BAKKAFROST

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The Finest Salmon from SCOTLAND

Invasive Non-Native Species Biosecurity Plan

Quarry Point, Loch Fyne

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1 Biosecurity Plan

This Biosecurity Plan has been created to minimise the risk of Bakkafrost Scotland Ltd (BFS) marine operations within Loch Fyne contributing to the spread and establishment of the invasive non-native species (INNS), the carpet sea squirt (*Didemnum vexillum*). Relevant activities associated with marine finfish culture have been identified and proposed biosecurity actions, in addition to standard best practice procedures, have been outlined to allow for a risk assessment of the potential for the activity to result in the spread of the carpet sea squirt. It is important to note that whilst this Biosecurity Plan focusses primarily on the INNS carpet sea squirt the best practice procedures and INNS specific biosecurity measures are also likely to reduce the potential for the spread of other marine INNS.

Table 1.1 provides full details on the activities considered within this Biosecurity Plan and the outcomes of the risk assessment for each activity based on best practice and specific INNS biosecurity measures.

Table 1.1: Risk assessment of finfish aquaculture operational activities that may lead to the spread or establishment of *D. vexillum* populations.

Activity	Risk Assessment Before Biosecurity Actions	Range of Biosecurity Actions to be Implemented	Justification	Risk Level before Biosecurity Actions	Risk Level after Biosecurity Actions
Nets and Pens – In-situ	Whilst the pens present a growing surface, the current design of nets ensures minimal fouling by marine organisms. BFS has a net washing programme which ensures that all nets are washed on a ~10 day basis, which helps to ensure that biofouling does not accumulate. In line with BFS current best practice net washing procedures, all net washing equipment is cleaned and disinfected at the end of each net washing day and between marine farms. Net washing equipment may also	Net washing teams are provided with identification information and asked to look for carpet sea squirt. If found, the suspected sighting must be photographed and reported to the Site Manager. Net washing will be stopped at that area, but the team may continue to clean the rest of the net. BFS will report any suspected sightings to Marine Directorate Marine@gov.scot (subject line - Marine Invasive Non-Native Species Report).	The frequent cleaning of the nets means carpet sea squirt colonies are unlikely to become established. The smooth external surface of the pen infrastructure helps to reduce the level of biofouling during each production cycle. The end of cycle cleaning regime ensures identification of carpet sea squirt and appropriate actions, if needed. Whilst also ensuring that at the start of each new production cycle, biofouling levels are negligible.	6	4

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	be disinfected between pens. In addition, at the end of each production cycle, each pen is lifted from the water via the crane on the workboat and washed and disinfected. All other equipment, including the feed spreader and support, and camera system are taken to the shorebase to be washed and disinfected and stored ready for re-deployment prior to the start of the next production cycle.				
Nets / Pens – Movements	Carpet sea squirt present on the nets may be put under stress and / or disturbed by movement, potentially causing larvae release	All nets are to be checked for the present of carpet sea squirt before movement, and any suspected sightings reported to the Marine Directorate (Marine@gov.scot) (subject line - Marine Invasive Non-Native	Once the fish have been removed, net cleaning may stop for a period of time and carpet sea squirt may get a further opportunity to	5	4

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	and / or fragmentation of colonies. At the end of each production cycle all primary containment netting at the farm will be removed from the pens and loaded directly from the workboat into cleaned and disinfected open top lorries that transfer the nets to the manufacturer's maintenance facility. Whilst at this facility all nets are serviced, washed, repaired (if needed) and disinfected. The facility captures all debris and wastewater and disposes of it appropriately, under licence.	Species Report). Nets should not be moved until advice has been received from Marine Directorate.	colonise. By removing the nets from the water, this reduces the opportunity for carpet sea squirt to colonise.		

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	The nets are then returned to the shorebase via road transport. The cleaned and disinfected nets are wrapped and secured in UV resistant bulk bags. On return the freshly serviced nets are completely dry. There is no interchange of nets between farms. The same nets are returned to the same farm post treatment. Each net has a unique ID to ensure traceability. In relation to pen movements, at the end of each production cycle, each pen is lifted from the water via the crane on the workboat and washed and disinfected. This				

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	procedure would also be undertaken prior to any pen movement within or out of Loch Fyne.				
Fin fish pens flotation rings / buoyancy collar / Froya rings	Whilst the rings present a growing surface, they are checked and cleaned at the end of each production cycle. Quarry Point does not use a froya ring system, but rather weighted lines instead. Each pen has 20 weight lines, with a 40 kg weight attached to ensure sufficient tension across the netting. The connecting rope and weight block may become fouled during the production cycle.	Carpet sea squirt identification information is provided to the washing teams. Any suspected sightings result in washing operations being halted and a report sent to the Marine Directorate via Marine@gov.scot (subject line - Marine Invasive Non-Native Species Report). No further washing action is taken until advice has been received from Marine Directorate. Net weight system are surveyed for carpet sea squirt colonies when periodic infrastructure checks are done. Any suspected sightings are reported to the Marine Directorate Marine@gov.scot (subject line - Marine Invasive Non-Native Species Report).	A programme of surveillance checks means that the risk of carpet sea squirt colonising these structures is reduced.	6	4

