



Biosecurity Plan

2014 – 2019

Incorporating
Invasive Non-Native Species
and
Shellfish Disease

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Executive summary

This biosecurity plan has been produced for the North-Western IFCA district by the NW-IFCA in order to take action and minimise the risk or prevent the movement or transmission of invasive non-native species and diseases. It details the current status of the area, potential threats and suggests measures to be taken to improve biosecurity and avoid any potentially damaging effects.

Abbreviations list

Timetable?

Objectives?

1. Introduction

1.1 Biosecurity

What are Invasive Non Native Species?

Non-native species (NNS) have been introduced deliberately, for cultural and economic benefit, and accidentally to the UK over many hundreds of years. With the increase in global shipping, aquaculture and recreational tourism however, there is now a greater threat of introducing non-native species to the marine environment. This can be exacerbated by climate change depending on the tolerance and adaptability of individual species. Not all NNS are invasive from the start of their establishment as some take time to establish and develop the rapid growth required for invasive behaviour. Climate change is expected to have a significant impact on biodiversity by making conditions more favourable for NNS and where NNS are already present, they may become invasive.

Non-native species become 'invasive' (INNS) when they thrive aggressively and threaten native species, ecosystems, natural features (such as mussel banks), or interfere with manmade structures and business interests such as aquaculture or fisheries. INNS are one of the greatest threats to biodiversity, being capable of rapidly colonising a wide range of habitats and excluding the native flora and fauna. This can be through competition for resources such as space, light and food or, in some cases, local species can become prey to INNS. The presence of INNS can also impact on the water environment and the condition of European protected areas, increasing the risk that these sites do not meet their favourable conservation target or the requirements of the Water Framework Directive and the EU Marine Strategy Framework Directive.

What are Shellfish Diseases?

The introduction of certain fish and shellfish diseases to places where they are not currently found can cause significant environmental and economic damage. Once a disease is present within a shellfish harvesting area it is difficult to control, therefore disease prevention is the only effective measure. There are many examples across the world where introduced diseases have had devastating effects on the shellfish farming industry, including the spread of *Bonamia* in native oysters within the UK. The introduction of a disease to an area can decimate stocks and in turn have hugely negative effects on the local fishing economy and the wildlife that relies on those fisheries.

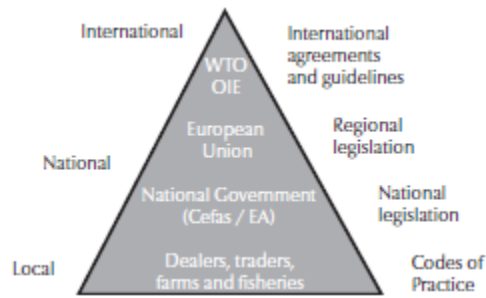
What is Biosecurity?

Biosecurity literally means 'safe life'. It involves reducing the risk of introducing or spreading invasive non-native species and other harmful organisms and diseases in the wild in both the terrestrial and marine environment. This plan describes the biosecurity issues present in the marine and coastal areas of the North-western IFCA district and presents actions for the prevention, early detection, control and mitigation of the introduction and spread of selected invasive non-native species and diseases that affect or impact the marine, estuarine and coastal environment. It will link with other previously produced biosecurity plans such as Cumbria Rivers Trust and Solway plans. Implementation of this plan will ultimately lead to conservation and enhancement of marine biodiversity in the area and a continual safe-guarding of the fisheries present to the environment and local economy.

The GB Invasive Non Native Species Framework Strategy is intended to provide a strategic framework within which the actions of government departments, their related bodies and key stakeholders can be better coordinated. The three key elements of it are:

- Prevention
- Early detection, surveillance, monitoring and rapid response
- Mitigation, control and eradication

The application of biosecurity in fisheries and aquaculture is a shared responsibility. Each individual involved plays a different but critical role in the implementation of the overall programme. This highlights the fact that, in order to be effective, biosecurity is necessary at all levels within the shellfisheries and aquaculture industry, from the control of INNS and infectious disease spread at an international level, to the development of national controls and down to operation of suitable practices at a local level. In these terms, the World Organisation for Animal Health (OIE) monitors the status of international diseases, our government (through Cefas and the Environment Agency) is responsible for controlling biosecurity within national limits, and Aquaculture Production Businesses (APBs) are responsible for biosecurity within their enterprises.



