

Fal and Helford SAC Biosecurity Plan: Recreational Boating



September 2022

The Fal and Helford SAC Biosecurity Plan for Recreational Boating has been produced by:



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APEM Ltd is an environmental consultancy based in the UK providing independent expert advice and guidance to support a wide range of industries as well as government and environmental regulatory guidelines. APEM has a dedicated invasive non-native species team focussing on providing guidance and services to help mitigate the introduction and spread of invasive species in aquatic habitats.



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1. Background

Non-native species can be plants, animals or pathogens that have been introduced either accidentally or intentionally by human activity to an area outside their native range. Many do not cause impacts on the area where they have been introduced. However, some 10-12% of non-native species that have been introduced cause significant environmental, social and economic impacts. These are known as invasive non-native species (INNS) and include the Chinese mitten crab (*Eriocheir sinensis*), carpet sea squirt (*Didemnum vexillum*), wireweed (*Sargassum muticum*), American signal crayfish (*Pacifastacus leniusculus*) and zebra mussel (*Dreissena polymorpha*) amongst many others.

INNS spread to new areas through various pathways, which are means and routes by which species are moved. In the aquatic environment, recreational boating and other watercraft use is recognised as a key pathway for INNS introduction and spread. This is attributed to plant fragments and seeds, as well as animals including eggs, larvae, juveniles and adult life stages, being caught up in small gaps or water-retaining features in equipment (e.g. boat propellers, trailers, wetsuits, buoyancy aids), within bilge and ballast water or attached to the hulls of boats, and subsequently being transferred between locations.

INNS can disrupt boating and watercraft activities in several ways. INNS can attach to hard substrate in large quantities, as seen with the carpet sea squirt (*Didemnum vexillum*), which is known to attach to boat engines, vessel hulls and floating pontoons in large numbers, as well as foul the natural seabed. The Japanese skeleton shrimp (*Caprella mutica*) inhabits the biofouling on vessel hulls and floating pontoons, and as it is a mobile organism, has been known to move and persist on personal protective equipment and other recreational kit such as SCUBA diving dry suits, wetsuits and tanks and buoyancy aids, resulting in additional and more regular cleaning of kit.

Preventing the introduction and spread of INNS is the most effective means of managing INNS. In order to prevent and/or reduce the risk of INNS introduction and spread in a given area, biosecurity measures are employed, which include a wide range of actions from having equipment that is only used at particular sites, completely drying out equipment between uses or employing cleaning measures to ensure hitchhiking INNS are removed before the equipment is moved between different sites.

2. Scope

The aim of this Biosecurity Plan is to establish a guiding framework to reduce the risk of the introduction and spread of new INNS to the Fal and Helford SAC and to effectively manage existing INNS.

This Plan uses the definition of recreational boating used by the GB Non-Native Species Pathway Action Plan: Recreational Boating¹:

“...recreational boating [is] broadly defined as the use of boats designed or adapted for sport or leisure, whether by sail, oars, paddle and/or power. This includes, but is not limited to, dinghies, yachts, canal boats, personal watercraft (commonly known as “jet skis”) and craft used for paddling and rowing activities. The trailers and associated equipment for these types of boats is included.”

Thus, this Biosecurity Plan considers the following recreational watercraft present in the Fal and Helford SAC:

- Sailboats;
- Sailing dinghies;
- Powerboats (including RIBs);
- Yachts;
- Personal watercraft (i.e. “jet skis”);
- Wind and kite surfers; and
- Craft used for paddling and rowing activities (e.g. rowboats, gig boats, stand-up paddleboards, canoes, kayaks [including kayaking sea anglers]).

This Biosecurity Plan has been developed for Natural England and the Fal and Helford SAC Management Forum and covers all recreational watercraft activities (as above) and associated supporting infrastructure and services.

3. Introduction to the plan

Wider context and national approach

Under the Invasive Alien Species (Enforcement and Permitting) Order 2019 Article 3, persons or organisations could face prosecution if found in violation of the Wildlife and Countryside Act 1981 Section 14(1)², which puts forth that “it is an offence to release or allow to escape into

¹ South West Regional Invasive Non-native Species Pathway Action Plan: Recreational Boating (2022). A report produced by South West Water, South West Lakes Trust and APEM, Ltd.

² <https://www.legislation.gov.uk/ukpga/1981/69/section/14>

the wild any animal which is not ordinarily resident in Great Britain and is not a regular visitor to Great Britain in a wild state, or is listed in Schedule 9 to the Act.” This is of particular concern in the Fal and Helford, as this area is a Special Area of Conservation (SAC) containing species and habitats of conservation concern. Thus, biosecurity actions to mitigate the risks of the introduction of INNS should be taken to help uphold the Wildlife and Countryside Act both at a national level and within the Fal and Helford SAC.

National work carried out by the [Great Britain Non-Native Species Secretariat](#) (GB NNSS), which is the group responsible at the national level for coordinating the approach to INNS in England, Scotland and Wales, has focused on INNS communications and awareness, pathways action plans, contingency plans and alert and horizon species. The Fal and Helford SAC Biosecurity Plan complements that existing national work but applies it at a local level such that existing communications and resources will be used wherever available and adapted to fit local requirements to avoid any duplication of or unnecessary additional effort.

The retained EU Invasive Alien Species Regulation and the UK Marine Strategy contain substantial provision for the regulation of intentional introductions and management of unintentional pathways. Prioritising pathways of introduction, analysing pathways of spread and developing Pathway Action Plans (PAPs) that reduce the introduction and establishment of new INNS are key actions under this regulation. National boating and angling PAPs have been developed for Great Britain and have recently been applied at the regional level within South West England^{1,3}. The Fal and Helford SAC has been created to address the identified risky pathway of recreational boating for targeted biosecurity actions, maximising efforts and minimising financial costs.

At the national level, the GB NNSS puts forth a three-stage strategy to address INNS introduction and spread:

1. Prevention: the most cost effective and least damaging (to the ecosystem) means of INNS management (‘an ounce of prevention is worth a pound of cure’);
2. Early detection: monitoring, surveillance and rapid response to INNS incursions (which may include eradication if possible); and
3. Control and containment: in cases where INNS are widespread – and eradication is not possible – control the population and mitigate against negative impacts.

³ South West Regional Invasive Non-native Species Pathway Action Plan: Angling (2022). A report produced by South West Water, South West Lakes Trust and Angling Trust.

This Plan focusses on the prevention stage through provision of relevant and effective biosecurity actions. A key biosecurity measure that is recommended for recreational water users is the adoption of '[Check, Clean, Dry](#)' (CCD) measures. CCD involves three simple steps undertaken in combination to remove and kill any INNS present on recreational equipment and clothing (see [Annex 7](#) for examples of CCD signage):

- **Check** your equipment, boat, and clothing after leaving the water for mud, aquatic animals or plant material. Remove anything you find and leave it at the site;
- **Clean** everything thoroughly as soon as you can, paying attention to areas that are damp or hard to access. Use hot water if possible; and
- **Dry** everything for as long as you can before using elsewhere as some invasive plants and animals can survive for over two weeks in damp conditions.

Fal and Helford SAC Biosecurity Plan development

The Fal and Helford SAC Biosecurity Plan has been produced by APEM Ltd in partnership with the Fal and Helford SAC Management Forum and funded by Natural England. Data supporting this plan were sourced through the NBN Atlas, DASSH database, Seasearch and independent surveys conducted by the Marine Biological Association (MBA) and the University of Plymouth (UoP). Guidance relating to identities, abundance and distribution of non-native species in the Fal and Helford SAC was received from the MBA.

The development of the Plan followed [biosecurity guidance](#) put forth by the GB NNSS. In the context of recreational boating, the GB NNSS has worked with The Green Blue/RYA to put forth best practice recommendations concerning recreational boating. More specifically, this Plan follows guidance from the CCD campaign, which is a partnership awareness-raising effort between the GB NNSS and the Aquatic Biosecurity Partnership to guide recreators on actions to take to reduce the chances of spreading INNS.

Following CCD and biosecurity guidance, more generally, in the marine environment can be challenging. As such, recreators should be given full support from local action groups and regional governing bodies as well as utilise support at the national level in applying biosecurity protocols.

Plan information

Location: The Fal and Helford Special Area of Conservation (SAC) ([Figure 1](#))

Plan period and review date: September 2022 - September 2027, with annual reviews

Biosecurity Manager/responsible party: Fal and Helford SAC Management Forum

4. Site description

The Fal and Helford is a designated Special Area of Conservation (SAC) due to the presence of several Annex I habitats which include sandbanks, mudflats and sandflats, large shallow inlets and bays and Atlantic salt meadows (Figure 1). Other priority habitats include subtidal seagrass beds, which are present in both the Fal and the Helford. These seagrass beds act as nursery areas for species such as sea bass and cuttlefish. The site also supports a population of native oyster, which supports a traditional commercial fishery. The SAC also includes the circalittoral reef in Falmouth Bay, which supports the nationally important pink sea fan, *Eunicella verrucosa*. The Annex II species that is the primary reason for selection of this site is the shore dock, *Rumex rupestris*. The SAC is composed mostly of marine areas and sea inlets (60%). Much of the area within the SAC is comprised of the Port of Falmouth, which is a natural coastal inlet with an average water depth of 5-9 m and an average tidal range of 3.6 m.

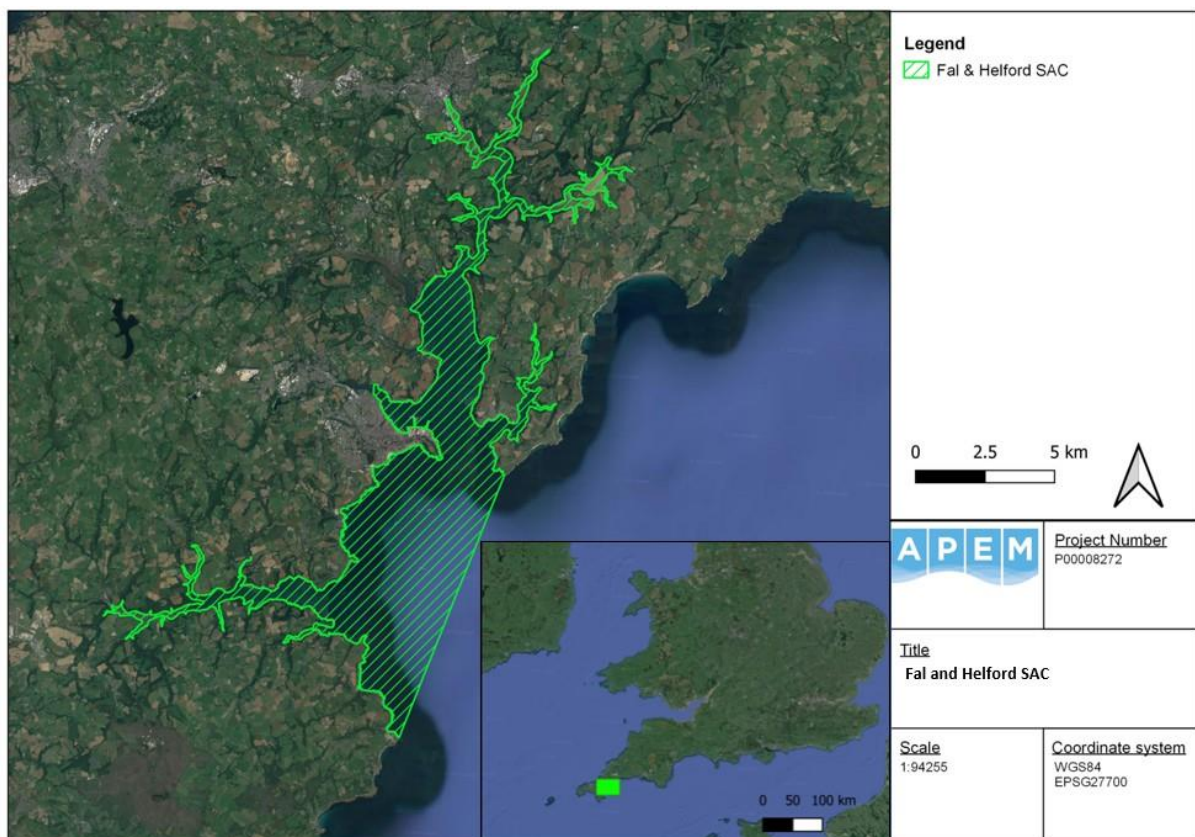


Figure 1. The Biosecurity Plan covers the Fal and Helford SAC. Inset map shows location of the SAC in England.

