scrub off the fouling and not the underlying paint. It is a Salcombe Harbour Authority requirement that all scrapings and debris are carefully collected, and are disposed of to landfill.

Select a wash-down facility that collects residues and at least filters 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](http://www.thegreenblue.org.uk) and to [www.nonnativespecies.org](http://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 Harbormaster. Send records of sighting to iRecord - [www.brc.ac.uk/irecord/enter-non-native-records](http://www.brc.ac.uk/irecord/enter-non-native-records) or Sealife Survey - [www.mba.ac.uk/recording](http://www.mba.ac.uk/recording)

Download Non-Native Species identification cards from the Marine Biological Association [www.mba.ac.uk/sho](http://www.mba.ac.uk/sho) [http://www.mba.ac.uk/sites/default/files/downloads/ID_NNS_English.pdf](http://www.mba.ac.uk/sites/default/files/downloads/ID_NNS_English.pdf) [15MB]

Citizen Science NNS survey recording schemes - [www.mba.ac.uk/citizen-science#b38](http://www.mba.ac.uk/citizen-science#b38)
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.

<table>
<thead>
<tr>
<th>Biosecurity Threat</th>
<th>What to do</th>
</tr>
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<tbody>
<tr>
<td>Unplanned or unexpected arrival of a vessel within the estuary which poses a high risk of introducing NNS or discovery of significant marine debris with extensive biofouling</td>
<td>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</td>
</tr>
<tr>
<td>Discovery of a new NNS on the unwanted list or suspicious marine growth</td>
<td>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.</td>
</tr>
</tbody>
</table>

Key Contacts

<table>
<thead>
<tr>
<th>Contact</th>
<th>Responsible for</th>
</tr>
</thead>
<tbody>
<tr>
<td>AONB</td>
<td>Coordination of South Devon Estuaries Management Plan, Estuary Biosecurity Plans and Estuary Forums – <a href="mailto:Nigel.Mortimer@SouthDevonAONB.org.uk">Nigel.Mortimer@SouthDevonAONB.org.uk</a> – 01803 229 335</td>
</tr>
<tr>
<td>CEFAS</td>
<td>Management of aquaculture – Fish Health Inspectorate <a href="mailto:fhi@cefas.co.uk">fhi@cefas.co.uk</a> – 01305 206700</td>
</tr>
<tr>
<td>D&amp;SIFCA</td>
<td>Management of a sustainable marine environment &amp; inshore fisheries <a href="http://www.devonandsevernifca.gov.uk">www.devonandsevernifca.gov.uk</a></td>
</tr>
<tr>
<td>Duchess of Cornwall</td>
<td>Estuary Fundus owner – <a href="http://www.duchyofcornwall.org">www.duchyofcornwall.org</a></td>
</tr>
<tr>
<td>EA</td>
<td>Protect &amp; enhance the environment – freshwater <a href="mailto:nick.whatley@environment-agency.gov.uk">nick.whatley@environment-agency.gov.uk</a></td>
</tr>
<tr>
<td>GB NNSS *</td>
<td>Non-Native Species Secretariat - <a href="mailto:alertnonnative@ceh.ac.uk">alertnonnative@ceh.ac.uk</a> <a href="http://www.nonnativespecies.org">www.nonnativespecies.org</a></td>
</tr>
<tr>
<td>Harbourmaster</td>
<td>Harbour moorings, navigational safety and estuary management <a href="mailto:Salcombe.Harbour@swdevon.gov.uk">Salcombe.Harbour@swdevon.gov.uk</a> 01548 843791</td>
</tr>
<tr>
<td>MMO</td>
<td>Marine planning, licensing, fisheries management, monitoring &amp; enforcement, protecting the marine environment - <a href="mailto:claire.bowers@marinemanagement.gsi.gov.uk">claire.bowers@marinemanagement.gsi.gov.uk</a> – 02080 266018</td>
</tr>
<tr>
<td>NE ✩</td>
<td>Statutory marine conservation advice <a href="mailto:Jan.Maclennan@NaturalEngland.org.uk">Jan.Maclennan@NaturalEngland.org.uk</a> – 02080 267450</td>
</tr>
</tbody>
</table>

* 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 www.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