The key elements of biosecurity are; practical and appropriate legislative controls, adequate diagnostic and detection methods for infectious diseases and INNS, disinfection and pathogen eradication methods, reliable high quality sources of stock, and best management practices. At the local level, implementation of an effective biosecurity measure plan is essential in reducing the risk of disease or INNS introduction to an area. This follows the traditional principle that prevention is better than the cure, which is also a cornerstone of the GB Animal Health & Welfare Strategy published in June 2004. The Aquatic Animal Health (England and Wales) Regulations 2009 recognises the importance of effective biosecurity measures in restricting disease spread. It requires APB operators to implement a biosecurity measures plan as a condition of their authorisation.

Given the high costs for the mitigation, control and eradication of INNS and fish and shellfish diseases once they are established, this plan emphasises the need for prevention and rapid response to the introduction of INNS species and disease before they become established. The NWIFCA considers the production and implementation of this plan and associated management measures as essential components in the protection and enhancement of the marine environment which will help minimise risk, conserve biodiversity in the area, protect stocks, improve the environment for marine organisms, and in turn ensure sustainable fisheries for the local economy in the future. However, the spread of invasive non-native species and disease is not confined to within the north-west UK area, and monitoring the host of vectors for entry and spread requires coordination and communication with neighbouring local authorities and stakeholders. The ultimate key to the effectiveness of this plan is in increasing awareness in local members of the public and a partnership approach with other local relevant stakeholders, to implement and ensure the success and long term sustainability of the biosecurity actions and the marine environment. It is crucial that everyone in the area is working together for the long term sustainable future of the environment.

Local Stakeholders	
Commercial	Water companies including United Utilities, marinas, harbours, ports, boat hire companies, developers, consultancy and construction companies
Government	Department of Environment Food and Rural Affairs, Cefas, Natural England, Natural Resources Wales, Marine Scotland, Environment Agency, Cumbria County Council, Allerdale County Council, Copeland Council, Liverpool Council, Cheshire West and Chester Council, Wirral Council, Halton Council, Sefton Council, Lancashire Council.
Non-governmental Organisation	The Rivers Trust, National Trust, Salmon and Trout Association, Angling Trust, RSPB, Wildlife Trusts, Morecambe Bay Partnership, Duddon Estuary Partnership, Solway Partnership, Mersey and Dee Estuary Conservation Groups, private landowners.
Conservation and Biodiversity	<i>Any invasive species groups?</i>
Recreation	Angling clubs, canoeing/ boating clubs, RYA, water users including diving, kite-surfing, jet-skiers, sailors.

Table 1: Relevant local stakeholders in the NW district

1.2 The IFCA and Area

IFCAs replaced sea fisheries committees in April 2011, with an expanded remit to "lead, champion and manage a sustainable marine environment and inshore fisheries, by successfully securing the right balance between social, environmental and economic benefits to ensure healthy seas, sustainable fisheries and a viable industry". The duties and powers of the IFCAs are set out in sections 153 to 158 of the Marine and Coastal Access Act 2009. Each IFCA manages a district that covers part of the English coast that goes out to 6 nautical miles and its inland boundaries align with those of its constituent local authorities. IFCAs also manage sea fisheries resources in estuaries that fall within their districts. (<http://www.marinemanagement.org.uk/about/ifcas/>).

The NWIFCA district extends from the Welsh administrative boundary in the Dee estuary in the South, to the Scottish administrative boundary in the Solway Firth in the north (figure 1). The seaward extent is from the shore to the 6 nautical mile limit.

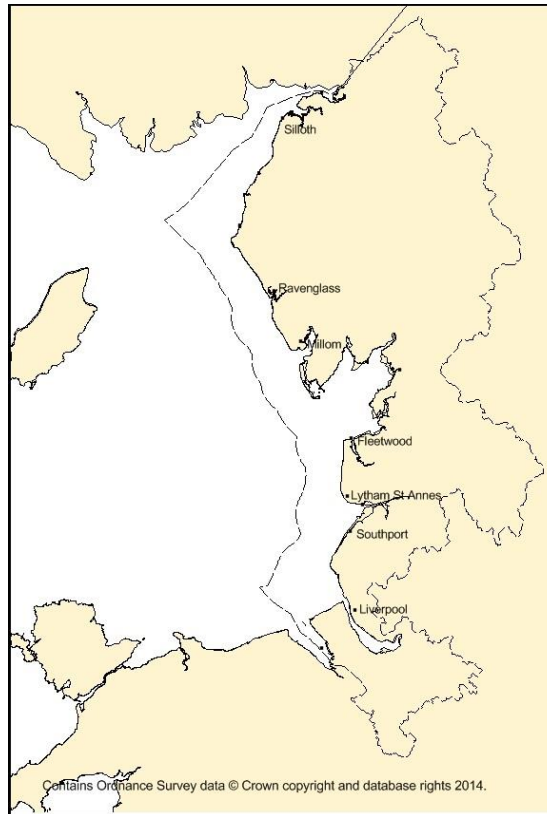


Figure 1: The NWIFCA district- the area covered under the NWIFCA Biosecurity Plan.