5. Use of the area

The Fal and Helford SAC supports a wide variety of recreational watercraft activities and clubs including sailing and yachting as well as kayaking, canoeing and stand-up paddleboarding. There are many associated supporting services and infrastructure for these activities, such as recreational marinas providing berthing through pontoons and moorings, boatyards offering maintenance and storage services, boat slipways, vessel haul-out infrastructure and pressure-washing services among others. The majority of these activities and supporting infrastructure are located along the Falmouth waterfront, with some in St. Mawes as well as at the mouth and up the River Helford ([Figure 2](#)). The SAC is also heavily utilised by recreators using highly portable and inflatable leisure watercraft such as SUPs and kayaks, which are launched from both designated (e.g. slipways, docks) and undesignated (e.g. from boats, private beaches) infrastructure/areas. These portable and inflatable watercraft users are typically not members of clubs, and as such, may carry a higher risk of transport of INNS due to their inability to receive biosecurity messages.



Figure 2. Recreational watercraft activities and associated infrastructure and services in the Fal and Helford SAC. The map inset shows activities on the Helford River.

High-risk activities: pathways of introduction and spread

An evaluation of pathways⁴ of introduction and spread of INNS related to recreational watercraft in the Fal and Helford SAC has identified several high-risk pathways:

- (1) Recreational watercraft external to the Fal and Helford SAC (including watercraft being launched from both designated and undesignated infrastructure/areas);
- (2) Equipment associated with recreational watercraft (e.g. boat trailers, wetsuits, paddles) external to the Fal and Helford SAC;
- (3) Harbour infrastructure associated with recreational watercraft (e.g. boat slipways, floating pontoons) external to the Fal and Helford SAC;
- (4) Cleaning of recreational watercraft, equipment and harbour infrastructure external to the Fal and Helford SAC (if wash water is allowed back into the marine environment);
- (5) Relocation/movement of harbour equipment and infrastructure associated with recreational watercraft between the estuaries/rivers (e.g. movement from River Fal to Helford River) or from sites external to the Fal and Helford SAC; and
- (6) Events and competitions, particularly those attracting participants and watercraft external to the Fal and Helford SAC.

Sites within the Fal and Helford SAC that support any of these pathways should be considered key sites to target for implementation of biosecurity measures. These key pathways are described in [Table 1](#) and practical steps that can be taken to raise awareness and reduce impacts from these pathways are identified in [Table 5](#).

⁴ Pathways are means and routes by which species are introduced to an area.

Table 1. High-risk pathways of INNS introduction and spread for the Fal and Helford SAC. All pathways refer to watercraft, equipment and infrastructure arriving from sites external to the Fal and Helford SAC.

No.	Pathway	Risk	Considerations
1	Recreational watercraft	Transfer of INNS being trapped in water-retaining features of watercraft, fouling of hulls and within bilge water	Introductions via watercraft can lead to colonisation of adjacent hard structures and other watercraft via fragmentation and release of larvae/spores. Consider watercraft launching from designated and undesignated areas. It is difficult to target biosecurity actions for watercraft being launched from undesignated areas
2	Equipment associated with recreational watercraft	Transfer of INNS on equipment and clothing (e.g. life jackets, wetsuits, paddles) between water bodies and regions	Equipment and clothing can carry larvae/spores and fragments of INNS to new locations where colonisation is then possible. Consider equipment associated with watercraft that is launched from designated and undesignated areas. It is difficult to target biosecurity actions for equipment associated with watercraft being launched from undesignated areas
3	Harbour infrastructure associated with recreational boating (e.g. marina walls and pontoons, slipways, haul-out at boatyards)	Provision of hard substrate for fouling by INNS	Marina pontoons and other harbour infrastructure (especially in sheltered conditions) provide a reservoir where INNS can survive and reproduce
4	Cleaning of recreational watercraft/ equipment and harbour infrastructure, whether in-water or out of water	Release of biofouling from vessels (e.g. sailboats) or harbour infrastructure (e.g. slipways) during cleaning	Fouling INNS released from substrate (whether intact or as fragments) may remain viable if washed back into the water
5	Relocation of harbour equipment and infrastructure associated with recreational boating (e.g. movement of floating pontoons, moorings, buoys, anchor chains)	Transfer of INNS via movement of fouled infrastructure	If not properly cleaned, harbour equipment and infrastructure can facilitate movement of INNS which can subsequently colonise local hard structures and other watercraft via fragmentation and release of larvae/spores

No.	Pathway	Risk	Considerations
6	Events and competitions	As in number 1 above but likelihood of transfer is substantially increased during events that support participants from outside the local area	Events/competitions that are particularly problematic are those that support national and international participants arriving from outside the region and of whom bring in external equipment

6. Non-native species

Non-native species known to be present in the Fal and Helford SAC are listed in Table 2. Most of these species have very little to no impact on the receiving ecosystem. There are, however, several species that are known to have negative ecological, economic and/or social impacts that are present in the SAC, and as such, are INNS of concern for further spread. These INNS are noted in [Table 2](#) as being present on the UK Marine Non-Indigenous Species Priority List (2020), which is a monitoring and surveillance list for 'priority' marine non-native species in which to focus efforts, as these are known to cause negative environmental impacts. [Annex 2](#) provides information and photographs on the 'top ten' most impactful of these priority species.

Table 2. Non-native species known to be present in the Fal and Helford SAC and indication of presence on the UK Marine Non-Indigenous Species Priority List (2020), which indicates high-risk species.

Scientific name	Common name	Priority species
<i>Amphibalanus improvisus</i>	Bay barnacle	
<i>Antithamnionella spirographidis</i>	Red algae	
<i>Antithamnionella ternifolia</i>	Red algae	
<i>Aplidium cf. glabrum</i>	Colonial sea squirt	
<i>Aplidium glabrum</i>	Colonial sea squirt	
<i>Asparagopsis armata</i>	Harpoon weed	✓
<i>Asterocarpa humilis</i>	Compass Sea Squirt	✓
<i>Austrominius modestus</i>	Darwin's barnacle	
<i>Bonnemaisonia hamifera</i>	Bonnemaisonia's Hook Weed	✓
<i>Botrylloides diegensis</i>	San Diego sea squirt	
<i>Botrylloides sp.</i>	indetermined Botrylloides species	
<i>Botrylloides violaceus</i>	Orange cloak sea squirt	
<i>Botryocladia wrightii</i>	Wright's golden membrane weed	✓
<i>Bugula neritina</i>	Ruby bryozoan	
<i>Bugulina fulva</i>	Bushy bryozoan	
<i>Bugulina simplex</i>	Bushy bryozoan	
<i>Bugulina stolonifera</i>	Bushy bryozoan	
<i>Caprella mutica</i>	Japanese skeleton shrimp	✓
<i>Caulacanthus okamurae</i>	Pom pom weed	✓
<i>Ciona robusta</i>	Solitary sea squirt	
<i>Codium fragile subsp. fragile</i>	Green sea fingers	
<i>Colpomenia peregrina</i>	Oyster thief	

Scientific name	Common name	Priority species
<i>Cordylophora caspia</i>	Hydroid	
<i>Corella eumyota</i>	Orange-tipped sea squirt	✓
<i>Crepidula fornicata</i>	American slipper limpet	✓
<i>Dasysiphonia japonica</i>	Siphoned Japanese weed	
<i>Diadumene lineata</i>	Orange-striped anemone	✓
<i>Dictyota cyanoloma</i>	Blue fringed fan weed	
<i>Ficopomatus enigmaticus</i>	Trumpet tube worm	✓
<i>Goniadella gracilis</i>	Polychaete	
<i>Grateloupia turuturu</i>	Devil's tongue weed	✓
<i>Hydroides elegans</i>	Tube worm	
<i>Hydroides ezoensis</i>	Twin-keel worm	
<i>Magallana gigas</i>	Pacific oyster	✓
<i>Melanothamnus harveyi</i>	Harvey's siphon weed	
<i>Mya arenaria</i>	Sand gaper	
<i>Perophora japonica</i>	Creeping sea squirt	
<i>Pileolaria berkeleyana</i>	Tube worm	
<i>Potamopyrgus antipodarum</i>	Jenkins' spire snail	
<i>Sargassum muticum</i>	Wireweed	✓
<i>Solieria chordalis</i>	Solier's Red String Weed	
<i>Spartina anglica</i>	Common cord grass	✓
<i>Styela clava</i>	Leathery sea squirt	✓
<i>Tricellaria inopinata</i>	Tufty-buff bryozoan	
<i>Undaria pinnatifida</i>	Wakame	✓
<i>Watersipora subatra</i>	Red-ripple bryozoan	✓

Horizon species are those which are not yet present in the area but have a high likelihood of introduction and establishment, and of which are likely to have negative ecological, economic and/or social impacts, including impacts yet unknown. It is vital to understand which species of concern are not yet within the area but may be present in adjacent or connected areas (e.g. a species of concern is abundant in a harbour whose vessels travel to the Port of Falmouth). Any monitoring programmes should survey for these species and have a rapid response plan in place if detected. Horizon species for the UK are listed in [Table 3](#) and species that are not yet established in the Fal and Helford SAC but have been detected in the southwest of England are included in Table 4.

Table 3. Horizon species listed on the UK Marine Non-Indigenous Species Priority List (2020). These are species that are not yet established but likely to arrive and establish in UK waters. Note that if any of these species are detected in the Fal and Helford SAC, the Great Britain Non-Native Species Secretariat (GB NNSS) is to be contacted immediately: www.nonnativespecies.org.

