RSPCA

JULY 2025

RSPCA welfare standards

Farmed rainbow trout

Contents

Introduction

The *RSPCA welfare standards for farmed rainbow trout* (*Oncorhynchus mykiss*) cover all life stages for the production of rainbow trout across both the freshwater and marine environments.

They take account of UK legislation, official codes of practice, scientific research, veterinary advice, recommendations of the Animal Welfare Committee (AWC) 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 higher 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 and Welfare Plan (VHWP) must be drawn up, which is regularly updated, in order to ensure higher standards of welfare. It is advisable for each farm to 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.

The standards are based upon the 'Five Freedoms' as defined by AWC. Although these 'freedoms' define ideal states, they provide a comprehensive framework for the assessment of animal welfare on-farm, in transit and at the place of slaughter/killing, as well as representing an important element of farm assurance requirements. These 'Five Freedoms' are relevant to fish welfare and should be considered in relation to husbandry practice. These 'Freedoms' are shown in bold below, and the wording has been adapted with supporting text to reflect how they relate to fish welfare.

- **Freedom from hunger and thirst** by ready access to fresh water and a diet to maintain full health and vigour.
- **Freedom from discomfort** by providing an appropriate environment including shelter and a comfortable resting area.
- **Freedom from pain, injury or disease** by prevention or rapid diagnosis and treatment.
- **Freedom to express normal behaviour** by providing sufficient space, proper facilities and company of the animal's own kind.
- **Freedom from fear and distress** by ensuring conditions and care which avoid mental suffering.

These freedoms will be better provided for if those who have care of livestock practise/provide:

- **caring and responsible planning and management**
- **skilled, knowledgeable and conscientious stockmanship**
- **appropriate environmental design**
- **considerate handling and transport**
- **humane slaughter.**

Guide to the use of the RSPCA welfare standards

- The numbered requirements are the standards, all of which must be complied with.
- Boxed sections (indicated by ⓘ) give additional information, including: providing the reasoning behind a standard, expand on a standard, state how a standard can/will be assessed and/or highlight areas where the standards will be reviewed in the future.
- It is expected that all relevant UK legislation regarding farm animal husbandry and welfare on-farm, during transport, and at the abattoir, will be fully implemented in addition to the RSPCA welfare standards.
- Some standards have been labelled as shown below, which have the following meaning:

  LEGAL refers to a standard that is based on an England legal requirement.

  REVISED refers to a standard or information box that was in the previous edition of these standards but has been amended.

  NEW refers to a completely new standard or information box, which must now be adhered to.

RSPCA Farm Animals Department

The RSPCA's Farm Animals Department develops the RSPCA welfare standards for farm animals. These detailed documents are intended to represent 'best practice' in the care and welfare of farm animals.

The RSPCA works to continually develop and improve the welfare standards using a range of information, including the latest scientific research and practical farming experience. We regularly consult with other animal welfare and agricultural scientists, veterinary surgeons, and farming industry representatives. This helps to ensure that the RSPCA welfare standards continue to be at the forefront of farm animal care and welfare, and are also achievable on commercial farms.

We always value constructive feedback and ideas for improvement from those who are implementing the RSPCA welfare standards. Comments/feedback can be discussed with RSPCA Farm Animals Department scientific staff, by contacting them on the below details:

Address: Farm Animals Department
RSPCA
4th Floor Parkside
Chart Way
Horsham
West Sussex RH12 1GY

Email: farm-animals@rspca.org.uk

The RSPCA does not approve equipment, but sets standards to ensure any equipment permitted for use is managed appropriately to safeguard the welfare of animals.

Freshwater

For the purposes of these standards the following definitions apply:

- **Eyed eggs**
  Eggs that have reached the stage of development where the eyes are clearly visible as black spots. This is approximately 140 to 150 degree days post fertilisation.
- **Alevins**
  Very young fry which have not fully absorbed their yolk sacs, and are not ready for first feeding.
- **Fry**
  Fish weighing up to 5g.
- **Fingerlings**
  5–49g.
- **Ongrowers**
  50g to harvest size.

General

There are currently areas of ongoing research designed to enhance our knowledge of rainbow trout welfare at the juvenile stage of their lifecycle. If any new scientific information emanating from this research indicates ways of improving aspects of trout husbandry, the RSPCA will seek to incorporate this information into subsequent versions of the standards. Some of this research may challenge aspects of current established practice.

