



Certification Mark

**welfare standards for
farmed atlantic
salmon**

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It is the intention of Freedom Food Ltd to establish sister, franchise organizations in other countries working to these welfare standards and therefore, in time, establish a common and consistent message for consumers around the world.

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INTRODUCTION

The RSPCA Welfare Standards for Atlantic salmon cover the two distinct phases of farming (freshwater and marine farming).

They take account of legislation, official codes of practice, scientific research, veterinary advice, recommendations of FAWC and the practical experience of the aquaculture industry. However, difficulties arise in specifying details in relation to several issues (for example, acceptable maximum stocking densities) due to the lack of scientific research examining fish welfare under different commercial systems. It is important to recognise therefore that the following requirements are made pending the relevant scientific research. To this end, the farmer is expected to maintain the highest possible welfare standards at all times and demonstrate commitment to continual improvement as advances in knowledge and technology allow.

Scientific evidence from behavioural, physiological and anatomical studies shows that it is highly likely that fish feel pain. Fish also have a similar stress response system to mammals. It is essential that staff managing farmed fish are aware of the importance of welfare as an integral part of production.

A written Veterinary Health Plan (VHP) must be drawn up, which is regularly updated, in order to ensure the highest possible standards of welfare. Each farm must have a designated fish veterinary surgeon available to advise on fish health matters and able to attend at short notice in case of disease. An Environmental Impact Management Plan must also be drawn up to closely monitor and minimise any effects of the operation on the wider environment.

Not all salmon farming companies are integrated and, therefore, there may be difficulties for seawater phase producers in obtaining smolts reared according to the RSPCA Welfare Standards. For this reason there is a derogation that smolts may be derived from sources where they have not been reared according to these standards for a period of two years after joining the scheme.

The 'Five Freedoms' as defined by FAWC are relevant to fish welfare and should be considered in relation to husbandry practice.

- ▶ **Freedom from thirst, hunger and malnutrition**
 - for example, by access to an appropriate high quality diet and an environment in which fluid and electrolyte balance can be maintained.

- ▶ **Freedom from discomfort**
 - for example, by maintaining the water at an appropriate temperature and chemical composition and providing well designed enclosures or tanks, with shading if necessary.

- ▶ **Freedom from pain, injury of disease**
 - for example, by avoiding situations which are likely to cause pain, injury or disease, by rapid diagnosis and treatment of disease and humane killing.

- ▶ **Freedom to express normal behaviour**
 - for example, by providing the appropriate space and environment for the species.

- ▶ **Freedom from fear and distress**
 - for example, by minimising stressful situations such as handling or predator attack as far as possible, by making gradual changes to husbandry and water quality, and by humane slaughter.

MANAGEMENT AND STOCKMANSHIP

The attitudes and competence of staff are a vital factor determining whether high standards of fish welfare can be achieved. It is the responsibility of management to ensure there is a welfare ethos among staff. It is essential that stock-keepers are suitably trained and experienced, and are able to recognise indicators of poor welfare at an early stage. They must have a good working knowledge of the husbandry system used and the animals under their care.

Managers and stock-keepers

- M 1.1** Managers must ensure that all stock-keepers have access to a copy of the RSPCA Welfare Standards for Farmed Atlantic Salmon at each site, are familiar with it and understand its content.
- M 1.2** Managers must ensure that all staff working with stock are trained and competent in aspects of fish husbandry and welfare, relevant to their duties.
- M 1.3** Written records of staff training must be maintained and be available to the Freedom Food Assessor and RSPCA Farm Livestock Officer.
- M 1.4** An adequate number of experienced staff must be available to deal sufficiently quickly with any problems that arise.
- M 1.5** Managers must develop and implement written plans and procedures to prevent and cope with emergencies such as fire, leaks, problems with transportation, etc.
- M 1.6** Stock-keepers must be able to demonstrate their proficiency in procedures that have the potential to cause pain or distress including netting or other handling, crowding and euthanasia.
- M 1.7** Stock-keepers must be able to recognise indicators of poor welfare in fish including abnormal behaviour, physical injury and symptoms of disease.

Staff with responsibility for fish must be able to satisfy auditors, on questioning, of their knowledge of fish husbandry and welfare, their competence in a range of practical circumstances, and their ability to identify and rectify problems.