Scientific name	Common name
<i>Alexandrium catenella</i>	Phytoplankton
<i>Amphibalanus reticulatus</i>	Reticulated barnacle
<i>Asterias amurensis</i>	Northern Pacific sea star
<i>Caulerpa racemosa</i>	Green algae
<i>Caulerpa taxifolia</i>	Green algae
<i>Celtodoryx ciocalyptoides</i>	Cauliflower sponge
<i>Ciona savignyi</i>	Pacific transparent sea squirt
<i>Dyspanopeus sayi</i>	Say mud crab
<i>Megabalanus coccopoma</i>	Titan acorn barnacle
<i>Megabalanus tintinnabulum</i>	Barnacle
<i>Megabalanus zebra</i>	Barnacle
<i>Mizuhopecten yessoensis</i>	Large weathervane scallop
<i>Mulinia lateralis</i>	Surf clam
<i>Ocenebra inornatus</i>	Japanese sting wrinkle
<i>Paralithodes camtschaticus</i>	Red king crab
<i>Polysiphonia subtilissima</i>	Red algae

Scientific name	Common name
<i>Pseudochattonella verruculosa</i>	Phytoplankton
<i>Rapana venosa</i>	Veined rapa whelk
<i>Rhopilema nomadica</i>	Nomad jellyfish

Table 4. Species not recorded in the Fal and Helford SAC, but which have been recorded in southwest England, with closest known record included (source: NBN Atlas⁵).

Scientific name	Common name	Closest record
<i>Didemnum vexillum</i>	Carpet sea squirt	Plymouth (Devon)
<i>Eriocheir sinensis</i>	Chinese mitten crab	Teignmouth (Devon)
<i>Hemigrapsus sanguineus</i>	Asian shore crab	Weymouth (Dorset)
<i>Homarus americanus</i>	American lobster	Sennen (Cornwall), Bigbury (Devon)
<i>Schizoporella japonica</i>	encrusting bryozoan	Plymouth (Devon)
<i>Urosalpinx cinerea</i>	American sting winkle	Spit Beach (Cornwall)

7. Biosecurity actions

This Biosecurity Plan is intended to be highly specific to the characteristics and activities in the Fal and Helford SAC and provide achievable and measurable biosecurity objectives for the area. The biosecurity procedures implemented must be realistic and achievable; therefore, it is acknowledged that operational requirements and logistical issues will need to be considered before commitment to any recommendations can be made. Recommendations made are intended to be followed only when safe and practical to do so. Biosecurity plans are working documents rather than fixed strategies, so it is expected that some of the recommendations and outcomes may be refined, enhanced, suspended or removed during the programme of implementation and subsequent review. More specifically, although information is included within the 'Owners' and 'Timescale' columns, this information is meant to be elaborated on, focussed, added and/or adjusted as the Plan progresses and after consultation with the Fal and Helford SAC Management Forum and relevant stakeholders.

⁵ <https://nbnatlas.org/>

This Biosecurity Plan is presented in a way that should allow for measurable biosecurity objectives/targets to be phased-in over appropriate timescales; proposed year of implementation is indicated in the 'Timescale' column. It should be noted that no single measure can provide full mitigation for the risk of INNS introduction or spread, so the use of multiple and integrated measures is recommended so they can act cumulatively to reduce risk.

Recommendations are presented by priority and each action described in detail in [Annex 1](#). The Fal and Helford SAC Management Forum is the primary owner of this Biosecurity Plan, and as such, is responsible for assigning actions and timeframes for implementation/delivery.

Recommendations and associated actions within this plan have been prioritised as: High, Medium or Low and indicated on a Red Amber Green (RAG) scale.

- The recommendations categorised as **High** include biosecurity practises that should form the critical “backbone” to the biosecurity framework in the Fal and Helford SAC and/or low-cost biosecurity measures which could be implemented quickly.
- **Medium** priority recommendations are those options with a good chance of efficacy, but which require a larger-scale infrastructural or operational change that may take longer to implement, or are dependent on the successful implementation of High priority recommendations.
- Recommendations categorised as **Low** are options which support biosecurity, but may not fully address the pathway, have a higher cost to benefit ratio and/or are dependent on the successful implementation of High and Medium priorities.

All biosecurity actions are presented in [Table 5](#).

Current and on-going actions

Training and empowering those involved with INNS biosecurity is essential for ensuring that biosecurity measures are implemented correctly, and that the importance of implementation is understood. In the Fal and Helford SAC, training has involved INNS identification, guidance on how to conduct rapid assessment surveys or other monitoring techniques and instruction on implementing biosecurity measures.

Raising awareness of the INNS issue for users of the Fal and Helford SAC is important to ensure buy-in from stakeholders and facilitate recreators' change in behaviours. Currently, CCD signage is posted in various locations throughout the SAC, but more targeted messaging could include placing biosecurity signage or information boards at entrance and exit points of

marinas and other high-traffic areas, including biosecurity information on the related websites and social media platforms and including biosecurity information in any briefings or communications before events and competitions.

The Fal and Helford SAC Management Forum is continuing to raise awareness and empower local stakeholders, such as marina and boatyard owners and operators, members of watercraft clubs and other regular users of the Fal and Helford SAC, to take action against INNS. Promoting biosecurity actions and encouraging small behavioural changes in stakeholders is the best approach to ensuring buy-in and continued support for this Biosecurity Plan for years to come. Approaches to empowering stakeholders to take action against INNS can include hosting INNS/biosecurity workshops at local marinas and watercraft clubs, conducting biosecurity and INNS identification training for local staff and club members and involving stakeholders in research and development of new biosecurity technology (e.g. anti-fouling paint, washdown and disposal facilities).

Table 5. Biosecurity actions with associated owners, timescales and target outcomes (i.e. success measures) for the Fal and Helford SAC presented by priority for implementation (Low, Medium, High). The number of each recommendation ('Rec no.')

links to full descriptions of each action in [Annex 1](#). 'Owners' are identified at a very high level but should be further narrowed to specific parties by the Fal and Helford SAC after consultation with relevant stakeholders. 'Timescale' for implementation/delivery of actions should be reviewed and adjusted as appropriate. 'FHSAC' = Fal and Helford SAC. 'LAG' = Local Action Group(s) which could include the Fal and Helford SAC Management Forum and/or other local groups and/or governing bodies.

Rec no.	Action	Owners	Timescale	Target outcome	Priority
Rec. 1	Appoint a Biosecurity Manager	LAG	Year 1	Biosecurity Manager in post	High
Rec. 2	Appoint local Biosecurity Champions	LAG; marina/boatyard/ watercraft club; Biosecurity Manager	Year 1	Biosecurity Champions designated at appropriate sites	High
Rec. 3	Biosecurity Manager to organise workshops with Biosecurity Champions and other relevant stakeholders. Workshops to include biosecurity and INNS training and to introduce to the Biosecurity Plan	Biosecurity Manager	Year 1	Completion of workshop with high attendance	High
Rec. 4	Biosecurity Manager to hold regular biosecurity meetings with Biosecurity Champions and other relevant stakeholders	Biosecurity Manager	Year 1	Regular meetings in place with high attendance	High
Rec. 5	Promote Check Clean Dry (CCD) through improved awareness messaging at key sites (e.g. slipways, marinas). Review existing and identify new key sites for targeted CCD messaging. Install CCD signage where relevant	LAG; marina/boatyard/ watercraft club	Year 1	Installation of CCD signage and provision of messaging at key sites	High
Rec. 6	Where possible, install CCD signage at undesignated but regularly used launch areas used by portable and inflatable watercraft (e.g. SUPs, windsurfers, kayaks)	LAG	Year 1	Installation of CCD signage at regularly used undesignated launch sites	High

Rec no.	Action	Owners	Timescale	Target outcome	Priority
Rec. 7	To target users of portable and inflatable watercraft, disseminate CCD material to local retailers, rental shops and tourist board, as well as lesson providers, tour guides, etc. Place CCD messaging on relevant websites and social media	LAG	Year 1	CCD messaging communicated to watercraft users by relevant retailers and lesson providers, and conveyed on websites and social media	High
Rec. 8	Stay up to date with horizon scanning reports from the GB NNSS	LAG; marina/boatyard/ watercraft club	Year 1	Demonstratable knowledge of horizon species	High
Rec. 9	Ensure FHSAC stakeholders and users are aware of INNS reporting protocols (see Annex 3 for contingency planning and Annex 4 for reporting procedures)	LAG; marina/boatyard/ watercraft club; individual user	Year 1	Reporting procedure in place and followed	High
Rec. 10	Work closely with organisations such as The Green Blue and British Canoeing to develop lines of communication to their members	LAG	Year 1	Regular communication with organisations in place	High
Rec. 11	Develop event/competition biosecurity procedures (particularly if events involve watercraft/participants external to FHSAC). Use events as an opportunity to raise awareness of INNS and biosecurity (e.g. raise awareness during Falmouth Sailing Week)	LAG; marina/boatyard/ watercraft club	Year 1	Procedure in place and followed	High
Rec. 12	Develop site-specific biosecurity protocols for recreational marinas/boatyards and watercraft clubs (e.g. sailing and gig clubs) that support watercraft external to FHSAC	LAG; marina/boatyard/ watercraft club	Year 2	Biosecurity protocols in place and followed at key sites	High
Rec. 13	Develop site-specific biosecurity protocols for movement of infrastructure, equipment and materials external to FHSAC (e.g. pontoons)	LAG; marina/boatyard/ watercraft club	Year 2	Biosecurity protocols in place and followed during operations	High

Rec no.	Action	Owners	Timescale	Target outcome	Priority
	and moorings that enter FHSAC from another site)				
Rec. 14	All recreational equipment that enters and leaves FHSAC should be cleaned and dried using CCD protocols	marina/ boatyard/ watercraft club; individual user	Year 2	Users regularly practising CCD	High
Rec. 15	Where possible, freshwater washdown facilities and dry-out areas should be installed in key areas	LAG; marina/ boatyard/ watercraft club	Year 3	All washdown facilities/areas addressed	Medium
Rec. 16	Implement conditions of entry and exit for use of personal equipment	LAG; marina/ boatyard/ watercraft club	Year 3	Procedure in place, conditions conveyed to users and procedure followed	Medium
Rec. 17	Review and update any current relevant byelaws to include biosecurity	LAG; marina/ boatyard/ watercraft club	Year 3	Amended byelaws enter into force	Medium
Rec. 18	Where relevant, implement consistent checking, cleaning and maintenance of any washdown facilities	LAG; marina/ boatyard/ watercraft club	Year 3 (or after washdown facilities are installed)	Procedure in place	Medium
Rec. 19	Where possible, ensure that all newly constructed marinas, boatyards and club facilities are built with freshwater washdown with appropriate drainage facilities	LAG; marina/ boatyard/ watercraft club	When new infrastructure built	Facilities in place and used as standard procedure	Medium
Rec. 20	Develop standard procedures for monitoring high-risk INNS. Encourage their adoption by relevant marinas, watercraft facilities and individual users	LAG; marina/ boatyard/ watercraft club	Year 3	Monitoring in place at key sites	Medium
Rec. 21	Encourage the standardisation of planning for boating-related maintenance work and conditions of movement	LAG; marina/ boatyard/ watercraft club	Year 4	Standard operating procedure (SOP) distributed to relevant staff	Medium

Rec no.	Action	Owners	Timescale	Target outcome	Priority
				Procedure adhered to and recorded if not	
Rec. 22	Where possible, inspect vessels and equipment arriving from sites external to FHSAC for INNS regardless of whether arriving via water or land.	LAG; marina/ boatyard/ watercraft club	Year 4	Procedure in place and followed	Medium
Rec. 23	Identify problematic INNS within FHSAC and explore options for containment, control or eradication	LAG	Year 5	Species-specific management plans in place at all sites these are required	Low
Rec. 24	Monitor the uptake of the Biosecurity Plan and update as required	LAG	Year 5 or when Plan evaluation and review is due	High priority recommendations made within the Plan are being practised, and owners and timelines for implementation of medium and low priorities are in place	Low
Rec. 25	Develop links with local university researchers to encourage research and innovation in FHSAC and wider INNS subject area	LAG	Year 5	Project collaboration	Low
Rec. 26	Consult the GB NNSS for how to work with local pet and aquarium shops to raise awareness of INNS and biosecurity	LAG	Year 5	INNS messaging in place	Low

8. Events and competitions

Events and competitions that include vessels and equipment arriving from outside the Fal and Helford SAC, particularly those that include vessels arriving from international areas, pose a threat to the SAC. This substantially increases the number of marine INNS hitchhiking on equipment, which consequentially increases the likelihood of new INNS arrival and establishment. As such, events and competitions should be prioritised for implementation of targeted biosecurity measures. Known relevant events and competitions occurring the in Fal and Helford SAC are listed in Table 6. This list should be reviewed and updated annually and level of risk of each event assessed by the Management Forum.

