



Monitoring Protocol No. 3

for

Offshore Finfish Farms- Sea Lice Monitoring and Control

(subject to revision from time to time)

11 May, 2000

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1. Monitoring Regime Required

All finfish farms are obliged to monitor for sealice on an ongoing basis and to take remedial action. This involves the inspection and sampling of each year class of fish at all fish farm sites fourteen times per annum, twice per month during March, April and May and monthly for the remainder of the year except December-January. Only one inspection is carried out during this period.

2. Purpose of Monitoring

The four purposes of the National Sea Lice-Monitoring Plan are:

- To provide an objective measurement of infestation levels on farms
- To investigate the nature of the infestations
- To provide management information to drive implementation of the control and management strategies
- To facilitate further development and refinement of the control and management strategies.

3. Monitoring and Control Strategy

The sea lice monitoring and control strategy has five principal components:

- Separation of generations
- Annual following of sites
- Early harvest of two sea-winter fish
- Targeted treatment regimes, including synchronous treatments
- Agreed husbandry practices

Together, these components work to reduce the development of infestations and to ensure the most effective treatment of developing infestations. They minimise lice levels whilst controlling reliance on, and reducing use of, veterinary medicines. The separation of generations and annual following prevent the vertical transmission of infestations from one generation to the next, thus retarding the development of infestations. The early harvest of two sea winter fish removes a potential reservoir of lice infestation and the agreed practices and targeted treatments enhance the efficacy

of treatment regimes. One important aspect of targeted treatments is the carrying out of autumn / winter treatments to reduce lice burdens to as close to zero as practicable on all fish, which are to be over-wintered. This is fundamental to achieving zero / near zero egg bearing lice in spring. The agreed husbandry practices cover a range of related fish health, quality and environmental issues in addition to those specifically related to lice control.

4. Trigger Levels for Treatment

The setting of appropriate treatment triggers is an integral part of implementing a targeted treatment regime. Treatment triggers during the spring period are set close to zero in the range of from **0.3 to 0.5** egg bearing females per fish and are also informed by the numbers of mobile lice on the fish. Where numbers of mobile lice are high, treatments are triggered even in the absence of egg bearing females. Outside of the critical spring period, a level of **2.0** egg bearing lice acts as a trigger for treatments. This is only relaxed where fish are under harvest and with the agreement with the Department of Marine and Natural Resources or its agent.

Over the period since the initiation of SBM, treatment triggers have been progressively reduced from a starting point of 2.0 per fish during the spring period to the current levels which are the optimal sustainable at present. These trigger levels will be kept under review in the light of advances in lice control strategies. Triggered treatments are underpinned by follow up inspections and, where the Department or its agent considers it to be necessary, by sanctions. Sanctions employed include, peer review under the SBM process, conditional fish movement orders and accelerated harvests.

5. Synchronous Sea Lice Treatment and Control in Bays

All fish farms operating in a particular bay will be required to undertake appropriate synchronous sea lice treatment and control strategies through the Single Bay Management/CLAMS process. The Department of Marine and Natural Resources or its agent reserves the right to devise appropriate strategies for synchronous action by fish farms in any bay.

6. Sampling Strategy

The Irish sampling strategy methodology is designed to:

- Provide a robust and reliable objective measure of lice numbers on farmed fish
- Operate within a framework which is cost effective and capable of being carried out over the range of installations which are in use in offshore farming
- Take account of weather conditions, fish health issues, environmental effects and animal welfare considerations.

There are four key components to this sampling strategy: the sampling method, the sampling frequency, the sample size and reporting mechanisms.

6.2 Sampling Method

The full methodology is laid out in [Appendix 1](#). It is essentially a non-destructive sampling method. Fish are removed at random from the cages and anaesthetised, to reduce stress and risk of injury. All adult and sub-adult mobile lice are then removed from the fish and retained for examination before the fish are allowed to recover and returned to the cage. Lice which become detached from the fish in the anaesthetic are collected and included in the lice count for the sample to ensure that lice numbers are not under reported. As it involves the handling of live animals and as there are animal welfare issues involved, the sampling process is subject to peer review and a licensing process. Strict limits are imposed on the number of fish which may be sampled and changes to these limits must be justified.

6.3 Frequency Sampling

The sampling frequency will fourteen inspections per year, plus any follow-up inspections required where instructions to reduce lice levels have been issued or such other frequency as may be determined by the Department or its agent.