- M 1.8** Managers must ensure that the Veterinary Health Plan (VHP) is drawn up, implemented and regularly updated.

Management and stockmanship

Inspection and records

- M 2.1** Fish must be inspected at least once a day, unless exceptional weather conditions make this impossible.
- It is the responsibility of the person caring for the fish to ensure that suitably regular and thorough inspections are being made.
- M 2.2** Full records must be maintained of inspections, including:
- a) The time and date of inspection
 - b) The name(s) and signature(s) of the person(s) conducting the inspection for each group of animals.
 - c) Details of any problems identified and any action taken.
- M 2.3** If problems are identified during an inspection, the stock-keeper must act promptly to discover the cause and take remedial action, in consultation with a veterinary surgeon when necessary.
- M 2.4** High standards of biosecurity must be maintained to avoid the spread of diseases between different populations of fish, as specified in a written policy.
- M 2.5** Removal of dead fish must occur frequently, and at least twice a week, except when adverse weather conditions mean this would involve danger to personnel.
- M 2.6** The cause of death of all fish dying must be classified using the categories developed in the VHP.
- Veterinary advice should be sought if the cause of death is not clear according to the criteria identified in the VHP.
- M 2.7** Relevant staff must demonstrate competence in interpretation of mortality records.
- M 2.8** When removing dead fish, appropriate precautions must be taken to prevent the spread of disease.
- M 2.9** Dead fish must be disposed of through outlets or methods approved by the appropriate government body.
- M 2.10** Inspections and other routine practices must be conducted in such a manner that fish are not stressed in avoidable ways.

Management and stockmanship

- M 2.11** All equipment used on a daily basis, including automatic and emergency back up equipment, must be inspected daily to check for defects, and a record made of the inspection.
- M 2.12** Any defects must be immediately rectified or, if this is not possible, alternative measures must be taken to safeguard fish welfare as necessary.
- M 2.13** Water levels in fresh water tanks must be monitored with automatic equipment, fitted to alarms.
- M 2.14** Oxygen levels in fresh water tanks must be automatically monitored by an alarmed system as necessary to ensure fish welfare in all parts of the system, and adequate facilities must be in place to allow appropriate action if oxygen levels fall.
- M 2.15** Stock-keepers must be able to recognise visual indicators of poor water and behavioural indicators of poor water quality.
- M 2.16** The following accurate and up-to-date records must be maintained and made available to the Freedom Food Assessors and RSPCA Farm Livestock Officers:
- Details of origin of stock, allowing traceability
 - Age of fish
 - Pest control / Predator control
 - Crowding and grading records
 - Calibration records
 - Numbers and weights of fish in each tank/enclosure
 - Estimated current stocking densities in each tank / enclosure
 - Where appropriate, target age and weight at which fish will be transferred to sea or slaughtered (in order to predict final stocking densities)
 - Details of fish and equipment inspections
 - Daily and cumulative mortality (reasons stated)
 - Daily and cumulative culling (reasons stated)
 - Feed consumption
 - Details of any health problems
 - Details of any medication/vaccinations applied
 - Records of smoltification monitoring
 - SEPA correspondence
 - Records of water quality tests as appropriate to the system (see E4.1, page 10)
 - Records of net inspections and maintenance
 - Training records
 - Full details of fish movements

Management and stockmanship

- M 2.17** Within two years of joining the Freedom Food scheme, producers must ensure that fish have spent their entire lives on Freedom Food accredited farms; for the first two years it is permissible for smolts to be purchased from non-Freedom Food sources.

HUSBANDRY PRACTICES

High standards of husbandry must be maintained at all times with the welfare of stock being considered as a priority. Animals must be handled in a considerate and skilled manner. Caring and responsible planning and management must be employed to safeguard welfare during essential procedures.

Handling

- HP 1.1** Removal from water and handling must only be carried out when absolutely necessary.
- HP 1.2** If fish must be handled, adequate support must be given to the body; live fish must never be held by the tail only or thrown on solid objects.
- HP 1.3** Time out of water must be kept to the minimum possible and must never exceed 15 seconds for a live fish (unless anaesthetised).
- HP 1.4** Where pumps and pipes are used these must not injure or unnecessarily stress fish.
- HP 1.5** When hand nets are used they must:
- a) be of a suitable size, and designed to avoid the occurrence of physical damage
 - b) be kept clean and be in good repair.
- HP 1.6** A different net must be used for handling fish from different populations to reduce the risk of disease transmission.