FW 1.1 Eggs and juvenile fish must be produced either in-house or obtained from another farm approved by the certification scheme assessing against these standards as being compliant with the *RSPCA Welfare Standards for farmed rainbow trout.*

FW 1.2 All eggs must be tested for specified pathogens as required under the relevant European and national legislation.

FW 1.2.1 Imported eggs must come from sources in line with national legislative requirements.

FW 1.3 Eggs and juvenile fish supplied by third parties must be accompanied by full health documentation appropriate to the source.

FW 1.4 Supply water must:

a) be of high quality (see standard FW 1.6)

b) if necessary, be filtered, aerated, degassed, or treated with ultra violet radiation.

FW 1.5 The maximum stocking densities in standards FW 1.5.1 and FW 1.5.2 must not be exceeded.

FW 1.5.1 Conventional hatchery trays/baskets must stock eggs at a maximum of 3 layers deep.

If you are an RSPCA Assured member and would like to use a recirculation system, please contact RSPCA Assured to request a derogation for this purpose. If granted, rigorous record keeping will be required whilst the derogation is in place. The information collected will be reviewed to inform a decision regarding the future use of recirculation systems under the standards.

FW 1.5.2 For first feeding and on-growing tanks, raceways and ponds, the maximum stocking density must not exceed 60kg/m^3.

FW 1.6 The following water quality parameters must be complied with when water quality is recycled:

Parameter	Ova	Alevins	Fry/Fingerlings	Ongrowers
Oxygen (O_2) mg/l	7.0	7.0	7.0	7.0
Oxygen (O_2) saturation % in exit water	>90.0	>90.0	>70.0	>70.0
Free ammonia (NH3) mg/l	N/A	<0.025	<0.025	<0.025
Carbon dioxide (CO_2) mg/l	<10.0	<10.0	<10.0	<10.0
Max temp °C	10.0	10.0	12.0	16.0
Min temp °C	1.0	1.0	1.0	1.0
pH in inlet water	7.0 to 8.0	7.0 to 8.0	7.0 to 8.0	7.0 to 8.0
Non-spate suspended solids (turbidity) mg/l	<25.0	<25.0	<25.0	<25.0
Nitrite mg/l	<0.2	<0.2	<0.2	<0.2
Nitrate mg/l	N/A	N/A	<50.0	<50.0

FW 1.6.1 For flow through systems, dissolved oxygen must be maintained at the levels shown in standard FW 1.6.

FW 1.6.2 In flow through systems the producer must be able to demonstrate how potentially harmful water constituents are monitored at levels to ensure that they are not harmful to the fish.

Super-saturated water can compromise fish welfare. Levels of oxygen and other relevant constituents should be regularly monitored in order to avoid this. As knowledge of the water quality needs of the fish improves, it may be necessary to change and/or add to the constituents in standard FW 1.6. For example, the inclusion of parameters associated with the mineral content of the water may be appropriate as more information becomes available about their effect on the welfare of the fish.

In order to ensure due diligence with regard to the welfare of the fish, it is expected that all water quality parameters with the potential to affect welfare will be measured.

FW 1.7 Flow rates/velocities must be such that:

a) fish can comfortably maintain their position in the water column

b) waste is effectively removed.

FW 1.7.1 Water quality composition must be monitored at least daily.

FW 1.7.2 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.

FW 1.8 The Emergency Action Plan must contain provisions to account for potentially catastrophic events such as pollution incidents, leaf blockages, equipment failure or spates that may adversely affect water quality.

FW 1.9 Records must be kept of equipment servicing in line with manufacturer's instructions.

FW 1.10 The hatching environment must minimise movement of the eggs.

FW 1.11 Flow and/or oxygen alarms must be fitted to all water intakes to the farm/hatchery.

FW 1.12 All alarms must be checked weekly and records kept of the checks.

FW 1.13 There must be a screen to prevent the blocking of inlet valves.

FW 1.13.1 Inlet valves must be regularly checked (at least daily) and recorded in the daily checklist.

FW 1.14 All eggs must be disinfected prior to entry into the hatchery, and used egg boxes disposed of in a biosecure way.

FW 1.15 Eggs must be water-hardened before being exposed to disinfectant or transportation.