Table 6. Some annual events and competitions in the Fal and Helford SAC for which event biosecurity should be developed and delivered.

Event	Location	Description
Classic Boat Rally	Falmouth	Boat rally based at the National Maritime Museum Casual trips included around Helford River
One-off championship events	Falmouth	Competitions that may involve keelboat yachts, sailing dinghies, rowing gigs, sliding seat rowing boats
Falmouth Classics	Falmouth Haven	Three days of racing and a parade of classic and small boats coinciding with The Falmouth International Sea Shanty Festival
Falmouth Oyster Festival	Falmouth Haven	A festival celebrating the start of the oyster dredging season
Falmouth Sailing Week	Falmouth Haven	Seven days of fleet racing for yachts and dayboats in Falmouth Bay
Owners Rally 2022	Cockwells Modern and Classic Boatbuilding	Sail to Dartmouth starting from Falmouth
Tall Ships Falmouth	Falmouth	Approx. 40 tall ships gathering in Falmouth for a maritime festival before the ships race to Spain
Helford Passage Regatta	Helford Passage	Annual regatta with swimming races, rowing, kayaking, paddleboarding as well as on land events
Cornwall Offshore Group Races	English Channel	Sailboat races across the English Channel

9. Review and evaluation

An annual meeting of the Fal and Helford SAC Management Forum and other key contributors and stakeholders, such as the Biosecurity Manager, Biosecurity Champions and marina owners from key sites, should be organised to review and assess progress made towards completing the actions outlined within this Plan (e.g. a yearly 'round-up'), particularly against the timescales identified in [Table 5](#). Review of the Plan can first include talks/reports from knowledgeable personnel and could include local stakeholders who are assisting in the implementation of the Plan, such as marina and boatyard owners and operators, and can include successes and failures of implementation. The yearly review should culminate in the production of an annual progress report with all owners of actions needing to report on progress, possibly via a properly facilitated forum style discussion. Also on an annual basis, a list of competitions/events for the upcoming year should be reviewed and the Management Forum prioritise these based on risk of spreading INNS, and the list of present and horizon species should be reviewed in consultation with taxonomic and INNS experts. Ideally, the annual meeting will be held in the boating off-season (i.e. December, January, February) to allow for preparation before the boating season begins. At all other Forum meetings, progress towards implementation of actions should be added as a regular agenda. A full evaluation of the Plan, including progress to date, items to remove and add and any other relevant information should be conducted every five years.

10. Contingency planning

Despite even the most robust biosecurity measures being in place, INNS may still arrive to an area. Contingency plans (also known as 'rapid response plans') are put in place to take urgent actions to eradicate, control or contain a new incursion of INNS. A Rapid Response Plan (RRP) is a document that presents a framework for managing new incursions by providing clear, proactive and coordinated actions to undertake based on the scenario presented. RRP's are triggered when the presence of an INNS considered to be of concern is detected. Once an INNS has been recognised and reported, the RRP is the response element.

The Fal and Helford SAC Rapid Response Plan is laid out in full in [Annex 3](#). It covers the geographic extent of the SAC. The plan covers necessary preparation, delivery of response, management actions and evaluation and review. The RRP should be reviewed and updated in line with this Biosecurity Plan.

11. Detecting and reporting

The Fal and Helford SAC Management Forum is to determine the appropriate method for reporting INNS sightings. Presently, Natural England has a protocol in place for reporting by members of the public and staff/contractors. All sighting information should be uploaded to the Marine Biological Association (MBA) website⁶ as they are data custodians for marine species. Detailed guidance is provided in [Annex 4](#). In general, it is recommended that any unknown species detected in the area be photographed and its location, approximate size of area affected, date/time, species ID and name of recorder be recorded to allow for an INNS expert to return to the location to verify the information.

12. Future work and next steps

Biosecurity planning is imperative for long-term INNS management, as preventing the introduction and establishment of new INNS is substantially easier and much more cost-effective than controlling or attempting to eradicate species that are already present. As such, biosecurity planning is an on-going and developing process informed by data from continuous monitoring, pathway analysis, training and awareness-raising and exploration and testing of new and innovative biosecurity technologies.

Monitoring and surveillance activities

Continuous monitoring and surveillance are vital for the detection of new species, which will trigger a rapid response and subsequent management actions (i.e. eradication, containment, control). There are several methods for monitoring for current and horizon INNS, with the best approach being employing multiple methods to maximise the ability to detect INNS in multiple habitats. Below are several monitoring methods that could be employed in tandem to achieve maximum coverage of habitat and species detection in the Fal and Helford SAC.

Employing **Rapid Assessment Surveys (RAS)** allows large areas of submerged hard structure (e.g. pontoons, harbour walls) to be surveyed for INNS in a reasonable amount of time by employing a semi-quantitative approach in which target species are recorded on an abundance scale during timed searches of specific habitats. RAS are optimal for detecting fouling (sessile) organisms but fail to find planktonic or soft bottom habitat species. For detection of these species, **soft-bottom habitat sampling** methods such as intertidal core sampling, use of crab/lobster traps, subtidal grab sampling or utilising fyke nets are necessary.

⁶ <http://www.mba.ac.uk/recording>

Scrape samples can also be taken from hard artificial structures such as the sides of floating pontoons, moorings and buoys and wave breaker walls using a scraper and sweep net. These samples can be analysed in the field or taken back to the laboratory for microscopic examination. **Settlement panels** can be placed in key areas around the harbour at the start of the biological recruitment season to capture colonising INNS and can be left in place for a pre-determined amount of time but should remain for at least the full recruitment period. Panels can then be removed and analysed in the laboratory. Alternatively, new infrastructure placed in the water can be monitored for settlement and colonisation of INNS, as this virgin substrate provides bare space for fast and opportunistic colonisers (essentially acting as settlement panels). Natural habitats, such as rocky shores, also need to be monitored, as INNS that are introduced to artificial habitat are known to spread to adjacent natural areas. Thus, **quadrat sampling of nearby natural rocky shores** should be considered. Quadrat sampling involves haphazardly placing a quadrat of known size (e.g. 25 × 25 cm) on substrate avoiding large crevices and rock pools and identifying and quantifying all flora and fauna within the quadrat.

A potential alternative to employing multiple sampling methods across several habitats, is to use **environmental DNA (eDNA)**. eDNA describes the genetic material that can be obtained from an environmental sample such as water, soil or sediment. eDNA samples can be analysed for the targeted detection of one or a few specific species through quantitative polymerase chain reaction (qPCR) or to conduct biodiversity assessments of a given taxonomic group through metabarcoding. eDNA may be useful in combination with more traditional surveying methods. eDNA samples could even be collected before traditional surveys are conducted and the results of the eDNA testing used to inform further sampling.

Exploring new technologies

The field of INNS management is necessarily evolving to include the use of new methods and technologies. In coastal and marine systems in particular, new technologies are being developed that facilitate hull fouling assessment and removal of fouling organisms from vessels efficiently and cost effectively whilst containing waste and preventing its return to the marine environment.

New designs under development include wet dock quarantine facilities, which involve chemical hull treatment or physical in-water hull cleaning within the wet dock (i.e. without the boat having to be hauled out of the water), thus significantly reducing quarantine time for heavily fouled vessels. As most recreational marinas have boat hoists on premises for removing vessels to facilitate washdown, most new facilities that are needed include methods

to dispose of or chemically treat biological waste on land. Marine filter beds and wash bays, which collect wash water and remove biological debris, antifouling particles and pollutants such as copper and zinc, are increasingly being trialled for waste removal, with some available commercially. Furthermore, assessing hull fouling levels quickly and effectively is vital not only for biosecurity but also for the marina business. Thus, underwater aquatic drones that assess biofouling levels of hulls are being developed. This technology allows for remote underwater assessment with data being fed to the surface in real time or with only a very short time delay.

Expansion of current Plan

Review should consider expanding the ambition of this Plan, based on successes, shortcomings and feedback, to include wider stakeholders and operators beyond recreational activities. For example, commercial shipping, aquaculture and fishing activities pose a high risk of the introduction and spread of INNS. To assist with identifying the highest risk activities, a pathway analysis could be conducted from which a pathway action plan (PAP) for the Fal and Helford SAC could be developed. As such, other Fal and Helford SAC stakeholders such as port authorities and IFCA's could be consulted to develop an estuary-wide INNS management plan.

Annex 1 – Full description of biosecurity recommendations

- Rec. 1** Appoint a senior level Biosecurity Manager. This role should be responsible for the implementation and management of biosecurity policy and procedures across all the Fal and Helford SAC. They should act as the liaison between Local Authorities and recreational watercraft users for biosecurity matters; ensure consistent and up to date biosecurity training for relevant staff within the Fal and Helford SAC; undertake periodic biosecurity audits; and provide clear and consistent feedback to relevant interest groups. Ideally, they would not be involved as a marina or club owner or operator; rather they should be from an organisation such as Natural England, the Environment Agency or another relevant local environmental or conservation management organisation.
- Rec. 2** Appoint local Biosecurity Champions to support the Biosecurity Manager and biosecurity priorities at key sites within the Fal and Helford SAC. Biosecurity Champions could be members of relevant watercraft clubs or staff of Local Authorities that take on the responsibility for on-site delivery of specific biosecurity initiatives intended to meet the targets set and managed by the Biosecurity Manager. They should also be the point of contact at each key site for all INNS and biosecurity concerns.
- Rec. 3** Organise trainings and workshops covering INNS issues, biosecurity training, reporting of INNS and an introduction to the Fal and Helford SAC Biosecurity Plan with a target audience of local stakeholders and Biosecurity Champions. Stakeholders might include marina and boatyard owners and operators and watercraft club members amongst others. Consider involving or inviting local representatives of recreational organisations such as The Green Blue, British Canoeing and British Rowing.
- Rec. 4** Regular biosecurity meetings should be organised by the Biosecurity Manger and include all the Fal and Helford SAC Biosecurity Champions and other relevant stakeholders to keep all parties informed of any new INNS-related news/issues, such as new INNS arrivals, biosecurity training, developing INNS monitoring, public engagement, horizon species and upcoming events for which biosecurity measures should be heightened.
- Rec. 5** ‘Check Clean Dry (CCD)’ is the national biosecurity initiative, managed through the GB NNSS. Aimed at recreational users, CCD provides simple and easy to follow

instructions for improving biosecurity in and around water. CCD protocols should form the basis of all biosecurity procedures in the Fal and Helford SAC. The Biosecurity Manager and Biosecurity Champions, as well as other relevant staff and members of marinas, boatyard and clubs should be advocates of CCD to public users of the Fal and Helford SAC. The Green Blue, British Canoeing and British Rowing have developed relevant CCD and biosecurity messaging/signage and awareness-raising materials, which should be considered for use across the Fal and Helford SAC. Current CCD, INNS and biosecurity-related signage on-site should be reviewed and updated if needed. Strategic placement of signage in car parks, watercraft clubs, boatyards, relevant public rights of way and around washdown areas should be prioritised.