Crowding and grading

Crowding is stressful to fish and should be kept to the absolute minimum necessary. Where appropriate, crowding a small population with a clean seine net is generally preferable to crowding a whole enclosure/tank. Careful monitoring of the fish is essential during crowding. It is essential that the persons responsible are able to recognise if a welfare problem is arising and have the experience to take action as appropriate. Limited grading is likely to be advantageous to welfare by preventing aggression and reducing feeding competition. However, the grading process will cause stress to fish and should be kept to the minimum necessary. Prevention of injury and stress to fish should be the main consideration when deciding the method of grading employed.

- HP 2.1** Crowding must be kept to the minimum necessary and no enclosure/

Husbandry practices

tank must be crowded more than twice in any week or three times in any month, unless this is required by the designated veterinary surgeon for fish welfare reasons.

- HP 2.2** The period for which fish are crowded on any one occasion must not exceed 2 hours.
- HP 2.3** Enclosure nets must be kept clean in order to avoid water quality problems during crowding.
- HP 2.4** If fish show signs of undue stress during crowding, immediate action must be taken as appropriate, for example by increasing the volume available to fish or by addition of supplementary oxygen.
- HP 2.5** Oxygen level must be monitored throughout crowding and should not fall below 5.5mg/l. If it does, corrective action must be taken.
- HP 2.6** Grading equipment must be designed so as not to cause damage to fish and must be regularly maintained.

Transfer to sea

Transfer to sea is a stressful stage for fish and all possible steps must be taken to ensure the optimum transfer time is identified. This will involve close monitoring of stock condition and behaviour as part of a programme detailed in the Veterinary Health Plan.

- HP 3.1** Prior to transfer to sea, the degree of smoltification must be monitored for several weeks before the expected transfer so that the least stressful time for transfer can be identified.
- HP 3.2** The smoltification process must be closely monitored as detailed in the VHP.
- HP 3.3** Saltwater survival testing in hypertonic saline solution is prohibited.

Pests and predators

- HP 4.1** Humane precautions must be taken to protect fish from predators and prevent pest infestations on the farm.

Genetic selection and modification

Compared to most other farm animals, salmon have been farmed intensively for a short time and less alteration has been achieved by genetic selection. The RSPCA is opposed to any breeding procedures which adversely affect welfare.

Husbandry practices

- HP 5.1** Genetic modification techniques are prohibited.
- HP 5.2** Fish must not have been produced by breeding techniques that result in health or welfare problems for any of the animals involved.

Husbandry practices



EQUIPMENT AND ENVIRONMENTAL QUALITY

The equipment in which fish are kept must be designed with full consideration of their welfare needs, and must protect them from physical or physiological discomfort, distress and injury, and allow them to perform natural behaviours. The stock-keeper is responsible for providing the life support system for farmed fish and must maintain the highest environmental quality at all times.

Enclosure/tank construction, situation and maintenance

- E 1.1** The siting of tanks and enclosures must be carefully considered with regard to fish welfare, personnel safety and minimising adverse affects upon the environment as detailed in the Environmental Impact Management Plan.

Tanks

- E 2.1** Tanks must be designed with fish welfare as a major consideration.
- E 2.2** Inlets and outlets must be designed to prevent fish escape, and ingress of wild stock.
- E 2.3** Tanks must be provided with lids or covered in net to prevent fish escaping.
- E 2.4** Flow rate must be suitable for fish to be able to hold their position.

Enclosures

- E 3.1** The location of enclosures must allow an adequate flux of clean water but should be protected from exposure to extreme conditions that may damage enclosures.
- E 3.2** The current must not be too strong for fish to be able to hold their position.
- E 3.3** There must be easy access from the shore so that adequate inspections can be made.
- E 3.4** The site must be at least twice the net depth at low water.
- E 3.5** The minimum depth of the enclosure must be 5m (apart from fry in freshwater loch enclosures).
- E 3.6** Netting used in the construction of enclosures must present a smooth, non-abrasive surface to limit injuries to the snout, fins and scales of fish.