FW 1.16 Unfertilised eggs being transported must be carried in their own ovarian fluid or a suitable substitute saline solution.

FW 1.17 Water flow and tank design must be such that 'dead spots' within the tank/tray do not occur, i.e. they must be sufficient to provide oxygen and remove waste products.

FW 1.18 Eggs must be placed into the hatching environment in a way that ensures maximum survival rates and be accessible for picking where this procedure is undertaken.

FW 1.19 Conditions in the hatching environment must be hygienic and free from any rough edges that could cause damage to the eggs.

FW 1.20 Where multi-layer systems such as buckets are used, it must be demonstrated that water hygiene and the integrity of the eggs are maintained.

FW 1.21 After placement, green eggs must remain undisturbed.

FW 1.22 Regular inspections must be made to ensure the earliest detection of fungal infections and must be recorded in the daily checklist.

FW 1.23 The egg shocking method used must not cause mortalities of viable (eyed) eggs.

FW 1.24 Training records must be available which identify those who are competent to perform shocking.

FW 1.25 Shocking onto a dry surface is prohibited.

Eyed eggs

FW 2.1 The transportation of eyed eggs must be undertaken using purpose built boxes.

FW 2.2 Eggs must not be transported at a depth greater than 4cm.

FW 2.3 Ice must be used above the eggs to allow cooling water to drip through the eggs to maintain moisture levels.

FW 2.4 In relation to standard FW 2.3, the bottom tray must be kept free of eggs to avoid the eggs sitting in melt water and asphyxiating.

Alevins

FW 3.1 REVISED All alevins must be inspected daily to ensure good health and development.

FW 3.2 The siphoning of alevins is not permitted.

FW 3.2.1 Alevins weighing under 0.5 grams must not be moved using nets.

FW 3.3 Abrupt changes in light levels must be avoided.

FW 3.4 Where water temperature manipulation is practised, fluctuation in temperature and temperature gradient must be kept to a minimum.

FW 3.5 Feeding must start only when at least 90% of the alevins have lost their yolk sac.

Multi-level hatchery systems

The stocking density calculation for multi-level systems is different from a traditional flow through or recirculation system in that, rather than calculating stocking density in square metres, it is calculated per tray. This is because each tray has the ability to maintain its own oxygen supply for the eggs.

The following standards need to be read in conjunction with the general hatchery standards.

FW 4.1 Each tray must have its own water intake.

FW 4.2 The flow in each tray must be:

a) visible and/or measurable

b) monitored to ensure maximum survival of the eggs.

FW 4.3 Trays must be easily accessible in order to perform tasks such as removing ‘deads’ without disturbing the other trays.

FW 4.4 The maximum stocking density in each tray must not exceed 60,000 eggs per tray (tray size 55 x 53cm approx) with eggs no more than 3 deep.

FW 4.5 Producers must be able to demonstrate that mortality over the ova-alevin period was below 5% for the previous year, if intending to stock to maximum permitted levels.

Fry/fingerlings

FW 5.1 Fish must have access to sufficient food to maintain them in full health and vigour.

FW 5.2 Feed must be:

a) available to appetite

b) spread at regular intervals.

FW 5.3 Light levels must be such that they allow all fish in the water column to see the feed during feeding.

FW 5.4 Water flow rates must be such that:

a) fish can hold and adjust their position in the water easily

b) the oxygen level can be maintained at the required level

c) wastes can be effectively removed.

FW 5.5 All tanks must have individual nets/cleaning equipment.

FW 5.6 There must not be any grading before at least 90% of fish weigh a minimum of 1.3 grams.

FW 5.7 The load of suspended solids must allow visibility to the bottom of the tank.

FW 5.7.1 Where water visibility is affected by the presence of peat, the producer must demonstrate that fish welfare is not being compromised.

FW 5.8 The water depth must be appropriate to the tank being used in order to be able to maintain optimum water quality levels.

FW 5.9 As the fish leave the bottom of the tank, the water depth must be adjusted to allow natural feeding behaviour.

Ongrowers – fish between 50 grams and harvest size

FW 6.1 The water temperature must not be manipulated above 16°C unless required by a veterinary surgeon.

FW 6.2 Fish must be able to hold and adjust their position in the water easily.

FW 6.3 All fish that require culling must be dispatched humanely and records kept of the culls (see standard H 2.2).