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	As a minimum, these weight blocks are washed, disinfected and re-roped between each production cycle. However, during net washing, every seven to ten days, the weight blocks are inspected and, if needed, will be washed and disinfected.				
Mooring Lines and Anchors	Moorings and chains are known to be a suitable habitat for carpet sea squirt. As standard, all grid system components are inspected and cleaned at the end of each production cycle.	Moorings and chains are to be surveyed at the end of each production cycle and divers will check for carpet sea squirt. If suspected colonies are found pictures are to be taken and submitted to the Marine Directorate by email to Marine@gov.scot (subject line - Marine Invasive Non-Native Species Report).	It is not possible to drop the moorings or remove them, however, the end of production cycle surveys provide an opportunity for early warning of any issues.	7	6
RIBs / Workboats	The boats are in constant use and therefore have a low fouling burden.	Identification materials for carpet sea squirt are provided to site staff and the monthly wash down is used as an	Lack of hull fouling lowers risk, however good practice procedures around	4	3

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	The polarcirkel vessels are hauled out and washed and disinfected at least once a month. All surfaces above the water are disinfected between farm movements.	opportunity to check for carpet sea squirt. Any suspected sightings are reported to the Marine Directorate Marine@gov.scot (subject line - Marine Invasive Non-Native Species Report). Wash down takes place well away from the water's edge (e.g. MHWS plus 150 m) and onto a permeable surface, if possible.	biosecurity are followed at site.		
Landing Craft Workboats	The boats are in constant use and therefore have a low fouling burden. The landing craft style workboats are hauled out and undergo a complete service and cleaning process, inclusive of hull antifouling, once every two to three years. All surfaces above the water are disinfected between farm movements.	If hull fouling begins to build up e.g. if the vessel is not used for a period of time, a dive survey will be carried out before movement out of Loch Fyne. If carpet sea squirt is suspected, a report is made to the Marine Directorate by email to Marine@gov.scot (subject line - Marine Invasive Non-Native Species Report) and the boat is not moved until advice has been received. Vessels should only be washed down out of the water and well	Landing craft, and other vessels which are too large to be hauled out within Loch Fyne, risk spreading carpet sea squirt to other areas should they become colonised.	7	5

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	However, due to the slower hull speeds and movement out of Loch Fyne for maintenance they present a higher risk than the RIBs.	away from the water's edge (e.g. MHWS plus 150 m).			
Wellboats	Wellboats service farms across the west coast, harvesting and treating fish throughout the production cycle. As standard, all wellboats are painted with anti-foulant paint. Wellboat equipment is also cleaned and disinfected between farms within Loch Fyne, and between Farm Management Areas (FMAs).	Discharge protocol and cleaning regime on each boat will be checked to ensure that it is effective against carpet sea squirt. Antifouling regime must be maintained, and any damaged areas repaired quickly. Skippers will be alerted to the biosecurity risk in Loch Fyne. The wells, decks and structures are regularly cleaned and disinfected. The wells are closed between pick up in Loch Fyne and discharge at the relevant harvest station. Check moorings and pier head for any signs of carpet sea squirt and report any suspected sightings to the Marine	UV filters, ionisation and ozonation are not known to be effective against carpet sea squirt.	5	4

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		Directorate by email to Marine@gov.scot (subject line - Marine Invasive Non-Native Species Report).			
Fish Movements	BFS prioritises the use of freshwater for fish movements between farms. Freshwater used for fish movements is created through reverse osmosis (RO), which removes all organic matter. However, on occasion, fish movements between farms during which they are held in seawater may be undertaken. In these circumstances the water is not filtered prior to use. However, it is anticipated that the best practice procedures and INNS	Monitor for signs of carpet sea squirt in association with equipment used to generate freshwater and within the wells and equipment used to move fish. Report any suspected sightings to Marine Directorate Marine@gov.scot (subject line - Marine Invasive Non-Native Species Report). Review the INNS status of the donor and receiving farms to ensure that carpet sea squirt has not been detected onsite prior to the fish movement. If carpet sea squirt has been identified the fish movement will be postponed until the actions outlined under the relevant "Activity" within this Biosecurity Plan have been completed, including notifying the MD and seeking advice.	Despite the use of RO freshwater for transporting fish, there is the potential for colonisation of equipment by carpet sea squirt.	3	2

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	specific biosecurity measures outlined throughout this Biosecurity Plan will help mitigate the potential for INNS spread through seawater fish movements.				