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- E 3.7** Biofouling must not be allowed to build up on enclosure nets.
- E 3.8** Enclosure nets must be regularly checked for holes and fouling and maintained accordingly.
- E 3.9** Nets must be adequately tensioned and weighted to prevent distortion.

Water quality

In contrast to most other forms of livestock farming, the life support system for the fish, in the form of a continuous flow of well oxygenated water, must be provided by the farmer. All staff involved in caring for fish must recognise the importance of this responsibility and the highest water quality must be maintained at all times.

- E 4.1** Water must be maintained at a suitable composition for the fish's stage of development in terms of levels of dissolved gases, temperature, pH and sediment levels. Specifically:

a) Tanks

Supply water must be of a high quality. If necessary it must be filtered or treated with ultra violet radiation. Table 1 below shows acceptable levels for water quality parameters.

b) Enclosures

Deterioration of water quality due to fouled nets or overfeeding must be avoided. Producers must aim to maintain oxygen and temperature levels within the range shown in Table 1 below.

Table 1 - acceptable limits for water quality parameters at different stages of production

<u>Parameter</u>	<u>Eggs</u>	<u>Alevins and fry</u>	<u>Parr/Smolts</u>	<u>Seawater</u>
Oxygen	>6mg/l	>6mg/l	>6mg/l	>6mg
Free Ammonia	-	<0.002mg/l	<0.002mg/l	-
CO ₂	-	<6mg/l	<6mg/l	-
Temperature (max)	10°C	14°C	16°C	22°C
pH	6 – 8	6 - 8	6 - 8	-

- E 4.2** Water quality composition must be monitored sufficiently frequently, if necessary daily, depending on the system, time of year and stage of stock (as specified in the VHP).

- E 4.3** If water quality departs from the acceptable range, steps must be taken immediately to identify the source of the problems and rectify the situation as quickly as possible.

Stocking density

Stocking densities are of central importance for fish welfare. High stocking densities cause poor water quality, increased disease transmission and physical damage. The RSPCA supports the view of the Farm Animal Welfare Council (FAWC) that the stocking density must allow fish to show most normal behaviour with minimal pain, stress and fear. However, good scientific information concerning the effects of stocking density on welfare is lacking and many factors influence this relationship. The RSPCA is aware that many fresh water producers are currently rearing fish at levels considerably higher than 30kg/m³. It is therefore planned to introduce these welfare standards to the freshwater phase of production by 1 January 2004. In the intervening period the RSPCA will gather further information and, in particular, compare the condition of fish reared under different commercial stocking densities. Prior to 1 January 2004, producers must agree, with their designated veterinary surgeon, a suitable maximum stocking density for each freshwater system. The onus is on the producer to demonstrate, with reference to detailed health records, that suitable stocking densities are being employed. The stocking densities in Table 2 below will be reviewed in five years when adequate experience of the standards has been gained, or sooner should scientific research or practical application suggest that this is necessary.

- E 5.1** Stocking densities must be maintained below those specified in Table 2 below, immediately, with the exception that for freshwater production this standard must be introduced by 1 January 2004. Meanwhile, the producer must agree a suitable maximum stocking density for each freshwater production tank system in conjunction with a designated veterinary surgeon. Stocking densities must be continuously monitored with reference to health, fish behaviour and water quality to ensure that welfare is not being compromised. In exceptional circumstances, under the advice of the designated veterinary surgeon and following notification to the RSPCA Farm Animals Department, these maximum stocking densities may be exceeded to allow withdrawal periods to be met prior to slaughter if treatment with a veterinary medicine product was necessary for welfare reasons.

Table 2 - showing maximum allowable stocking densities

	<u>Maximum stocking density</u>
Hatchery tray	15000/m ²
First feeding tank	10000/m ²
Freshwater production tank	30kg/m ³
Freshwater enclosure	12kg/m ³
Freshwater enclosure site max	10kg/m ³
Sea water enclosure	17kg/m ³
Sea water enclosure site max	15kg/m ³

- E 5.2** The maximum stocking density must be calculated on the weight of fish/m³ of water volume. For enclosures deeper than 15m, a depth of 15m must be used in calculation of volume for the purpose of planning

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stocking levels.