- Rec. 6** Highly mobile watercraft such as portable and inflatable SUPs and kayaks are able to launch from most any location within the SAC (e.g. private beaches, off boats), making it difficult to target CCD messaging to certain locations. However, where possible, CCD signage should be installed at these undesigned but regularly used launch areas (e.g. SUPs, windsurfers, kayaks).
- Rec. 7** Highly mobile watercraft such as portable and inflatable SUPs and kayaks are able to launch from most any location within the SAC (e.g. private beaches, off boats), making it difficult to target CCD messaging to certain locations. To target users of these watercraft, CCD material should be disseminated to local retailers, rental shops and the tourist board, as well as lesson providers, tour guides, etc. CCD messaging should also be conveyed on relevant websites and social media.
- Rec. 8** It is vital to stay up to date with horizon scanning reports, species alerts and any other relevant news/information from the GB NNSS so that updating of biosecurity protocols, monitoring and reporting in the Fal and Helford SAC stays current. Relevant biosecurity and INNS information can be found on the GB NNSS website [here](#).
- Rec. 9** Stakeholders and users of the Fal and Helford SAC should be aware of INNS reporting protocols. It is recommended that a single organisation or group (e.g. the Fal and Helford SAC Management Forum) be the main point of contact for reporting a potential INNS. Local stakeholders (i.e. marina and boatyard operators and watercraft club representatives), Biosecurity Champions and the Biosecurity Manager can be the first point of contact for the public. These points of contact

should then report to a central organisation. Depending on the INNS in question, this should either be reported to local/regional datacentres and authorities or to the GB NNSS. See the Fal and Helford SAC Rapid Response Plan for further details ([Annex 3](#)).

Rec. 10 Local members of organisations such as The Green Blue, British Canoeing and British Rowing should be engaged with in order to develop lines of communication to their members. These organisations already have existing lines of communication in place nationally, and as such, will be effective in conveying local biosecurity messaging directly to their members. They should be considered when organising biosecurity workshops and INNS awareness-raising activities.

Rec. 11 Event and competition biosecurity procedures should be developed and implemented. If site biosecurity measures are already in place, there should be a general increase in these measures (e.g. increase the number of staff on-site) at all events that take place when number of visitors are greater than non-event days. During events, additional biosecurity measures should be considered (on top of current measures): 1) biosecurity information and requirements (including arriving with clean and dry kit) sent out with any advanced tickets sales; 2) staff or volunteers (e.g. Biosecurity Champions) being more available to help visitors practise CCD and raise awareness of INNS; 3) disqualification from the event (if applicable and possible) and eviction from the site should biosecurity requirements be intentionally disregarded; and 4) if possible and relevant, increase the availability of site owned equipment available for hire. During high-risk events (e.g. competitions supporting international watercraft), the Biosecurity Manager or Biosecurity Champion should be on-site and available to speak to visitors. A short talk or briefing before each event explaining the importance of biosecurity as well as reminding participants to engage with the site biosecurity, will help to reduce poor biosecurity practice and raise awareness of INNS. For large-scale events, a biosecurity education centre/stand could be set up and manned by the Biosecurity Champion or knowledgeable staff or volunteers. Providing information on the CCD campaign and the facilities and rules at the site are important but tailoring the outreach towards the event's primary activity should be the objective.

Rec. 12 Marinas, boatyards and watercraft clubs should be encouraged to develop site-specific biosecurity plans and protocols, particularly if they support watercraft that is external to the Fal and Helford SAC. Plans should consider vessel arrivals, level

of hull fouling, maintenance work, events and competitions, cleaning of vessel hulls, equipment and PPE and review /installation of freshwater washdown facilities. The Fal and Helford SAC Management Forum should provide support and guidance where possible.

Rec. 13 Stakeholders at sites that support the removal and/or movement of in-water infrastructure and equipment (e.g. floating pontoons, buoys), such as marina and boatyard owners and operators, should be encouraged to develop site-specific biosecurity protocols. Standard procedure should be to clean and dry all structures and equipment before moving them from their original location. However, if cleaning can only occur once the equipment has arrived, and the equipment is operationally vital, cleaning should be carried out in a low-risk area and follow CCD protocols. Stakeholders can use the Fal and Helford SAC Biosecurity Plan as guidance for the development of site-specific plans and protocols. The Fal and Helford SAC Management Forum should provide support and guidance.

Rec. 14 All recreational watercraft users should be encouraged to clean and dry all equipment (including PPE and clothing) that enters and leaves sites within the Fal and Helford SAC, following CCD protocols, well enough that stowaway INNS are removed or rendered nonviable. Users can be informed of CCD protocols through on-site signage and instruction and through on-line messaging, as well as through marina and club messaging.

Rec. 15 Freshwater washdown facilities and dry-out areas with appropriate drainage and waste disposal accommodations should be installed at sites that support watercraft external to the Fal and Helford SAC. Freshwater tanks for soaking gear, such as wetsuits and lifejackets, should be provided. Drainage is a critical element of washdown facilities, as contaminated water must not be allowed to run into water courses. Although correct drainage provides a significant barrier to biological pollution at washdown facilities, there may be instances when INNS waste requires more considered disposal – for example if large fragments of macroalgae are snagged ashore by watercraft. Suitable waste bins/sacks should be available and arrangements for their disposal should be considered. If current facilities already include haul-out and power washing but do not accommodate for waste disposal, biological waste disposal methods must be implemented. In the interim, ensure all boats hauled out and leaving the water are washed down before moving to a

different location (this situation is not ideal but does ensure that INNS remain in the current waterbody and are not spread to new areas).

- Rec. 16** All recreational watercraft users who visit the Fal and Helford SAC, if possible, should be instructed to ensure their equipment is cleaned, following the CCD guidelines, in advance of their visit. Condition of entry and exit must be conveyed in appropriate messaging to visitors as well as members of marinas and watercraft clubs, such as installing on-site CCD signage at boat launches, using targeted messaging on marina/club's website and social media channels and providing CCD details and a signed/tick box declaration of adherence to the condition of entry rules included with member registrational/renewal (where applicable). If possible and where relevant, watercraft users who knowingly ignore these conditions should be evicted from the site, and members who are repeat offenders should have their membership revoked.
- Rec. 17** It is recommended that any available Fal and Helford SAC-wide and site-specific byelaws be reviewed and updated to better include legal instruction and emphasis on biosecurity, including conditions for entry to and exit from a site or the wider SAC. A strengthened legal framework that includes all current activities and, importantly, is communicated to users and supported by the Fal and Helford SAC Management Forum, could provide a powerful tool for the enforcement of biosecurity especially relating to recreational activities.
- Rec. 18** Procedures for consistent checking, cleaning and maintenance of any washdown/cleaning facility need to be in place. This could be managed SAC-wide by the Biosecurity Manager and at each site by the Biosecurity Champion and a SOP should be developed and published. Consideration might be given to updating site maintenance SOPs and schedules to include close inspection of the areas surrounding washdown facilities.
- Rec. 19** Where possible, ensure that all newly constructed marinas, boatyards and club facilities are built with freshwater washdown facilities, including appropriate drainage. The best time to install a washdown facility is at the initial site construction stage, as construction equipment and material will already be on-site and the appropriate permissions and permits will be in place. If part of the infrastructure from the start, it is likely that washing procedures will be accepted as the norm and will be put into regular practice, compared to installing infrastructure and implementing

procedures retrospectively. New development planning should include exploring options for hull cleaning facilities, disposal of waste, facilities for dry-docking contaminated vessels/material and use of anti-fouling materials. New technologies for hull cleaning, such as marine wash bays that collect wash water and remove marine debris, antifouling flakes as well as copper and zinc pollutants or in-water hull cleaning approaches, such as closed loop wash down systems, should be explored and considered for larger and busier facilities. See [Exploring new technologies](#) in Section 12 for more details.

- Rec. 20** Standard procedures for monitoring high-risk INNS should be developed for application across the Fal and Helford SAC. It is possible that those who will be conducting the monitoring may not have specialist taxonomic identification training, and as such, monitoring programmes should target the highest-risk and most easily identifiable species. In such cases, workshops to train citizen scientists, Biosecurity Champions, marina staff and/or watercraft club members may be necessary, as well as provision of identification guidance documents. If taxonomic experts are available, monitoring can focus on all INNS, as well as horizon INNS.
- Rec. 21** Contractors working on-site should provide contractual assurance that they will work in a biosecure way and adhere to the site rules. This should include consideration of vessels, vehicles and equipment and the likelihood of contamination; contractors should therefore be requested to avoid (where possible) visiting other aquatic sites in the days before coming onto sites in the Fal and Helford SAC. Contractor awareness of required biosecurity could be facilitated by the provision of a 'rules for contractors' guide at the time any sitework is agreed. Upon arrival, contractors should be thoroughly briefed and have biosecurity procedures reiterated by the Biosecurity Manager or Biosecurity Champion. Interactions with contractors, when considering their obligations to biosecurity (i.e. at tendering, contract sign-off, arrival at site etc.) should be standardised by asset type (e.g. marina, boatyard).
- Rec. 22** Where possible, the Biosecurity Manager, Biosecurity Champions and any relevant marina staff and watercraft club members should be trained in inspection of watercraft; however, the intent is not for inspections to be operationally burdensome. A standard procedure defining how to carry out inspections and responses is critical; but it is acknowledged that not all inspection scenarios can be predicted, so some flexibility should be maintained. The inspection process could





involve a visual inspection of the watercraft from the surface of pontoons/docks and gathering information from the watercraft user/captain about their last port of call. Ideally, inspection should occur prior to a vessel or watercraft arriving on-site. Thus, in marinas and boatyards, inspection may be needed both on land and in the water. Currently, vessels coming from international waters have to make a health declaration to Port Health before arriving from aboard; this system could be utilised to capture boater information regarding previous ports of call, level of biofouling on their hull, date of last anti-fouling coating, etc.