FW 6.3.1 All culls must be disposed of in a biosecure way as documented in the VHWP.

FW 6.4 Measures must be in place to prevent fish escaping.

Lochs (fresh and seawater)

In some adverse environmental conditions it may be necessary to temporarily withdraw feed to avoid compromising the welfare of the fish through the increased risk of de-oxygenated conditions arising, for example, during an algal bloom.

FW 7.1 If food is temporarily withdrawn for welfare reasons, it must be:

a) kept to a minimum

b) recorded in the VHWP (see standard H 1.1).

FW 7.2 Nets used in lochs must be managed hygienically.

FW 7.3 Deterioration of water quality due to fouled nets or over feeding must be avoided.

FW 7.4 The stocking density in enclosures:

a) for fish up to 100g, must not exceed 10kg/m^3

b) for ongrowers weighing more than 100g, must not exceed 15kg/m^3 over the site, and 17kg/m^3 in any one enclosure.

Vaccination

FW 8.1 The VHWP (see standard H 1.1) must incorporate a vaccination programme to protect fish from diseases for which a licensed effective vaccine is available and which may represent a risk to the fish.

If effective oral vaccines are available these should be the preferred method of vaccination.

FW 8.2 All vaccination procedures must be conducted with care and with the minimum possible distress caused to the fish.

FW 8.3 Vaccines and anaesthetics must be used according to the manufacturer's data sheet, unless otherwise specified by a vet.

FW 8.4 Vaccine use must be recorded in the VHWP.

FW 8.5 All fish must be sedated before being injected, unless there are clear health and welfare reasons not to.

FW 8.6 All fish must have been pre-graded before they are vaccinated.

FW 8.7 An assessment of fish condition must be made before the grading process begins to ensure that they are robust enough to endure the grading procedure.

FW 8.8 Vaccine operatives must be able to demonstrate that the machine is properly calibrated before the main vaccination process begins.

FW 8.9 Any sample fish used must be humanely dispatched before any inspections to check for vaccination accuracy.

FW 8.10 There must be back-up systems and contingency plans in place in order to deal with system malfunctions and breakdowns in order to safeguard the welfare of the fish.

FW 8.11 Water temperature for vaccination must be according to manufacturer's data sheet, or recorded in the VHWP if temperature does not adhere to manufacturer's recommendations.

FW 8.12 Care must be taken when returning fish to the recovery tank following vaccination in order to avoid injury to any fish.

FW 8.13 Oxygen levels in the recovery tank must be:

a) monitored regularly

b) maintained at a minimum of 7mg/litre.

FW 8.14 Fish must be checked at regular intervals to ensure that vaccinations are being performed correctly and consistently.

FW 8.15 Any injectable vaccination procedure must be subject to a third party audit.

The audit may be performed by the health manager or other competent person outside of the vaccination team.

FW 8.16 All of those involved in vaccinating fish must be trained and competent to do so and records kept of any training undertaken.

Auto-vaccination

FW 9.1 All fish must have been pre-graded before they are vaccinated.

FW 9.2 An assessment of fish condition must be made before the grading process begins to ensure that they are robust enough to endure the grading procedure.

FW 9.3 The machine must:

a) be calibrated according to the size of the fish, taking into account the vaccination depth, position, angle and dosage of the vaccine

b) be checked for the correct calibration at least once per hour during the vaccination process.

FW 9.4 A sample number of fish must be vaccinated to check the calibration before the main process is started.

FW 9.5 The sample fish must be humanely dispatched before any inspections to check for vaccination accuracy.

FW 9.6 All fish must be anaesthetised before being vaccinated.

FW 9.7 There must be back-up systems and contingency plans in place in order to deal with system malfunctions and breakdowns in order to safeguard the welfare of the fish.

FW 9.8 Needles must be inspected at least every two hours and replaced if necessary.

FW 9.9 After transportation, the machine must be thoroughly checked to ensure that any working parts have not been damaged during the transportation process.

Management

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 need to have a good working knowledge of the husbandry system used and the animals under their care. It is important to note that all of the sections of the welfare standards are applicable to all relevant aspects of the farming process.

M 1.1 All records and other documentation that the *RSPCA welfare standards for farmed rainbow trout* require the producer to keep and maintain, must be made available upon request.