Detail extent of coastline, habitats, species.....

1.3 Use of marine resources in the North-Western IFCA district

Fisheries

The North-western IFCA district hosts a variety of habitats and species leading to a diverse range of fisheries including (amongst others) cockle and mussel fisheries, angling and netting for cod, whiting and plaice, trawling for turbot and sole and potting for lobsters and crabs. [Detail](#)

Aquaculture

There are oyster aquaculture areas in Cumbria and the Solway, [fish farms???](#) Mussel relaying in Walney...

1.4 Marine Protected Areas in the North-Western IFCA district

There are various European Marine Sites and Marine Conservation Zones within the NW-IFCA district. As part of the protection of these sites the biodiversity must be maintained and enhanced, fish and shellfish stocks must be protected, the water environment must be maintained and where necessary improved and the European conservation site should be maintained at favourable status. This biosecurity plan will help contribute to these sites staying in a favourable condition.

This Plan covers marine and coastal species only, including those that spend a part of their lifecycle in fresh waters. Galloway Fisheries Trust, the River Nith District Salmon Fishery Board, the Annan District Salmon Fishery Board in Dumfries and Galloway and the Freshwater Invasive Non-Native Species Initiative in Cumbria have prepared Biosecurity plans through RAFTS which cover both fresh water and brackish water species. The North West Inshore Fisheries and Conservation Association has produced this biosecurity plan for inshore fisheries. It is important that this plan overlaps the marine and fresh water plans to ensure all potential INNS at every stage of their life cycle are covered.

2. Context

2.1 Biosecurity: The nature of the problem

Biosecurity issues are of increasing economic and ecological significance. Globalisation has expanded the possibilities, extent and complexity of world trade and the growth of the tourism market has expanded the number of destinations for activity holidays and travellers. These trends have led to the increased probability of the unintentional as well as intentional introduction, establishment and spread of invasive non-native species (INNS), parasites and diseases in the UK. Climate change is also causing species to extend their natural habitat range, allowing them to live in areas they haven't previously inhabited and thus causing effects to the new habitat.

INNS

According to CBD (2006), invasive non-native species are one of the greatest threats to biodiversity, being capable of rapidly colonising a wide range of habitats and excluding the native flora and fauna. Furthermore, over the last 400 years, INNS have contributed to 40% of animal extinctions where the cause of extinction is known (Esk Rivers and Fisheries Trust Biosecurity Plan, 2009). As water is an excellent vector for the dispersal of many of these species, the sea, rivers and their banks and shorelines are amongst the most vulnerable areas to the introduction, spread and impact of these species. The ecological changes wrought by INNS can further threaten already endangered native species and reduce the natural productivity and amenity value of water-bodies. The threat from invasive species is growing at an increasing rate assisted by climate change, pollution and habitat disturbance with a correspondingly greater socio-economic, health and ecological cost.

There is also a growing recognition of the impacts of translocated species. Translocated species are native species that have been purposefully translocated outside of their natural range which can

have severe ecological impacts. An example in the marine environment is Pacific Oysters, which were deliberately introduced to the UK in the 1960s for commercial purposes and escapees have since established unintentional populations elsewhere. Once established they may out-compete and displace native species, as well as potentially smothering or excluding other marine life and altering habitats (www.nonnativespecies.org...).