Total enclosure depth must not be used when calculating stocking rates for enclosures deeper than 15m because water currents and tidal flow may distort nets at depth, reducing the volume available to fish. Also, with deep enclosures it is more difficult to ensure fish near the bottom of the enclosure receive adequate food. This policy will be reviewed as more is known about the relationships between enclosure design, stocking density and fish behaviour.

Lighting

E 6.1

Lighting must be maintained at a level suitable for each stage of development (as detailed in the Veterinary Health Plan). Fish must be protected from distress caused by high levels of UV light or sudden changes in lighting levels. Specifically:

- a) Hatchery
Developing eggs and young fry must be maintained in dim light or darkness to reduce mortality.
- b) Rearing tanks
Lights must have dimmers fitted which are used at lights on and off. Rearing tanks must be protected from strong sunlight. At least 50% of the tank surface must be covered. Tank covers must be removed or lights provided before transfer to sea in order to habituate fish to brighter light.
- c) Enclosures
Enclosures must be of adequate depth to prevent damage from ultraviolet radiation.

The RSPCA is considering the welfare implications of using artificial lighting patterns (photoperiods) to alter fish development and growth. Currently there appear to be potential welfare advantages in some cases. For example, providing artificial lighting in sea enclosures can reduce early maturing. However, little research has been conducted examining the effects of photoperiod on welfare and the Society will therefore continue to gather information in this area and amend these standards as appropriate. In the meantime, the optimum lighting patterns for fish welfare on each site, as determined by practical experience and veterinary advice, should be implemented.

Equipment and environmental quality

Environmental enrichment

The requirements of salmon for environmental stimulation are not understood. Environmental enrichment is not therefore necessary at present. This policy will be reviewed in five years.

Equipment and environmental quality

FEEDING

Fish must have freedom from hunger and malnutrition by ready access to a high quality diet that is appropriate to their species, and allows full health to be maintained. Food must be distributed in such a way that fish can eat without undue competition.

- F 1.1** Feeding must be such that the quality, quantity and frequency are optimal for the fish's stage of development.

Food content

- F 2.1** All feed must be manufactured from constituents that are free from active parasites and known fish pathogens and contamination.
- F 2.2** All feeds used must be produced strictly to the standards laid down by all the relevant UK and EU legislation.
- F 2.3** No feedstuffs containing growth regulators or hormones are permitted.
- F 2.4** The use of veterinary medicinal products in food is prohibited except for essential therapeutic use (a disease outbreak or where welfare will otherwise be compromised as advised by a veterinary surgeon).

Feeding methods

- F 3.1** Food must be dispensed and distributed in such a way that fish can eat without undue competition.
- F 3.2** Observation of fish must take place during feeding.
- F 3.3** The person feeding must check that fish on the periphery of the tank or enclosure receive adequate amounts of food.
- F 3.4** Overfeeding must be avoided.

Feedback systems to prevent overfeeding are encouraged in seawater enclosures.

Fasting

Although salmon may not feed for long periods in the wild, depriving a farmed fish that has previously been fed regularly will usually have an adverse effect on welfare. Therefore, salmon must not be deprived of food, except for a period before slaughter for food hygiene reasons, or where the overall effect of food deprivation is an improvement in fish health. It is unacceptable to deprive salmon of food for perceived flesh quality reasons.

- F 4.1** Fasting time must be kept to the minimum possible and must not exceed 72 hours (unless directed by the designated veterinary surgeon for fish welfare reasons).

HEALTH

Fish must be protected from pain, injury and disease, through good management and husbandry practice, and by rapid detection and treatment of disease. All producers must develop a health plan in consultation with a designated veterinary surgeon. Disease is a major cause of poor welfare and mortality in farmed salmon. Further, wild fish may be susceptible to disease agents carried by farmed fish. Therefore it is essential to take all reasonable steps to minimise the likelihood of disease outbreaks in the farmed stock.

H 1.1 A Veterinary Health Plan (VHP) must be drawn up and updated regularly, and at least annually, following a visit from the designated veterinary surgeon.

H 1.2 The VHP must include future husbandry plans, risk assessment, monitoring and control of fish health and diseases.