- Rec. 23** Identify problematic INNS within the Fal and Helford SAC and explore options for containment, control or eradication. Most established INNS will not be able to be eradicated, but controlling populations is often possible. Knowing what the problematic INNS are at a given site will allow for appropriate biosecurity measures to be put into place. Moreover, site-specific and event and competition biosecurity protocols can focus on measures to reduce the spread of these problematic INNS off-site.
- Rec. 24** A scheme to monitor the uptake of the Fal and Helford SAC Biosecurity Plan should be developed and implemented. Understanding stakeholder and public response will allow for fully informed review of the Plan. Monitoring might include conducting informal interviews with or sending out short surveys to stakeholders and holding workshops to engage stakeholders and the public and measure their satisfaction with the Plan.
- Rec. 25** Collaboration opportunities with local universities to encourage INNS and biosecurity research and innovation in the Fal and Helford SAC should be explored. Creating and fostering links with researchers developing new biosecurity technologies (e.g. anti-fouling paints, washdown and disposal facilities) will allow for practitioner input into research and may present opportunities for the technology to be tested and used in the Fal and Helford SAC. Opportunities to work with researchers to develop a standard and long-term monitoring program in the area should also be given consideration.
- Rec. 26** The GB NNSS is developing action plans concerning collaboration with pet and aquarium shops regarding INNS. Thus, consultation with the GB NNSS to explore opportunities to work with local shops to raise awareness of INNS and biosecurity

should be explored. The pet and aquarium trades have been attributed to many INNS introduction events worldwide. Rather than cast an unfavourable light on this industry, collaborative relationships should instead be developed to encourage sale of native species or species unlikely to establish in the UK and allow for INNS and biosecurity information to be shared with pet owners.

Annex 2 – Top 10 high impact INNS

Table 1. Top 10 high impact INNS that are already present in the Fal and Helford SAC. This list of 10 was taken from the UK Marine Non-Indigenous Species Priority List (2020). Where available, corresponding links are provided to the GB NNSS risk assessments for each species. Descriptions and photographs should not be used for identification purposes.

Species and description	Photograph
<p>Caprella mutica (Japanese skeleton shrimp) is a very slender amphipod with a reddish colour. Males of this species can be up to 45 mm long, while females are typically smaller (15 mm). It is abundant in late spring and early summer and is typically found on fouling biota on pontoons and other harbour structures. See GB NNSS Risk Assessment here: Caprella mutica.</p>	 <p>© K O'Shaughnessy</p>
<p>Corella eumyota (orange-tipped sea squirt) is native to the southern hemisphere and was first discovered in 2004 in the UK and has since spread rapidly. It is a solitary sea squirt, up to 8 cm. Often found attached to hard substrates such as cobbles, boulders, vessel hulls and shells of bivalves.</p>	 <p>© J O'Leary MARLIN</p>
<p>Crepidula fornicata (slipper limpet) is native to North America and arrived in England in the late 19th Century and is now established on the southern coasts of England and Wales. It can grow up to 5 cm long with a distinctive kidney shaped shell. It is typically found attached to hard substrate or small objects, most frequently seen attached to the shells of other <i>C. fornicata</i> individuals. See GB NNSS Risk Assessment here: Crepidula fornicata.</p>	 <p>© K Hiscock MARLIN</p>
<p>Ficopomatus enigmaticus (trumpet tubeworm) typically forms clumps up upright chalky tubes that are 1-3 mm in diameter. It is found in sheltered and shallow coastal areas, such as marinas, particularly in areas with reduced salinity.</p>	 <p>© K O'Shaughnessy</p>
<p>Grateloupia turuturu (devil's tongue weed) is a large red alga from the Pacific with broad slippery blades up to 1 m long and a very small holdfast. It grows on artificial and natural hard substrate.</p>	 <p>© K O'Shaughnessy</p>

Magallana gigas (Pacific oyster) was introduced to the UK in the 1960s for commercial purposes, but feral populations have since established. Shells can be up to 18 cm long with lower half firmly attached to substrate. It fouls artificial structures, such as marina pilings, and creates a safety concern on natural rocky shore due to sharp edges of the shell. See GB NNS Risk Assessment here: [Magallana gigas](#).



Sargassum muticum (wireweed) is a brown seaweed originating from Japan. It can grow up to 1 m long. It is typically found in rock pools in the intertidal zone where it is sometimes the dominant taxa. It is also commonly attached to hard substrate such as pontoons, but also natural rock in the intertidal zone. See GB NNS Risk Assessment here: [Sargassum muticum](#).



Styela clava (leathery sea squirt) is a brownish solitary sea squirt up to 20 cm and attached to hard substrate via a long, distinctive stalk. The surface of the organism is tough and leathery. It is often found in marinas and harbours fouling vessel hulls and pontoons.



Undaria pinnatifida (Wakame) is a fast-growing brown kelp native to the NW Pacific with fronds 1-2 m in length. The blade has a distinct midrib and there are reproductive frills just above the holdfast. It is particularly prevalent along the south coast of England. See GB NNS Risk Assessment here: [Undaria pinnatifida](#).



Watersipora subatra (red ripple bryozoan) is a rapid growing colonial bryozoan with colonies up to several cm across of 1 mm individuals arranged as a sheet and often forming round lobes. Typically found attached to artificial hard substrate and natural rock in shallow water.



Annex 3 – Contingency planning: The Fal and Helford SAC Rapid Response Plan (RRP)

When is a response required?

A response is triggered when a new species is detected within the Fal and Helford SAC. This includes water bodies or water courses not within the SAC, but which connect to it. Generally, a sighting is of concern if there is evidence to suggest a self-sustaining population can form, but there should be consultation with experts to determine this on a case-by-case basis.

If the INNS is novel to GB this should be reported to the GB Non-Native Species Secretariat immediately. This will trigger the national rapid response process. See Table 3 and Table 4 for species likely to arrive in the UK as well those close to the Fal and Helford SAC ('horizon species').

If the INNS is novel to the region OR to the Fal and Helford SAC, then this RRP is triggered. The remainder of this section covers the implementation of the Fal and Helford SAC RRP.

Preparation

Staff resources and equipment

Suitable volunteers who can provide assistance when there is a sighting and/or in the event of a serious outbreak should be identified. It is recommended that two groups assist with the delivery of a rapid response process:

The Response Group will be responsible for directing all actions concerning the response, including the Operational Group and communications. The Biosecurity Manager might lead this group, with external INNS experts or members of regulatory bodies to sit on the group as required. The Response Group should endeavour to ensure resources are in place so that suitable equipment can be sourced quickly in order to implement a rapid response to an INNS incursion. This can be done by exploring options for equipment known to be effective at addressing species of concern. Rather than having reserve equipment or stock piling in case of an introduction, it may be more prudent to consider a war chest where funds are ring-fenced to cover the initial phases of a rapid response.

The Operational Group members will be responsible for on-the-ground implementation of actions. The Operational Group may consist of external expert INNS contractors, members of regulatory bodies, Biosecurity Champions and other staff and volunteers. Operational staff should be familiar with relevant management techniques and obtain training where necessary.

External communication and media

The Response Group will be responsible for external communications. Messaging should be conveyed through media channels that are typically used to convey INNS messaging for the Fal and Helford SAC, such as particular organisations' websites and social media. Reactive lines should be prepared for each species on suspicion, confirmation, during a response, following a response and in the case of a need to escalate or stand down. Proactive messaging should be considered where possible and appropriate. External communications should take into account local and national stakeholders and should be developed and shared with them where appropriate.

Internal communication and training

After its development, the RRP should be disseminated to all relevant staff and volunteers and ensure they are trained in its delivery. RRP information could be included in training curriculums and can be included in relevant inductions (e.g. for Biosecurity Champions). To test and ensure the robustness and preparedness of delivery of the plan, simulated mock incursion situations and responses could be undertaken as exercises to ensure appropriate parties are aware and competent with required procedures.

Delivery of response

The Response Group has overall responsibilities for this Plan, including delivery of the plan, oversight of the response, reporting sightings to the GB Non-Native Species Secretariat, on-the-ground implementation of the response and external communications if deemed necessary. This means that all potential INNS sightings should be reported immediately to the Response Group and through reporting channels of the group's choice. Figure 1. illustrates in detail the stages of response with associated communication and responsibilities.

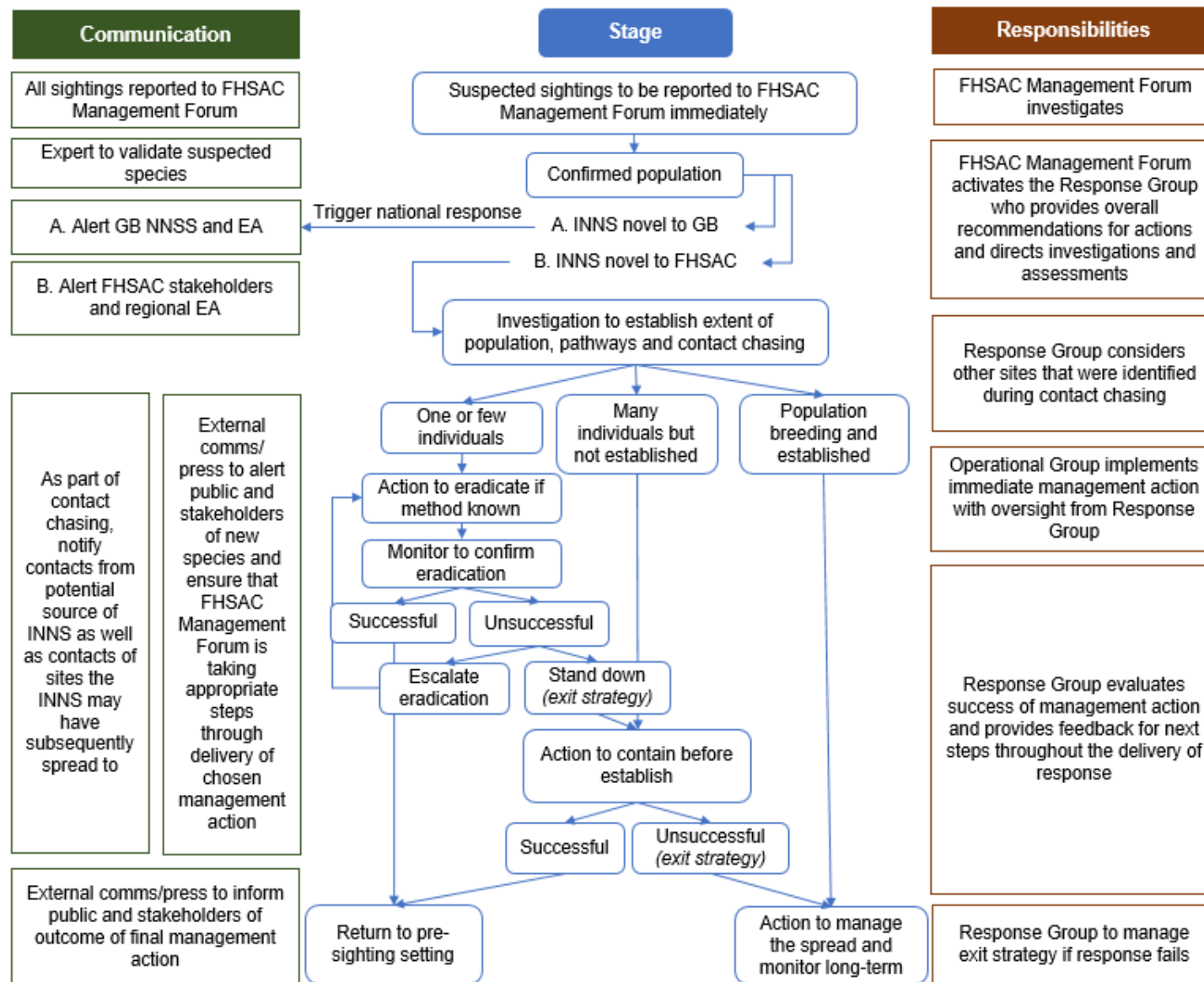


Figure 1. Flow diagram indicating stage of response and associated communication and responsibilities.