Disease

The main risks of disease transmission identified for the NW IFCA district are through cockle and mussel movements (similar to Eastern IFCA):

- Records of seed bivalve shellfish movements not required under EC 853/2004 (Hygiene of food of animal origin) Annex 3 Section 7
- Harvesting can occur throughout the year –monitoring of all activities is not possible

Vectors

The main pathways, vectors or means of introduction of INNS and disease may be through:

- Intentional introduction or release
- Fouling and ballast water of marine vessels
- Escapes from fish farms, ponds, gardens
- Fish from the aquaculture industry as disease vectors
- Contaminated water sports equipment (e.g. from anglers, canoeists)
- Improper control and disposal measures
- Commercial fishing vessels in the North-west district operate in other areas of the UK and return to the NW, or fishing vessels from outside the area may come in, possibly transmitting disease and INNS through the vessel itself
- Vehicles used to launch boats or quads used on intertidal areas may be used in one area outside of the NW and then move to within it, possibly transmitting disease and INNS
- Fishing gear (including clothing and boots) used outside of the NW district can be brought in and used, possibly transmitting disease and INNS
- Seed mussel may be re-laid here from other areas in the future
- Mussel lays may be situated adjacent to, or in close proximity to naturally occurring mussel and cockle beds in the future
- Mussel and cockle bags used for transportation are exchanged between vessels both in NW area and around other fisheries and shellfish processing plants in the UK

Without some form of coordinated and systematic approach to the prevention of introduction and control of the spread of INNS and disease, it is likely that the ecological, social and economic impacts and the costs for mitigation, control and eradication of these species and diseases will continue to increase. Once established, it may not be possible to fully eradicate some invasive species and diseases, therefore prevention is crucial. This plan is a first attempt to set out and implement such an approach at a district level for selected species and diseases that significantly impact fisheries and the marine environment.

2.2 Legislation

The actions presented in this plan conform to UK and European legislation associated with the prevention, management and treatment of INNS, disease and parasites including:

- Section 14 of The Wildlife and Countryside Act (1981) makes it illegal to allow any animal which is not ordinarily resident in Great Britain, or that is listed on Schedule 9 to the Act, to escape into the wild, or to release it into the wild. It is also illegal to plant or otherwise cause to grow in the wild any plant listed on Schedule 9 of the Act.
- The Import of Live Fish (England and Wales) Act 1980 gives the relevant Minister the power to make Orders to prohibit or licence the import into, or the keeping or release in any part of England and Wales of live fish, or the live eggs of fish, of a species which is not native to England and Wales and which might harm the habitat of, compete with, displace or prey on any freshwater fish, shellfish or salmon. This Act also allows the courts upon conviction of an offence under this Act to order the forfeiture and destruction of illegally stocked specimens of certain fish or fish egg species.
- The European Aquaculture Regulation 708/2007/EC (2007) establishes a dedicated framework to assess and minimise the possible impact of non-native and locally absent species used in aquaculture on the aquatic environment.
- The Alien and Locally Absent Species in Aquaculture Regulations 2011 control the use of non-native and locally absent species on farms.
- Worldwide, the Convention on Biological Diversity states under Article 8(h) that each Contracting Party shall "prevent the introduction of, control or eradicate those non-native species which threaten ecosystems, habitats or species" and the United Nations Convention on the Law of the Sea (Article 196) requires Member States to take all measures necessary to prevent, reduce and control the intentional or accidental introduction of species (non-native or new) to a particular part of the marine environment, which may cause significant and harmful changes.

2.3 Existing planning framework

Describe local plans:

-Cumbria Freshwater Biosecurity Plan (2011-2015) prepared on behalf of the Cumbria Freshwater Invasive Non-Native Species Initiative.

- South Cumbria Rivers Trust plan and produced an educational leaflet for stakeholders (<http://www.scrt.co.uk/biosecurity/biosecurity>).

-Solway Plan

- There is a statutory requirement on Aquaculture Production Businesses to have Biosecurity Plans in relation to disease (refer to Kingfisher plan)

Other IFCA:

- Eastern IFCA have a biosecurity plan for the Wash Fishery Order area, and are willing for other IFCA's to use it as a template ([http://www.eastern-ifca.gov.uk/documents/Biosecurity %20Plan%202010.pdf](http://www.eastern-ifca.gov.uk/documents/Biosecurity%20Plan%202010.pdf)).

3. Biosecurity issues in the area

3.1 INNS threats

3.1.1 Current threats from INNS

At least three non-native species have been reported within Morecambe Bay and the Duddon Estuary area: leathery sea-squirt (*Styela clava*), Japweed (*Sargassum muticum*) and Chinese Mitten Crab (*Eriocheir sinensis*). The most recent sighting of Chinese Mitten Crab was reported to the NWIFCA on 12th April 2012 – an adult female carrying eggs was found on 30th March at Millom Pier (South Cumbria Rivers Trust via the Environment Agency). This was the fourth report from this site in 7 years. However, there is no evidence to show there is an established population in the Duddon, and it is possible that these reports are of washed in crabs.