The Veterinary Health Plan (VHP) forms a vitally important part of the RSPCA Welfare Standards with regard to maintaining the health and welfare of livestock on farm. The written VHP is agreed between a named veterinary surgeon and the producer and is then frequently updated following regular visits from the veterinary surgeon to the farm. Guidance notes for producers and veterinary surgeons, as to how the VHP should be formulated to ensure high standards of health are maintained, will be available in due course.

Should you or your veterinary surgeon require assistance with the formulation of your VHP, please talk to the Freedom Food Assessor or RSPCA Farm Livestock Officer.

H 1.3 All relevant legislation regarding notifiable diseases must be understood and adhered to.

H 1.4 There must be no recurring physical damage occurring on fish attributable to features of their environment, husbandry procedures or unrecognised disease challenge.

Recurring physical damage is that seen on a number of fish, with sufficient similarity to suggest a common cause, for example poor tank or enclosure design, methods of handling or a husbandry procedure. Different types of physical damage may also suggest a common cause.

H 1.5 Fish condition must be continuously monitored for signs of disease or problems with the environment or handling practices.

Physical health problems, such as symptoms of disease or recurrent physical injury, which should have been noticed on previous inspections and dealt with, will be taken as evidence of negligence of duties by the stock-keepers and therefore non-compliance.

- H 1.6** If a problem is identified, the VHP must be revised to include a programme of remedial action.
- H 1.7** Any fish suffering from overt physical damage, or disease symptoms, must be segregated and treated without delay or, where necessary, be humanely killed, if this is possible without distressing other stock.
- H 1.8** If necessary, a veterinary surgeon must be consulted to determine the most appropriate action (however, this must not delay euthanasia of a severely distressed fish).
- H 1.9** If mortality level is above 0.5% a week (excluding pre-swim up fry) the designated vet must be notified and an investigation made as appropriate.

Casualty slaughter

- H 2.1** Any seriously sick or injured fish, or fish found not to be recovering, must be humanely killed without delay.
- H 2.2** Overdose of a suitable anaesthetic (as specified in the Veterinary Health Plan) using immersion in a solution of the agent, must be used for culling fish during the freshwater stage, including pre-swim up fry. For fish during the seawater stage, a non-recoverable percussive blow to the head, using a priest or mechanical percussive device, of sufficient force to render the fish immediately insensible, can be used for emergency killing instead of anaesthetic overdose.
- H 2.3** Under no circumstances must seriously injured or sick fish be left to die in air.
- H 2.4** Culling of sick or injured fish must only be conducted by suitably trained and competent people.

Medicinal products

- H 3.1** High quality management and husbandry standards must be employed in order to minimise the need for therapeutants.

- H 3.2** Treatment must only be given when the welfare of the stock may otherwise be threatened (as advised by a veterinary surgeon).
- H 3.3** Prophylactic use of veterinary medicinal products, where no known disease problems exist, is prohibited (except vaccines as agreed with the veterinary surgeon).
- H 3.4** In cases where medication is required for welfare reasons, treatments must be used in accordance with current legislation and the designated veterinary surgeon's recommendations.
- H 3.5** Any veterinary medicines used must be licensed in the UK for use in Atlantic salmon or authorised under an Animal Test Certificate or an Animal Test Exemption Certificate issue.

The RSPCA recognises that the welfare of farmed fish may be adversely affected by the limited availability of vaccines or therapeutic medicines approved for the treatment of fish. In exceptional circumstances, on the advice of the designated veterinary surgeon, specific products licensed in the UK for use in other food producing species can be administered (following the requirements of the cascade principle) as detailed in the Veterinary Health Plan, providing that a valid discharge consent is held from the appropriate Government body. All proven medications should be made available to aid disease treatment as advised by the designated veterinary surgeon.

- H 3.6** The medication must only be administered to fish by suitably trained staff and strictly in accordance with the instructions prescribed.
- H 3.7** The potential for therapeutic agents to affect the environment, both locally and more widely, must be given full consideration, and all relevant legislation and Codes of Practice must be adhered to.
- H 3.8** A valid discharge consent must be held, prior to commencement of treatment, for all medicines administered and veterinary medicine withdrawal periods must be strictly adhered to.
- H 3.9** Veterinary products must be properly labelled and stored appropriately.
- H 3.10** All farms must have a written pharmaceutical waste policy.