Managers and stock-keepers

M 2.1 Managers must ensure that all stock-keepers:

a) have a copy of the current version of the *RSPCA welfare standards for farmed rainbow trout* at each site

b) are familiar with its content

c) understand and apply its content

d) have a), b) and c) as part of their induction programme.

M 2.2 Managers must:

a) ensure that all staff working with stock are trained and competent in aspects of fish husbandry and welfare, relevant to their duties

b) ensure that staff working with stock have attended a recognised fish welfare course within the first six months of starting their jobs if it involves handling the fish. Those not involved in direct fish handling must receive this recognised fish welfare training within the first year of their employment.

M 2.3 Written records of staff training must be maintained.

M 2.4 An adequate number of experienced staff must be available to deal sufficiently quickly with any problems that arise.

M 2.5 Managers must:

a) develop and implement plans and precautions to cope with emergencies such as fire, leaks, problems with transportation, etc.

b) provide an emergency action board, sited in a prominent position, which must include:

   i. appropriate emergency contact numbers

   ii. a map grid reference and postcode for the location of the unit.

M 2.6 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 2.7 Stock-keepers must be able to recognise indicators of poor welfare in fish including abnormal behaviour, physical injury and symptoms of disease.

M 2.8 Managers must ensure that the site specific VHWP is drawn up (see standard H 1.1), implemented and regularly reviewed and updated at least annually.

Inspection and records

M 3.1 Any welfare problems seen during an inspection by the producer or stock-keeper must be dealt with appropriately and without delay.

Welfare problems of sufficient severity that they should have been noticed on previous inspections and dealt with, shall be taken as evidence of negligence of duties by the stock-keeper.

M 3.2 Fish must be inspected at regular intervals, at least twice daily, weather permitting.

It is the responsibility of the person caring for the fish to ensure that suitably regular and thorough inspections are being made.

M 3.3 Full records must be maintained of farm inspections, including:

a) the time and date of inspections

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

d) numbers of sick/moribund fish.

M 3.4 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 3.5 High standards of biosecurity must be maintained to avoid the spread of diseases between different populations of fish, as specified in a written policy, such as the Biosecurity Measures Plan as required by the Fish Health Inspectorate (FHI).

M 3.6 REVISED Removal of dead fish must occur as frequently as is necessary and without undue delay and, in any case:

a) at least four times a week in pen systems

b) at least daily for land-based systems.

NEW **Regarding standard M 3.6, instances where removal of dead fish might occur more frequently include, but are not limited to, increased mortality due to an infectious disease or a predator interaction.**

The RSPCA strongly recommends daily removal of all dead fish and will consider making this a requirement in future publications of this standard.

M 3.7 The cause of death of all fish must be classified using the categories developed in the VHWP.

Veterinary advice should be sought if the cause of death is not clear according to the criteria identified in the VHWP (see standard H 1.1).

M 3.8 NEW Tanks/enclosures must be inspected at least daily for the presence of moribund (dying) fish.

M 3.9 NEW Whenever identified, moribund (dying) fish must be:

a) removed promptly

b) humanely culled without delay according to standard H 2.2.

NEW The RSPCA strongly supports and encourages further research and development of technologies that help to identify moribund fish at an early stage and enable efficient removal of such fish from enclosures. Where such technology is being considered, please contact the RSPCA Farm Animals Department.

M 3.10 Relevant staff must demonstrate competence in interpretation of all records.

M 3.11 Any equipment defects must be immediately rectified or, if this is not possible, alternative measures must be taken to safeguard fish welfare.

M 3.12 Alternative measures relating to standard M 3.11 must be written into the Emergency Action Plan section of the VHWP (see standard H 1.1) and all staff must be made aware of them.

M 3.13 Stock-keepers must be able to recognise:

a) visual indicators of poor water quality

b) fish behavioural indicators.

M 3.14 The following accurate and up-to-date records must be maintained:

a) details of origin of stock, allowing traceability

b) age of fish

c) wild animal control

d) crowding, movement and grading records

e) calibration records

f) numbers and weights of fish in each tank/enclosure/raceway/pond

g) estimated current stocking densities in each tank/enclosure

h) where appropriate, target age and weight at which fish will be transferred to sea or killed (in order to predict final stocking densities)

i) details of fish and equipment inspections

j) daily and cumulative mortality (reasons stated)

k) daily and cumulative culling (reasons stated)

l) feed consumption or provision

m) details of any health problems

n) details of any medication/vaccinations given

o) records of water quality tests as appropriate to the system

p) records of net inspections and maintenance where appropriate

q) training records

r) full details of fish movements

s) appropriate statutory authority correspondence.