The Chinese Mitten Crab (*Eriocheir sinensis*) can impact marine and freshwater ecosystems. It lives in freshwater but breeds in seawaters, originally from SE Asia. It is a voracious predator that will consume a range of invertebrate species and the eggs of fish leading to competition with native species and impacting invertebrate and fish populations. It will burrow into river banks, increasing erosion and river turbidity, and causing bank collapse. Burrowing will also lead to the siltation of gravel beds, including those used for fish spawning (<http://www.nonnativespecies.org/factsheet/factsheet.cfm?speciesId=1379>) Chinese Mitten Crab is reported to be established in the Dee Estuary and was a serious issue affecting the fishery for under-size mussel at West Kirby. Mitigation measures were taken in the area, including taking it into account when timing the fishery openings, and making it a condition of catches to inspect and report any findings. Officers sought advice from the TSB at the time about our obligations regarding non-natives found within a fishery, and the risks associated with their transference to other areas, as may be the case with relaying of mussels. It is not currently known to be present in the Solway, and measures must be taken to ensure it is not spread. **MK to edit and write**

3.1.2 Potential threats from INNS

Potential threats of introduction of INNS into the NW IFCA district come from those species that are not currently found here but are present in neighbouring areas, or could have access through one or more vectors to the area, or are spread further within an area.

Discuss potential threats from individual species and what threats they pose:

Slipper Limpet *Crepidula fornicata*

Originally from the USA, it was transported to the UK with oysters. It outcompetes local species, a major pest of oyster and mussel beds. Issues in Menai..... Not currently known to be present in the

Solway.

Japanese skeleton shrimp *Caprella mutica*

An aggressive skeleton shrimp originally from NE Asia which is rapidly invading and has established populations in the North Sea, West coast of Scotland and Irish Sea. It can clog equipment and nets, and outcompete native species. It is found in harbours and marinas amongst fouling growth on boat hulls, ropes and nets. Not currently known to be present in the Solway.

Pacific Oyster *Crassostrea gigas*

Originally from Asia and farmed in the UK in aquaculture. Outcompetes and smothers local species, grows on lower shore/ coastal hard substrates and can be found in harbours and marinas.

Leathery Sea Squirt *Styela clava*

A brown solitary sea squirt attached by a small flat holdfast at the base of a narrow stalk. Originally from Korea it is now widespread around the UK coast. Large populations dominate and displace native species and can be a fouling pest on ship hulls and aquaculture infrastructure. It attaches to solid surfaces in harbours and marinas as well as natural surfaces.

Carpet Sea Squirt *Didemnum vexillum*

A fast growing extensive sheet or mat forming sea squirt thought to be of Asian origin. It is fast growing, potentially smothering underwater structures and native plants or animals and grows in shallow water marinas and harbours. Not currently known to be present in the Solway. **Didemnum and mussel farms- where its been found and eradication measures taken**

(information taken from 'Invasive Non-native Species in the Solway Identification Guide- Solway Firth Partnership).

3.2 Disease threats

3.2.1 Current status of disease

At present the NWIFCA District is shellfish disease free and management measures are required to ensure this situation continues and disease is not transferred in from other areas of the UK. Shellfish resources in the District, particularly seed mussel, have become extremely important to the UK and Ireland's mariculture industry due to their disease-free status and it is essential that this situation continues.

3.2.2 Potential threats of disease

Many other areas suffer shellfish diseases such as *Marteiliosis* and *Bonamiosis* (affecting both wild and cultivated native oysters) and *Minchinia* sp. was possibly the cause of mass cockle mortalities in the Wash and Burry Inlet stocks. The greatest risk of introducing disease comes with movements of live shellfish. Presently seed mussels are fished in the district and re-laid in the Walney channel (also within the district) or the Menai Strait and Ireland (outside of the district). There are movements of

live oysters to aquaculture areas, where spat is on-grown on frames.

The prevention and mitigation measures required will be detailed later in this plan to reduce the risk of the spread of such diseases into the NWIFCA District through vectors such as fishing vessels, gear, even cockle bags.

Diseases currently present in other areas of the UK that may be brought in? What would the effects be here? Write with MK

3.3 Stakeholders

Detail relevant stakeholders

3.4 Existing INNS control activities

Detail existing controls- CCW CMC monitoring protocols

3.5 Existing disease control activities

For many years, the government has tried to prevent serious fish, shellfish and crustacean diseases being introduced into Great Britain. This has been a significant factor in ensuring Great Britain has maintained a high aquatic animal health status, remaining free from the most serious disease. In the early 1990s, national fish health rules were replaced by EU rules. These are designed to encourage trade within the single market and, at the same time, protect parts of the EU with a high aquatic animal health status – e.g. Great Britain.