Sea lice

The problems involved with availability of effective treatments for sea lice infestations are recognised. The welfare and environmental impact of treatments must be given full consideration. The RSPCA will monitor the situation, and review new technology and research as it develops.

- H 4.1** Farms must take all reasonable steps to maintain a minimal gravid lice population.
- H 4.2** Stock-keepers must be able to recognise symptoms of lice infestation.
- H 4.3** Separation of year classes and fallowing of sites must be practised to help control sea lice populations as detailed in the Environmental Impact Management Plan.
- H 4.4** The producer must, through documented evidence, demonstrate that any co-operative management schemes between operations in the same loch/area aimed at reducing sea lice populations have been entered.
- H 4.5** Sea lice prevention and treatment programmes must be drawn-up with the designated veterinary surgeon and fully detailed in the Veterinary Health Plan.
- H 4.6** Biological control using cleaner fish (wrasse) is prohibited.

Vaccination

- H 5.1** The VHP must incorporate a vaccination programme to protect fish from diseases for which an effective vaccine is available and which may represent a risk to the fish.
- If effective oral vaccines are developed these should be the preferred method of vaccination.
- H 5.2** Records must be made of all vaccination procedures including:
- a) the date of vaccination
 - b) identification of the groups of fish vaccinated
 - c) the vaccine used (including batch numbers)
 - d) details of dosage and the names of personnel involved.
- H 5.3** Vaccination must only be carried out by named competent persons.
- H 5.4** Vaccines must be used in accordance with the manufacturer's recommendations.
- H 5.5** All vaccines must be stored in an appropriate container and must not be used after their expiry date.

- H 5.6** Equipment used in vaccination must be maintained in a hygienic manner.
- H 5.7** All vaccination procedures must be conducted with care and with the minimum possible distress caused to the fish.

Mutilations

- H 6.1** Mutilations involving the removal of sensitive tissue are prohibited.
- H 6.2** Marking methods that cause distress or injury to fish must not be employed.

TRANSPORT

Transport systems must be designed and operated in such a way that ensures fish are not caused unnecessary distress or discomfort. The transport and handling of fish must be kept to an absolute minimum. Persons involved in transport must be thoroughly trained and competent to carry out the required tasks.

- T 1.1** Any catching and handling of fish prior to transport must be kept to a minimum and conducted in such a way as to prevent any unnecessary distress to the fish.
- T 1.2** A written policy on catching and handling must be in place.
- T 1.3** Fish in transit must be inspected regularly (and at least once every four and a half hours).
- T 1.4** Delays in transport must be reduced to the absolute minimum possible.
- T 1.5** Supplementary oxygen or aeration must be available during all transportation, which is sufficient to last at least 50% longer than the anticipated journey length.
- T 1.6** Oxygen levels must be continuously monitored and maintained above 6mg/l.
- T 1.7** When transported by truck, the driver must have the facility to adjust levels of oxygen from the cab.
- T 1.8** Excessive changes in water temperature and pH during transportation must be avoided.
- T 1.9** Care must be taken to ensure dead fish are not loaded for transport.
- T 1.10** Sick or seriously injured fish must not be transported.
- T 1.11** Any fish which die during transportation must be separated from live fish as soon as possible after arrival.
- T 1.12** Records must be kept of any deaths or injuries that occur during transportation.
- T 1.13** Transport containers must be cleaned and disinfected after each consignment of fish is transported to prevent spread of disease.
- T 1.14** All persons involved in transportation of fish must be familiar with, and transport fish in accordance with, all relevant legislation.

SLAUGHTER

Fish must be killed humanely without any unnecessary distress or discomfort. Pre-slaughter crowding and handling must be kept to an absolute minimum. Personnel involved in slaughter must be thoroughly trained and competent to carry out the required tasks.

- S 1.1** Prior to slaughter, fish must only be fasted for the absolute minimum period required to meet food hygiene requirements, and must not exceed 72 hours, unless fasting is beneficial for welfare.
- S 1.2** Crowding and handling prior to slaughter must be kept to an absolute minimum.
- S 1.3** Transport to a different location for slaughter is prohibited unless previously discussed and agreed with the RSPCA Farm Animals Department.
- S 1.4** Farmed fish must be humanely killed.
- S 1.5** The method of killing used must rapidly, and without pain and distress, render the fish insensible, until death supervenes.