Detecting and reporting

The Response Group is to determine the appropriate method for reporting INNS sightings, such as reporting directly to the Fal and Helford SAC Management Forum and/or submitting sightings to the Environmental Records Centre for Cornwall and the Isles of Scilly (ERCCIS)⁷.

Presently, Natural England has a protocol in place for reporting by members of the public and staff/contractors. All sighting information should be uploaded to the Marine Biological Association (MBA) website⁸ as they are data custodians for marine species. Detailed guidance is provided in [Annex 4](#). In general, it is recommended that any unknown species detected in the area be photographed and its location, approximate size of area affected, date/time, species ID and name of recorder be recorded to allow for an INNS expert to return to the location to verify the information.

Reports of individual INNS may not necessarily require a response. The Response Group will determine when a record should be considered of concern, undertaking investigation as necessary and, where relevant, consulting relevant taxonomic and invasive species experts.

Validation

Validation of the identity of a specimen will be achieved by consulting the relevant taxonomic expert(s). A list of experts of high alert/horizon species should be developed and kept current prior to a sighting. It must be determined if the species is: (a) novel to the Fal and Helford SAC area or (3) novel to GB.

Investigation

Upon confirmation of INNS identity, the Response Group should coordinate an investigation to be carried out by the Operational Group to determine the extent of the population, duration on site and presence of other species of concern (e.g. sensitive or protected native species). Information gathered during this step will inform the assessment for the type of response that will be feasible (e.g. eradication, containment, management). The investigation should include:

- Assessing the affected area, including vessel hulls, to establish the likely distribution and extent of the population;

⁷ <https://ercis.org.uk/share-sightings>

⁸ <http://www.mba.ac.uk/recording>

- Undertaking a biosecurity risk assessment of pathways into and out of the affected areas (e.g. recreational watercraft, commercial vessels, pontoon relocation);
- Undertaking contact chasing through risk-based surveillance of additional water bodies that may be connected to the site and therefore affected;
- Immediately putting in place any initial biosecurity or containment measures if relevant;
- Informing all marine users (e.g. recreational marinas, fishermen, boatyards) of the detection and advise that extra caution be taken to avoid further spread;
- Liaising with landowners and stakeholders as necessary to obtain access and other permissions; and
- Investigating the source of the outbreak and gathering appropriate information to provide evidence as required.

Feasibility assessment of response

Before any further response is activated by the Operational Group beyond the initial investigations, the Response Group should conduct a feasibility assessment to determine if it is feasible to:

- (1) Eradicate – Complete eradication of the species is the first priority; however, this is unlikely to be feasible in many cases (particularly when an established population is discovered or there is not a proven eradication method for the INNS of concern);
- (2) Contain – The next priority is to contain the species to the invaded site. Measures to do this will be based on the biosecurity risk assessment undertaken by the Operational Group; or
- (3) Manage the spread – Where complete containment is not feasible, the next priority will be to implement measures to slow the spread of the species.

Feasibility can be assessed using the following criteria (see Table 1.):

- Effectiveness – the ability to produce the desired outcome, in this case, to eradicate, contain or manage an INNS incursion
- Practicality – covers aspects of the ability to install or implement
- Cost – total direct cost of the response using the defined strategy
- Impact – covers environmental, social and economic impacts
- Acceptability – relates to significant issues that could arise as a result of disapproval or resistance from individuals, groups or sectors

- Window of opportunity – relates to how quickly the species will spread beyond the point that eradication, containment or management, using the defined strategy, would be effective

Table 1. Assessment criteria for feasibility response scores.

Criteria	Response Score				
	1	2	3	4	5
<i>Effectiveness</i>	Very ineffective	Ineffective	Moderate effectiveness	Effective	Very effective
<i>Practicality</i>	Very impractical	Impractical	Moderate practicality	Practical	Very practical
<i>Cost</i>	>£10M	£1-10M	£200k-1M	£50-200k	<£50k
<i>Negative impact</i>	Massive	Major	Moderate	Minor	Minimal
<i>Acceptability</i>	Very unacceptable	Unacceptable	Moderate acceptability	Acceptable	Very acceptable
<i>Window of opportunity</i>	< 2 months	2 months-1 year	1-3 years	4-10 years	>10 years
<i>Likelihood of reinvasion</i>	Very likely	Likely	Moderate likelihood	Unlikely	Very unlikely
<i>Conclusion (overall feasibility of eradication)</i>	Very low	Low	Medium	High	Very high

The Response Group will determine the appropriate course of action, in consultation with any taxonomic and/or invasive species experts.

Management actions

Eradication

Upon decision by the Response Group to eradicate, the Operational Group will:

- Produce an eradication strategy (including any necessary biosecurity measures);
- Liaise with landowners and stakeholders to obtain access or any permissions if necessary;
- Implement the eradication strategy;
- Update the Response Group as necessary and advise on any required changes to the planned response, including the need to escalate or stand down; and
- Monitor the site following eradication to ascertain success.

The Response Group will:

- Support the Operational Group by reviewing the eradication strategy and helping to resolve issues;
- Liaise with regional and national stakeholders as necessary;
- Communicate proactive messaging regarding the management action to the public and stakeholders; and
- Maintain an overview of the eradication strategy and determine whether to escalate or stand down if necessary.

The Response Group will determine when to move from the eradication phase to the monitoring phase and determine when monitoring can stop as a result of successful eradication. To ensure the outcome of an eradication management action is fully informed, INNS populations will be monitored annually with specific timescales defined on a species-by-species basis.

Escalation and standing down eradication effort

The Response Group will, in consultation with the Operational Group, determine if there is a need to escalate eradication efforts or to stand down. Standing down may be appropriate if, for example:

- Eradication is unsuccessful or more difficult and/or expensive than initially estimated
- New populations are discovered that cannot be eradicated

If a decision is taken to stand down, the response will move to containment or slowing the spread through long-term management.

Containment or slowing the spread through long-term management

The Response Group will provide recommendations for containment, quarantining or slowing the spread, based on the biosecurity risk assessment and advice of the Operational Group.

The Response Group will determine what action to take, in consultation with stakeholders and invasive species experts as necessary and communicate this decision back to the Operational Group.

The Operational Group will:

-
- Liaise with local stakeholders and landowners to make them aware and seek support and/or apply regulatory conditions (where appropriate) to secure enhanced biosecurity;
 - Implement additional local biosecurity measures where appropriate and/or help landowners and other stakeholders to implement measures; and
 - Monitor the effectiveness of biosecurity measures as necessary.

The Response Group will:

- Communicate with regional and national stakeholders to make them aware and seek support for enhanced biosecurity if necessary;
- Develop and promote regional and national biosecurity messages as necessary;
- Communicate proactive messaging regarding the management action to the public and stakeholders;
- Consider and if relevant take forward any regulatory or statutory measures to improve biosecurity; and
- Monitor and review biosecurity measures as appropriate.

Exit strategy if response fails

If the INNS is unable to be removed from the site, it needs to be managed to avoid spread and growth to new areas. This can be done by:

- Reducing INNS movement pathways;
- Creating barriers or gaps in habitats to new areas;
- Restricting access to areas by staff and/or the public;
- Continued monitoring;
- Conducting INNS and biosecurity training; and/or
- Ensuring biosecurity measures are being implemented throughout the SAC, and if possible, surrounding water bodies and water courses.

Evaluation and review

An evaluation should be carried out after all major outbreaks, and as necessary, following exercises, to identify lessons learned and improve future responses. Evaluations should be led by the Response Group.

This RRP should be reviewed and updated where relevant on an annual basis. This includes reviewing species of concern and horizon species. If new species of concern are detected in

the area or the surrounding region (i.e. South West England), the RRP should be amended accordingly.

Annex 4 – INNS reporting guidance

Marine Invasive Non-Native Species (INNS) – What to do when you find a non-native species?

Jan Maclennan – Environmental Specialist, Marine Evidence: Systems and Advice
August 2020
Esther Hughes - Updated broken links July 2022

This note is intended to provide guidance for staff when:

- They see an INNS on site or during a survey
- A species sighting is reported to them by a member of the public or other stakeholder
- Records of INNS are shown in condition assessment or survey reports

STEP 1: Ensure the sighting is recorded

- Members of the public and *ad-hoc* sightings

Sighting information should be uploaded to the Marine Biological Association (MBA) website as they are data custodians for marine species <http://www.mba.ac.uk/recording>

If you are unsure about a particular sighting - email the sighting with date, location (lat/long in WGS84 or grid ref, preferably), name of recorder, species, notes and any photos to recording@mba.ac.uk

There is currently one **marine ALERT species**; the carpet sea squirt, [*Didemnum vexillum*](#), which should be recorded with images here https://risc.brc.ac.uk/alert.php?species=carpet_seasquirt

All records are uploaded to the NBN gateway as the central database for species data.

It is not generally advised to take samples or advise others to do so – if not preserved sufficiently they are unlikely to be any use for identification purposes and may risk further spread. Follow up samples, if required, to verify photographs or sightings will be arranged by the relevant organisation e.g., the MBA.

Remember that NE has an agreed responsibility to [coordinate a rapid response](#) if a new species is detected in England and main impact is on biodiversity (if fisheries MMO, if aquaculture CEFAS). Contact the marine INNS national lead for advice.

- Staff and contractors on surveys

Incidental marine INNS should be recorded on Marine Recorder, which is again uploaded at regular intervals to the NBN gateway. Contractors are requested to do this within their contracts and it is outlined in specifications following the [CEFAS UK Marine Strategy Species list](#) Therefore if you come across an INNS in a survey report there should be no need to record it again. This could be checked either with the contractor or in Marine Recorder reports.

STEP 2: Communication

If the species is a new record to a site or is a [high risk species](#) it may be useful to inform local user groups – particularly marina operators and/or aquaculture facilities so that they are aware of the record. This can help ensure that future sightings and raises awareness of the importance of biosecurity to reduce the risk of INNS spreading.

STEP 3: To remove or not to remove?