The EU Council Directive 2006/88/EC sets out legislation to prevent and control certain diseases in aquatic animals. These diseases are 'notifiable', the owner or anyone else attending to the animals must immediately report suspicion of notifiable diseases to the Fish Health Inspectorate (FHI at Cefas).

Notifiable diseases are categorised as either exotic or non-exotic. Exotic diseases are those diseases not currently present in the EU. They could have a significant economic and environmental impact if they were introduced and all infected fish and shellfish must be destroyed as soon as possible.

Non-exotic diseases are those that are present in parts of the EU, under containment and subject to long-term eradication. They are controlled to prevent them spreading to unaffected areas of the EU. As well as exotic and non-exotic diseases, there are other notifiable diseases that are present in the EU and which are controlled by national programmes. The FHI also has powers to prevent the spread of new and emerging diseases, that are not listed but that have the potential to present a significant

economic or environmental threat to our aquatic animal populations.

The spread of notifiable diseases is controlled by:

- Strict rules for importing live fish, molluscs and crustacea.
- Regular monitoring of fish, shellfish and crustacean farms by the FHI to check for disease and monitoring of consignments of live shellfish and fish to outside of the UK.
- Speedy containment of outbreaks of serious disease where detected by the FHI or notified by someone else.
- Operators of fish farms, shellfish farms, crustacean farms, and fisheries taking all the necessary precautions when buying, selling, keeping and moving live aquatic animals.

Where a notifiable disease is suspected in aquatic animals (fish, molluscs or crustaceans), the FHI will undertake an investigation and samples will be taken for diagnostic testing. The FHI will also apply controls to the affected area in the form of an initial designation notice in order to minimise the risk of any further disease spreading. This initial designation notice is a temporary 'standstill' notice that is usually served to the owner or operator of the affected site or area in the form of a written notice, describing the control area and the restrictions applied to prevent any further spread of disease. Depending on the test results, the initial designation notice will be lifted (if negative), or a Confirmed Designation issued (if positive). This is a public, legal order restricting aquatic animal movements into, out of and within the affected area without prior written permission from the FHI, and remains in force until the disease is no longer present in the designated area. For more information visit <https://www.gov.uk/protecting-freshwater-fish-and-other-aquaculture-species>.

Notifiable diseases in this area

4. Biosecurity Management Strategy

Objectives/ outputs, actions, timeframes?

- Prevention- identify vectors and protect against them
- Early detection, surveillance, monitoring, rapid response
- Mitigation, control and eradication

4.1 Management of INNS and disease in the marine environment

The following steps could be employed in the North-western IFCA district in order to avoid the transmission of INNS or diseases and mitigate risk:

- Fishing anywhere within the North-west district after returning from fishing in other areas, or leaving the NW area to fish in other areas requires power-washing of vehicles and boats prior to entering the area to prevent introduction of new / additional pathogens and invasive non-native species.
- Vehicles used to launch boats or quads entering the intertidal area must be power-washed

to remove all sediment and organic matter, especially tyres, wheel arches and any surfaces that have come into contact with shellfish or intertidal sediments, for instance via loaded cockle or mussel bags, footwear or external clothing. This must take place in the vicinity of the area of fishing and prior to entering areas outside of this.

- Vessels and fishing gear used in the NW fisheries must be power-washed to remove all sediment and organic matter prior to their use outside of the district. In particular, the boats hull, bilge area, deck and fixed equipment (anchor, winch etc) should be cleaned and disinfected. Any bilge water should be pumped out whilst still in the original area. Particular emphasis should be placed on any areas that have come into contact with shellfish or intertidal sediments, for instance via loaded cockle or mussel bags, footwear, external clothing and the bilges of boats. Steam cleaning and disinfecting could be employed to ensure no organisms or disease remain.
- All participants in the fisheries, whether fishermen, merchants or regulatory staff, must thoroughly wash all external clothing and clean footwear and all equipment / implements used in the fishery and allow time to dry. This includes cockle and mussel bags to be re-used in another fishery. All sediment and organic matter must be removed.
- Effluent arising from the washing and grading of still live cockles and mussels must not be discharged untreated into estuarine and marine environments. Any arising should be boiled prior to discharge, as chemicals or irradiation might not be robust enough methods.
- In addition to fishing vessels, any survey vessels or recreational angling boats entering or leaving the NW area from/ to an area outside the NW district should be cleaned and disinfected thoroughly, including survey equipment and gear (grabs, sieves etc) and crew PPE (drysuits, boots, waterproofs etc).