6.4 Sample Size

The target number of fish sampled is sixty per inspection, comprising two samples of thirty fish. One sample is taken from a standard cage, inspected at each inspection, and one from a cage selected at random. Where there are difficulties in obtaining the full sample size, every effort will be made to obtain a minimum of ten fish in each sample. (This sample size is statistically robust and also takes into consideration the practicalities and animal welfare issues involved in carrying out the programme. The standard cage allows for the monitoring of within cage trends and the random cage acts as a spot check).

6.5 Reporting of Lice Monitoring

Monthly reports are compiled for each site of mean numbers of egg bearing lice and total mobile lice of each species. These reports are circulated to the farms, the Department of the Marine and Natural Resources, the Marine Institute, the Central Fisheries Board, the Regional Fisheries Boards, Save Our Sea Trout, the Western Gamefishing Association and the Irish Salmon Growers' Association. This ensures that detailed information on the levels pertaining on farms is available to all interested parties. These reports are designed to give a clear, unambiguous measure of the infestation level at each site and to act as a basis for management decisions.

APPENDIX 1.

Sampling Methodology

This protocol is followed in the carrying out of sea lice inspections on all salmon and rainbow trout farms.

Disinfection

Due to the real risk of transmitting disease from one site to the next the Disinfection Protocol should be rigidly adhered to.

It is especially important to ensure that your hands and protective clothing are kept clean and disinfected by washing with the Iodophor disinfectant provided. Disinfection of dirty clothing or equipment is not possible as the dirt reduces the effectiveness of the disinfectants.

Cages to be sampled

The standard cage (*i.e.* the selected cage which is sampled at each sampling session).

A random cage: To be selected by the inspector on the day. This cage may be nominated at the start of the inspection or on the morning of the inspection so that it can be left un-fed to facilitate the catching of fish. The inspector may, at his/her discretion, consult with the Fisheries Board's observer on the selection of the random cage.

Fish to be sampled

A sample of thirty fish is to be taken from a standard and random cage for each year class of fish on site.

Where there are only two cages of fish on site only one cage need be sampled.

Where fish are on starve for immediate harvest they need not be sampled.

Methods of Sampling

Fish may be caught by any of the following methods:

1. With a hand net (with or without the use of feed to attract fish).
2. By seining the cage.
3. By the use of a brailer.
4. By the use of a box net.
5. By pulling the net and removing fish using a net or brailer.
6. By use of a draw net.
7. By sampling fish being removed for harvesting.

Limitations to sampling

Sampling should not be attempted where weather conditions are such as to put the safety of personnel or the health of the fish at significant risk.

Where there is difficulty in obtaining a full sample of thirty fish every effort should be made to obtain a minimum of ten fish.

Where it is not possible to obtain a representative sample the sampling of damaged or moribund fish only should be avoided, as this will not give a representative measure of lice infestation levels within the cage and will skew the results for the site as a whole.

Difficulties in obtaining samples should be noted.

Registration of lice from fish sampled

All mobile stages of lice should be removed from the fish and placed in a bottle containing alcohol.

Attached stages may be removed, at the discretion of the inspector, for research purposes.

All lice remaining on the sampling tray or in the bin of anaesthetic should be collected and placed in a bottle containing alcohol and labelled "Bin".

All sample bottles including the "Bin" bottle are to be placed in a plastic bag together with a waterproof label containing the following minimum information:

1. Date
2. Year Class of Fish
3. Site sampled
4. Number of fish sampled
5. Cage number

Inspection Forms

An inspection form should be completed for each inspection. The farm representative, the RFB observer and the inspector should sign the form.

Water Samples

A 30ml water sample should be taken at each inspection and preserved by the addition of 3-4 drops of Lugols Iodine.

This sample should be forwarded to the Phytoplankton section at the FRC at the earliest opportunity.

Disinfection Protocol for Sea Lice Inspections

1. All protective clothing, footwear, containers and equipment to be dipped/washed in iodophor (0.5%) on return to shore.
2. All observer from RFB's to be advised to disinfect before entering and on leaving Dip and/or wash all footwear and protective clothing in iodophor (0.5%) prior to leaving the shore base for the sea site.
3. All bins, containers and equipment to be dipped/washed in iodophor (0.5%) prior to leaving the shore base for the sea site.
4. All instruments and work surfaces to be washed in Virkon (2%) prior to use.
5. All observers from RFB's to be advised to disinfect before entering and on leaving site, as per above protocol.