NEW Use of Artificial Intelligence

NEW **The RSPCA is reviewing the role of Artificial Intelligence and the wide-ranging benefits it can bring to fish welfare, particularly in the areas of welfare outcome assessment, health inspection and lice checks.**

It is strongly recommended that producers investigate the feasibility of such technology to further safeguard and advance fish welfare.

Where such technology is being considered, please contact the RSPCA Farm Animals Department.

Husbandry practices

High standards of husbandry need to be maintained at all times with the welfare of stock being considered as a priority. Animals should be handled in a considerate and skilled manner. Caring and responsible planning and management should 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.

HP 1.2.1 Live fish must never be:

a) held by the tail only

b) thrown onto solid objects.

HP 1.3 Time out of water must:

a) be kept to the minimum possible

b) never exceed 15 seconds for a live fish (unless anaesthetised).

HP 1.4 Where pumps and pipes are used these must:

a) not unnecessarily stress fish

b) be free from sharp protrusions, kinks and bends that are likely to injure fish.

HP 1.5 When hand nets are used they must be:

a) of a suitable size

b) designed to avoid the occurrence of physical damage

c) kept clean, disinfected and in good repair.

HP 1.6 In order to reduce the risk of disease transmission when handling fish from different populations:

a) a different net must be used for each batch or,

b) nets must be thoroughly cleansed between tanks and a record kept of the procedure.

HP 1.7 Fish must not be left to die in air.

NEW Crowding

NEW These standards apply to all crowding operations, regardless of location or situation.

HP 2.1 NEW All personnel working with, or handling, the fish must be:

a) trained and fully competent to carry out their duties

b) aware of the needs of the fish

c) aware of any risks to the welfare of the fish and the procedures to address those risks.

HP 2.2 REVISED Sweep nets must be:

a) of knotless construction

b) optimal for the enclosure where it's being used (e.g. appropriate size and design)

c) of an appropriate mesh size for the fish to prevent them getting trapped in the mesh gaps.

HP 2.3 Sweep nets/floatlines must be used to crowd a portion of the population rather than crowding the whole enclosure.

HP 2.4 Any section/group of fish must not be crowded for more than 2 hours.

HP 2.5 No population of fish must be crowded more than twice in any one week or three times in any month, unless this is required by the designated veterinary surgeon for fish welfare reasons.

HP 2.6 NEW Fish must be monitored throughout the crowding operation by a designated person whose responsibility it is to recognise welfare issues and can take appropriate action if necessary.

HP 2.7 Enclosure nets must be kept clean in order to avoid water quality problems during crowding.

HP 2.8 Oxygen levels must:

a) be monitored throughout crowding

b) not fall below 7mg/l, with appropriate action taken should this occur.

HP 2.9 Where water replenishment has been shut-off from the crowd:

a) supplementary oxygen and/or aeration must be available for the duration of the crowding procedure

b) oxygen levels must be monitored

c) oxygen levels must not fall below 7mg/l, with appropriate action being taken should this occur.

HP 2.10 NEW As soon as possible after crowding, any dead fish must be:

a) removed

b) recorded, including classification of the cause (see standard M 3.7).

Grading

Consideration should be given to stocking tanks and enclosures to final biomass from their initial stocking, so as to minimise the possibility of welfare compromises during the crowding and grading processes.

HP 3.1 All grading systems must be fit for purpose and must be situated in such a way that fish can be observed at all times.

HP 3.2 All personnel involved in the grading operation must:

a) have access to a copy of the current version of the *RSPCA welfare standards for farmed rainbow trout*

b) be familiar with its content

c) understand and be able to apply its content.

HP 3.3 All personnel working with, or handling the fish must be:

a) trained and fully competent

b) aware of the needs of the fish

c) aware of any risks involved and the procedures to address those risks.

HP 3.4 Grading must only be performed when absolutely necessary.

HP 3.5 REVISED A written grading plan must be:

a) agreed between the farm management and site staff and/or grading operator prior to operations commencing

b) included within the VHWP (see standard H 1.1).