An efficiently applied percussive blow is the only permitted killing method at present. This method is highly effective when applied properly. Humane mechanical percussive devices are now available commercially and these must be used in preference to a manual percussive blow for slaughter (except emergency killing). The particular mechanical device must be approved by RSPCA Farm Animals Department prior to use. It is important to monitor killing to ensure that the strength and location of the blow is such that the fish does not regain consciousness before death. The RSPCA will monitor the situation and if humane alternatives to percussive stunning become available, as research and technology develops, these will also be considered. However, no slaughter method, other than a percussive blow, may be used unless previously agreed with the RSPCA Farm Animals Department.

- S 1.6** Fish must be killed by a non-recoverable percussive blow using a mechanical device. One blow must be delivered to the top of the head just behind the eyes, of sufficient force to cause immediate loss of consciousness that lasts until death. A priest must also be available throughout the slaughter process to allow a manual percussive blow to be administered in an emergency.
- S 1.7** Bleeding must follow within 10 seconds.

Slaughter

- S 1.8** All staff involved with the slaughter process must have received full training to ensure they have the knowledge and skill to perform their task humanely and efficiently.
- S 1.9** There must be a named person responsible for fish welfare throughout the slaughter process who has attended a recognised training course in humane slaughter of fish.
- S 1.10** Killing efficiency must be continuously monitored to ensure that every fish is effectively stunned and does not regain consciousness prior to death.

Methods for monitoring fish slaughtering operations are outlined in the Veterinary Health Plan guidelines.

- S 1.11** All blood and mucus from slaughter operations must be contained and disposed of ashore.

WIDER ENVIRONMENTAL IMPACT

The farm must be operated with respect for the natural environment and employees must recognise their duty to care for the wider environment. All reasonable steps must be taken to minimise the ecological impact of the farming system. Producers must draw up an Environmental Impact Management Plan within two years.

- ENV 1.1** An Environmental Impact Plan must be drawn up and complied with within two years.
- ENV 1.2** All relevant legislation, official guidelines and Codes of Practice must be strictly adhered to and understood.

These standards are primarily aimed at the welfare of farmed fish. However, the potential for aquaculture to have wider environmental effects must also be considered. In addition to fully complying with all relevant legislation and recommendations, the farmer must demonstrably and positively review environmental protection policies as developments in research and technology allow. An Environmental Impact Management Plan must be drawn up according to the guidelines provided. It is the responsibility of the management to ensure that all employees recognise their duty to care for the natural environment and monitor possible impacts on it.

Predators

- ENV 2.1** Farmed fish must be protected from predation by denying predators access to tanks and enclosures.
- ENV 2.2** Enclosures must be adequately tensioned and of a suitable net size to reduce the risk of predators becoming entangled.

The RSPCA recognises that predator activity can cause welfare problems on fish farms.

- ENV 2.3** The farmer must take all reasonable non-lethal, humane methods of control to prevent predation of stocks as detailed in the Environmental Impact Management Plan; the primary means of achieving this must be physical exclusion.

Wider environmental impact

Escapees

- ENV 3.1** Every reasonable step must be taken to prevent the escape of farmed fish.
- ENV 3.2** Enclosures must be designed and sited in such a way that they are not likely to be damaged by adverse weather conditions.
- ENV 3.3** Screens must be fitted at the inlet and outlet of the site.

Farmed fish which escape may have an adverse ecological impact and are also likely to experience welfare problems. It is therefore essential that all possible reasonable measures are being taken to prevent farmed fish escaping.

Extraneous species

- ENV 4.1** Extraneous species must be returned to the wild, or humanely culled, as advised by the designated veterinary surgeon.

Fallowing

- ENV 5.1** Enclosures must be fallowed as detailed in the Environmental Impact Management Plan to allow recovery of the benthos and help reduce sea lice populations.

Aesthetic

- ENV 6.1** Sites must be kept tidy and all waste must be disposed of by an approved method; burning of plastics is prohibited.

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farmed atlantic salmon



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