In order to mitigate risk in shellfish areas particularly, the following procedures should be followed (similar to Eastern IFCA):

- Shellfish farmers are required to give prior notice to the Authority if they intend to deposit shellfish in the NW area from areas outside of the Authority's district (could we have a system of authorisation where we only allow it once checked, or do Cefas do this?)
- Under the notification (above) the shellfish farmers are required to provide details of the amount of seed to be brought in and its origin
- All shellfish farmers should be notified of the risks of spreading disease
- Shellfish farmers are required to report unusual levels of mortality to the Authority
- Shellfish farmers are encouraged to purchase standards bags for transportation (as used in Eastern IFCA district- use here?)

The practicality of implementing these suggestions is questionable and would require industry and stakeholders to support the process. Raising awareness would be crucial in improving understanding of the possible impacts and measures that could be taken to reduce them.

How practical is this? What could realistic specific requirements be?

Contingency plan

In the event that diseased shellfish were positively identified by shellfish farmers or NWIFCA Officers within the district, the following actions would or could be taken if deemed appropriate:

- 1) Brief NWIFCA Officers of the presence of a disease, its effects, and methods of reducing the spread of the disease
- 2) Inform all NWIFCA district shellfish fishermen (in writing) of the presence of a disease, outlining the steps that they can take to minimise the risk of spreading the disease
- 3) Inform Cefas (the Fish Health Inspectorate), Defra and MMO of the presence of diseased shellfish within the district
- 4) Place an information notice on the NWIFCA website detailing the disease, actions to take to minimise the spread of the disease and details of the disease
- 5) Identify the source of the diseased shellfish through surveys or sampling of shellfish stocks
- 6) Determine the extent of the spread of the disease through surveys or sampling of shellfish stocks
- 7) Introduce a temporary closure of any open shellfish fisheries to prevent the movement of shellfish fishing vessels from spreading the disease
- 8) Revoke any outstanding authorisations or licences to fish shellfish to prevent the movement of diseased/contaminated shellfish or shellfish fishing vessels in/out or within the NWIFCA District.

4.2 Management of disease in aquaculture sites

APBs produce their own plan- describe local ones here

Owners of shellfish farms can take a number of steps to ensure they are doing everything possible to prevent disease being introduced to their farm.

Steps that can be taken to protect the health of shellfish include:

- stocking only certified, disease-free shellfish from a reputable supplier
- training staff in hygienic shellfish handling and disease prevention methods
- keeping health and treatment records

Good shellfish husbandry practices include:

- using a pathogen-free water supply, such as a borehole or a spring, or ultraviolet/ozone treated water
- supplying water to each holding facility independently, avoiding water flowing from one tank to another
- preventing shellfish from being under undue stress from over-stocking or poor water quality
- carrying out regular disease checks and introducing vaccination programmes and disease treatments where necessary
- removing dead shellfish on a daily basis and disposing of them correctly
- managing pests to prevent the spread of disease from vermin or predators

When moving shellfish, there are various measures that can be taken to prevent disease, such as:

- exercising caution when transferring shellfish between different farms
- properly cleaning and disinfecting lorries and tanks used to transport shellfish before loading and after each delivery of shellfish

- making only single-site deliveries by lorry, wherever possible

There are many ways to increase biosecurity in the day-to-day running of a farm, including:

- keeping production, processing and recreational areas independent and separate from one another
- isolating each unit on the farm and using separate equipment in each unit
- containing water, packaging and organic waste that comes from processing sites and not allowing them to be taken back to production areas
- providing disinfection facilities between production areas
- requiring visitors to wear protective clothing
- disinfecting hands, boots and equipment when moving between different holding facilities
- limiting access to production areas, for example by locating a car park some distance away
- providing disinfectant facilities and signs requiring visitors to disinfect their boots and equipment when they enter and leave the farm

Overall, outbreaks could be avoided by:

- the prompt identification of signs of disease
- reducing stress with proper stocking numbers and correctly managed habitats
- improving water quality
- introducing biosecurity measures

4.3 Public awareness

There is limited understanding by the general public and other organisations of the threats posed by invasive non-native species and disease. Improved awareness and understanding of the issues surrounding biosecurity is key to wider support for the relevant policies and programmes, and for engaging the public in decision-making. The public could play several roles, including modifying behaviours to help reduce the likelihood of introducing invasive non-native species or disease, or the risk of facilitating their spread, and assisting with their detection and monitoring. **Refer to appendices.**