HP 3.6 The grading plan must include:

a) the reason for the need to grade

b) a pre-grade risk assessment

c) the number of fish to be graded per day

d) the location of fish populations both pre- and post-grade

e) the pre-grade fasting period

f) the health status of the fish

g) the equipment to be used, including the type of grader

h) expected timetable for completion of the grade

i) the required number of staff and duties to be performed

j) the physical characteristics of the site such as water temperature, tides and weather conditions

k) the training records of the grading team

l) the requirement for a post grading health check

m) post grading mortality records

n) any relevant contingency plans

o) the approval and signatures of the site manager and the person in charge of the grading equipment.

HP 3.7 All grading equipment must be designed and maintained in order to prevent damage or causing stress to the fish.

HP 3.8 REVISED The grader must be appropriate for the size of fish to be graded.

HP 3.9 For the chosen grading system, all staff involved must be:

a) fully trained

b) competent in its use.

HP 3.10 Only healthy fish must be subjected to the grading process.

HP 3.11 If fish are being returned to their original enclosure, it must be large enough to ensure the welfare of both the original and returning populations.

HP 3.12 The grade of the group/section of fish must be completed in one continuous operation.

HP 3.13 Producers must:

a) return any extraneous/non-target fish to the watercourse or humanely cull them as advised by the veterinary surgeon

b) be aware of, and adhere to, any legislation relating to protected species.

HP 3.14 Fish must be monitored throughout the operation by a designated person whose responsibility it is to recognise welfare issues and take appropriate action if necessary.

HP 3.15 Mortality checks must be recorded as soon as possible after grading.

HP 3.16 All equipment must be thoroughly cleaned and disinfected before use and between sites.

HP 3.17 Grading operations must not take place if adverse weather conditions are likely to compromise fish welfare.

Passive grading

Passive grading is recommended where possible and practical to do so.

HP 4.1 Where passive grading is used, the size and design of the grading panel must be appropriate for the size of fish that are to be graded, and the enclosure they are contained within.

HP 4.2 The grading panels must be pre-checked for signs of wear before grading commences.

Hand/manual grading

HP 5.1 Pumps must be able to pump the required distance and head.

HP 5.2 All pipes must be:

a) smooth with swept bends

b) of a diameter which is appropriate for the size of the fish, including when they pass through the couplings.

HP 5.3 Water must always flow through the pipework to minimise the incidence of scaling.

HP 5.4 All grading equipment must be smooth, with no sharp edges.

HP 5.5 Where counters are used, they must be in working order and be fit for purpose.

HP 5.6 The sweep net/crowding device must:

a) be of an appropriate size

b) have sufficient floatation

c) be constructed of knotless mesh.

HP 5.7 No fish must be out of the water for more than 15 seconds.

Protection from other animals

HP 6.1 NEW All producers must abide by the mandatory standards set out in the Aquaculture Code of Practice - Containment of and Prevention of Escape of Fish on Fish Farms in relation to Marine Mammal Interactions.

NEW In relation to standard HP 6.1, the Code sets out the standards expected from Aquaculture Production Businesses in order to provide for the containment of fish on fish farms and to prevent their escape in relation to marine mammal interactions.

It is a legal requirement in Scotland for Scottish producers to adhere to the mandatory requirements.

However, under these RSPCA standards, producers that are not operating in Scotland are also required to abide by the mandatory standards set out in the Code, but are not required to report to the Scottish Government (Marine Scotland) where required under the Code.

The Code is available at: https://www.gov.scot/publications/aquaculture-code-practice-containment-prevention-escape-fish-fish-farms-relation-marine-mammal-interactions-2/

NEW Successful containment at fish farms is essential for minimising the risk of escape of farmed fish.

The Aquaculture Code sets out standards expected from aquaculture production businesses to provide for the containment of fish on fish farms and to prevent their escape in relation to marine mammal interactions.

For the purposes of the Code, a containment measure is any measure used to prevent or mitigate against interactions between farmed fish and marine mammals. Examples include anti-predator nets, and measures that actively deter seals such as ADDs.

HP 6.2 Humane precautions must be taken to prevent wild animal infestations on the farm.

HP 6.3 The producer must:

a) use all reasonable non-lethal methods of control to protect fish from predation from wild animals

b) detail the methods specified in a) in the Environmental Action Plan

c) detail the methods specified in the Wild Animal Control Plan.