Internal guidance documents have been produced to provide staff with advice on key species - risks and impacts, feasibility of control and what our approach should be in terms of both management and research priorities. These documents can be found [here](#)

Generally speaking, if you come across a marine INNS on site or you see it on a survey you should not attempt to remove it:

- A number of species can be spread more if removal is attempted and then not carried out properly e.g. if the perennial base of *Sargassum muticum* (Wireweed) is not removed, evidence has shown that the plant responds by regenerating quickly, resulting in even denser growth.
- Removal may damage site features e.g. delicate substrates, such as chalk reef.
- Public perception – without awareness and explanation, it may cause issues if we are seen removing and killing organisms.
- Poor use of resources. Some INNS species have a low or negligible impact. More information on risk assessments can be found [here](#)

We have a responsibility to address INNS if they are likely to have a significant effect on the feature(s) of a designated site, however, a cost benefit analysis needs to be carried out to determine whether action is appropriate and/or necessary. This should assess the level of likely risk to the site and the potential cost of INNS removal. Removal is more likely to be successful if the INNS is a recent arrival to a site. It should be noted that the key focus for marine INNS is to improve biosecurity to prevent or limit their spread. There is currently no dedicated resource for the early eradication or long term control of marine INNS, though this may change in the future...

Please contact Jan Maclennan or your marine [INNS team lead](#) for further advice.

Annex 5 – Case studies

Mitigating the threat of invasive marine species to Fiordland: New Zealand's first pathway management plan

Summary:

This paper presents the Fiordland Marine Regional Pathway Management Plan (FMPP), with the overarching objective to prevent the introduction and spread of invasive marine species to the FMA. The plan involves three key elements to manage invasive species vectors: (1) that vessel owners and operators hold a current Clean Vessel Pass for their vessel; (2) that the vessel meets clean vessel standards including hull biofouling, gear biofouling and residual seawater requirements; and (3) that owners and operators maintain and can present records on the steps taken to meet the clean vessel standards.

Full citation:

Cunningham, S., Teirney, L., Brunton, J., McLeod, R., Bowman, R., Richards, D., Kinsey, R. and Matthews, F. (2019). Mitigating the threat of invasive marine species to Fiordland: New Zealand's first pathway management plan. *Management of Biological Invasions*, 10(4), pp.690-708.

Read the full paper here:



Cunningham et al.
2019_NZ pathway ma

Development of a template for vessel hull inspections and assessment of biosecurity risks to the Kermadec and sub-Antarctic Islands regions (New Zealand)

Summary:

For inspection and assessment of biofouling risk on vessels intending to visit the sub-Antarctic or Kermadec islands, a decision support tool was developed to determine:

- (a) which vessels will require inspection and how frequently, and
- (b) the level of biosecurity risk posed by vessels that do have biofouling on their hulls.

Templates for hull inspections were also created, which include:

-
- (a) inspection protocols for the initial presence of fouling,
 - (b) sampling protocols for hull biofouling inspections,
 - (c) laboratory protocols for specimen handling, preservation and dispatch to taxonomic specialists, and
 - (d) instructions for taxonomic specialists on the biological and biogeographical information required to allow an informed assessment of the biosecurity risk posed by the vessel to the sub-Antarctic and Kermadec islands

Full citation:

Floerl O, Wilkens S, Inglis G (2010) Development of a template for vessel hull inspections and assessment of biosecurity risks to the Kermadec and sub-Antarctic Islands regions. Prepared for the Department of Conservation. NIWA report no. CHC2010-086, 110 pp.

Read the full plan here:



Floerl et al. 2010
vessel-hull-inspection:

Best Management Practices to Mitigate Risk of Introduction and Spread of Invasive Organisms into and out of the San Francisco Bay and Delta

Summary:

This plan describes procedures to be followed for recreational boats participating in the 34th America's Cup (2013) in San Francisco Bay (USA). It covers boats arriving from outside the Golden Gate Bridge as well as boats participating whose residence is within the Golden Gate Bridge.

Read the full plan here:



Americas Cup Event
Biosecurity.pdf

The Green Blue: The Green Guide to Boat Washdown Systems

Summary:

This guide was written for marina operators, harbour authorities, boatyards, local authorities and port authorities who are considering installing washdown facilities. It set out:

- Why a washdown system might be needed
- The legal framework
- What to consider when installing a washdown system
- The types and makes of system available, together with details of how they work
- Case studies of some systems already installed in the UK

Read the full document here:



**The Green Blue - The
Green Guide to Boat**

Annex 6 – Biosecurity and INNS reference materials

British Canoeing invasive non-native species

<https://www.britishcanoeing.org.uk/go-canoeing/access-and-environment/invasive-non-native-species>

GB Boating Pathway Action Plan (GB NNSS)

<http://www.nonnativespecies.org/index.cfm?sectionid=135>

GB Non-Native Species Secretariat

<http://www.nonnativespecies.org/home/index.cfm>

GB Non-Native Species Secretariat Biosecurity and Pathways

<https://www.nonnativespecies.org/biosecurity/>

IMO biofouling management guidance

<https://wwwcdn.imo.org/localresources/en/OurWork/Environment/Documents/MEPC.1-Circ.792.pdf>

The Green Blue invasive species prevention

<https://thegreenblue.org.uk/you-your-boat/info-advice/wildlife-habitats/invasive-species-prevention/>

UK Check Clean Dry campaign for canoe and paddle users

<http://www.nonnativespecies.org/checkcleandry/biosecurity-for-canoe-and-paddle-users.cfm>

UK Check Clean Dry campaign for clubs and managers of waterbodies

<http://www.nonnativespecies.org/checkcleandry/biosecurity-for-clubs.cfm>

UK Check Clean Dry campaign guidance for events

<http://www.nonnativespecies.org/checkcleandry/biosecurity-for-events.cfm>

Annex 7 – Examples of Check, Clean, Dry signage for boating



Invasive plants and animals block waterways, harm the environment and wildlife, and can damage your boat's engine and props. They can be small and hard to spot so are easily spread on damp equipment and clothing.

Protect the environment and sport you enjoy by keeping your kit free of invasive plants and animals.



Remember to check these places



CHECK

CLEAN

DRY

Check boats, equipment and clothing after leaving the water for mud, aquatic animals or plant material. Remove anything you find and leave it at the site. Reapply anti-fouling annually.

Clean everything thoroughly as soon as you can, paying attention to ropes, bilges, trailers, and areas that are damp and hard to access. Use hot water if you can.

Dry - drain water from every part of your boat and trailer before leaving the site. Dry everything for as long as possible before using elsewhere as some invasive plants and animals can survive for two weeks in damp conditions.

Watch out for:



KELLEE SHRIMP QUAGGA MUSSEL FLOATING PENNYWORT





Find out more about invasive plants and animals and how you can help to stop the spread at:
nonnativespecies.org/checkcleandry



Invasive plants and animals harm the environment and wildlife, and block waterways making paddling difficult. They can be small and hard to spot so are easily spread on damp equipment and clothing.

Protect the environment and sport you enjoy by keeping your kit free of invasive plants and animals.



Remember to check these places



CHECK

CLEAN

DRY

Check boats, equipment and clothing after leaving the water for mud, aquatic animals or plant material. Remove anything you find and leave it at the site.

Clean everything thoroughly as soon as you can, paying attention to the inside of your boat and areas that are damp and hard to access. Use hot water if you can.

Dry - drain water from every part of your boat and dry with a sponge or towel before leaving the site. Dry everything thoroughly for as long as possible before using elsewhere as some invasive plants and animals can survive for two weeks in damp conditions.

Watch out for:



KELLEE SHRIMP QUAGGA MUSSEL FLOATING PENNYWORT





Find out more about invasive plants and animals and how you can help to stop the spread at:
nonnativespecies.org/checkcleandry

Annex 8 – Biosecurity actions by stakeholder

High priority biosecurity actions identified in [Section 7](#) and described in [Annex 1](#) are split into broad stakeholder groups/responsible parties (with year of implementation indicated) below to facilitate implementation of actions and delivery of information to relevant stakeholders. The text contained within this section should be viewed as a starting point for dissemination of information, and thus can be adjusted to meet local requirements/conditions and relevant information should be added as the Plan progresses.

Individual users

e.g.: users of any recreational watercraft in the Fal and Helford SAC

In general, every watercraft user should be undertaking Check Clean Dry (CCD) measures as part of a regular routine and before bringing watercraft into a new water body, watercourse, catchment or marina. High priority actions that individual users should be responsible for include:

- All recreational equipment that enters and leaves FHSAC should be cleaned and dried using CCD protocols (Year 1)

Marinas / Boatyards / Watercraft Clubs

e.g.: recreational marinas and boatyards, as well as sailing, paddling, boating, gigging, etc. clubs

Generally, every organisation should adopt a biosecurity code of practice and promote and encourage use of biosecurity measures to their members. If relevant, Biosecurity Champions should be appointed. Organisations should, as much as possible, provide biosecurity resources and facilities where appropriate to members and develop/support biosecurity measures for events and competitions. Watercraft providers, such as organisations that rent watercraft and associated equipment should be included here where relevant. High priority actions that marinas/boatyards/watercraft clubs should be responsible for include:

- Appoint local Biosecurity Champion (Year 1)
- Promote Check Clean Dry (CCD) throughout the organisation (Year 1)
- Stay up to date with horizon scanning reports from the GB NNSS (Year 1)
- Be aware of INNS reporting protocols and promote to members (Year 1)
- All recreational equipment that enters and leaves FHSAC should be cleaned and dried using CCD protocols (Year 1)

- Develop event/competition biosecurity procedures (Year 1)
- Develop site-specific biosecurity protocols for recreational marinas/boatyards and watercraft clubs (Year 2)
- Develop site-specific biosecurity protocols for movement of infrastructure, equipment and materials external to FHSAC (Year 2)

Local action group(s) / Regional governing body(ies)

e.g. Fal and Helford SAC Management Forum, local conservation groups, local city council

The overall role of the lead local action group or governing body is to develop the Biosecurity Plan and collaborate with regional clubs and organisations to implement the Plan, as well as review implementation and effectiveness of actions within the Plan. Appointing a Biosecurity Manager for the Fal and Helford SAC early-on will help facilitate stakeholder collaboration and implementation of biosecurity actions. High priority actions that the local action group(s)/ regional governing body(ies) should be responsible for include:

- Appoint a Biosecurity Manager and help the person in this role coordinate an INNS/biosecurity workshop as well as facilitate meetings with Biosecurity Champions (Year 1)
- Appoint local Biosecurity Champions (Year 1)
- Promote Check Clean Dry (CCD) (Year 1)
- Review existing and identify new key sites for targeted CCD messaging (Year 1)
- Install CCD signage at key sites and, where possible, at undesignated launch areas used by portable and inflatable watercraft (e.g. SUPs, windsurfers, kayaks) (Year 1)
- Disseminate CCD material to local retailers, rental shops and tourist board, as well as lesson providers, tour guides, etc (Year 1)
- Place CCD messaging on relevant websites and social media (Year 1)
- Stay up to date with horizon scanning reports from the GB NNS (Year 1)
- Ensure FHSAC stakeholders and users are aware of INNS reporting protocols (Year 1)
- Work closely with organisations such as The Green Blue and British Canoeing to develop lines of communication to their members (Year 1)
- Encourage event organisers, marinas and clubs to develop event/competition biosecurity procedures (Year 1)
- Develop site-specific biosecurity protocols for recreational marinas/boatyards and watercraft clubs (Year 2)
- Develop site-specific biosecurity protocols for movement of infrastructure, equipment and materials (Year 2)