4.4 Actions

- Launch and promotion of Biosecurity plan through local press and website links and sharing with stakeholders
- Raise awareness of campaign 'check clean dry' through local press and website links
- Disseminate 'check clean dry' leaflets, posters, press/ website releases, wallet cards
- Promotion of plan and 'check clean dry' to canoeists, boaters, anglers and any other water users at water entry points and parking points, relevant retail outlets, open days
- Work with environmental groups, schools, organisations and partners to enhance awareness
- Promote the use of disinfection/ wash down stations
- Liaise with and work alongside neighbouring counties

- Identify reporting network and liaise with rapid response teams in national organisations such as the Environment Agency and Cefas

5. Monitoring

Industry monitoring plan

The recording of the actions taken against the measures put in place in the plan are listed below:

- Shellfish farmers regularly inspect their lays - incidents of mortality and meat yields are reported to the Authority and recorded
- Shellfish intended for relaying could be randomly inspected by NWIFCA Officers. Officers record inspections and these are held in the office. Any issues are reported to FHI
- Shellfish entering and leaving the NWIFCA District is monitored –report to FHI
- Records of seed mussel removed from within the district under NWIFCA authorisation is recorded

6. References

Direct information sources have been referenced where relevant but the general information contained in the plan was brought together from a wide variety of sources detailed below.

Insert Harvard referencing throughout

Argyll & The Islands Fisheries Biosecurity Management Plan (Version 1- 2009)

Biosecurity guidance for SEARS staff (SEARS natural Scotland Scottish government)

Cumbria Freshwater Biosecurity Plan (2011-2015)

Eastern IFCA Biosecurity Plan (2010)

Esk Rivers and Fisheries Biosecurity Plan (2009)

Kingfisher Biosecurity Plan 2012 (Benson and Cefas)

Practical Steps on Dee Estuary Shellfish Bio Security (EA, November 2012)

The Invasive Non-Native Species Framework Strategy for Great Britain (Defra, 2008)

Invasive Non-native Species in the Solway Identification Guide- Solway Firth Partnership

Websites

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

<http://www.cbd.int/>

<https://www.gov.uk/protecting-freshwater-fish-and-other-aquaculture-species>

<http://www.nonnativespecies.org/factsheet/downloadFactsheet.cfm?speciesId=1013>

(<http://www.nonnativespecies.org/factsheet/factsheet.cfm?speciesId=1379>)
<http://www.marinemanagement.org.uk/about/ifcas/>

DRAFT

7. Appendices

Appendix 1 - Invasive Non-Native Species recording schemes and further information sources

Recording schemes

Wireweed

www.snh.org.uk/wireweed or Email wireweed@snh.gov.uk

Carpet Sea Squirt

www.snh.org.uk/carpetseasquirt, email carpetseasquirt@snh.gov.uk or call 01463 725000

Chinese Mitten Crab

<http://secure.fera.defra.gov.uk/nonnativespecies/index.cfm?pageid=254>

For all other marine INNS

Email GB NNSS at alert_nonnative@ceh.ac.uk

Contact MarLIN at http://www.marlin.ac.uk/marine_alien/marine_alien.htm

<http://www.nonnativespecies.org/index.cfm?sectionid=81>

Appendix 2 - Disease recording schemes and further information sources

Cefas Fish Health Inspectorate: <http://www.cefaz.defra.gov.uk/our-services/aquaculture/fish-health-inspectorate.aspx>

Appendix 3 – GB NNS ‘Check, Clean, Dry’ Campaign



STOP THE SPREAD

STOP THE SPREAD
INVASIVE AQUATIC SPECIES
CHECK-CLEAN-DRY

Are you unknowingly spreading invasive species on your water sports equipment and clothing?

Invasive species can affect fish and other wildlife, restrict navigation, clog up propellers and be costly to manage. You can help protect the water sports you love by following three simple steps when you leave the water.

CHECK Check your equipment and clothing for live organisms - particularly in areas that are damp or hard to inspect.

CLEAN Clean and wash all equipment, footwear and clothing thoroughly.
If you do come across any organisms, leave them at the water body where you found them.

DRY Dry all equipment and clothing - some species can live for many days in moist conditions.
Make sure you don't transfer water elsewhere.

For more information go to www.direct.gov.uk and search for Check Clean Dry