HP 6.4 The primary means of protecting the fish must be through physical exclusion, by denying potential predators access to tanks and enclosures.

HP 6.5 Enclosure nets must be adequately tensioned and weighted to prevent distortion, taking into account local conditions such as currents, tidal flows etc.

HP 6.6 Enclosure nets must be regularly checked for holes and fouling and maintained accordingly and records must be kept of these checks.

HP 6.7 Enclosures must be:

a) protected using visible topnets

b) of a mesh size that does not ensnare birds.

HP 6.8 Predator nets must be considered for deployment at high risk sites during high risk periods, and at other times as appropriate if there is a risk of an attack.

HP 6.9 Where predator nets cannot be deployed for animal welfare reasons, the reason why must be documented and recorded.

HP 6.10 NEW LEGAL Acoustic Deterrent Devices/Acoustic Startle Devices (ADDs/ASDs) may only be used in accordance with any required licensing requirements, legislation, codes and/or guidelines.

HP 6.11 NEW If ADDs/ASDs are used they must be:

a) models that do not negatively impact the welfare of non-target species

b) models that have been accepted for use by the Scottish Government

c) effective in deterring seal depredation

d) regularly serviced and maintained to ensure that they are in full working order.

HP 6.12 REVISED To ensure all ADDs/ASDs are in full working order they must be:

a) checked daily (weather permitting)

b) regularly serviced (as per the manufacturer's guidelines)

c) well maintained at all times.

ADDs should only be used whilst taking into consideration the potential effects they may have on other wildlife, in particular, cetaceans, which may have a migration route nearby.

The remote monitoring of ADDs is available. The RSPCA recommends that this is used to ensure that they are working properly.

HP 6.12.1 NEW Records relating to standard HP 6.12 must be kept.

HP 6.13 REVISED If a predator attack has taken place, the fish must be checked for signs of any injury as a result of the attack without delay from the time the attack became apparent.

HP 6.14 Culling of non-protected wild animals to protect fish welfare, must only be undertaken as a last resort:

a) when all available non-lethal methods have been employed and have proved unsuccessful

b) be undertaken using the most humane method possible.

For the purposes of these standards, a last resort scenario is defined as:

- **nets are adequately tensioned**
- **top nets are secured to deny ingress into the enclosures**
- **dead fish have been regularly removed**
- **where they can be used, ADDs have been fully utilised and regularly serviced, and are monitored to ensure that they are working**
- **predator nets/curtains/screens have been deployed.**

HP 6.14.1 The producer must be able to demonstrate that all of the procedures leading up to the point of last resort have been mobilised.

HP 6.14.1.1 NEW Producers in Scotland must not kill seals that may present a predatory threat to the fish, as this is prohibited by law.

The shooting of animals without having deployed all of the measures leading to a last resort scenario, will result in the site being suspended from the scheme pending further investigation.

HP 6.15 There must be positive identification that an animal is causing the problem of fish mortality, or is the cause of compromised fish welfare.

HP 6.16 Where it becomes necessary to humanely dispatch a predator, the following records must be kept:

a) names of all persons with valid firearms certificate who are deemed competent to perform the task

b) detail of any bullets used and returned, in the ammunition register

c) details of any animal that has been shot, including:

   i. the species

   ii. the time and date of dispatch

   iii. the location

   iv. the reason for the shooting.

HP 6.17 All attempts must be made to recover the body of the animal that has been shot and it must be recorded as to whether or not the body was recovered.

HP 6.18 Any carcases must be disposed of in accordance with the law.

HP 6.19 After every shooting incident, a review of all predator exclusion procedures must be undertaken and records kept of such reviews.

Genetic selection and modification

The RSPCA is opposed to any breeding procedures that adversely affect welfare.

HP 7.1 Genetic modification techniques as defined by European Directive 2001/18/EC are prohibited.

HP 7.2 Fish must not have been produced by breeding techniques that result in health or welfare problems for any of the animals involved.

NEW Non-medicinal treatments for sea lice and amoebic gill disease – general

NEW Non-medicinal treatments for the control of sea lice and gill disease (including amoebic gill disease) are treatments that do not require a veterinary prescription during the seawater phase of on-growing. These treatments include, but are not limited to, delousing techniques, such as thermal and mechanical delousing, and freshwater bathing treatments for gill pathogens and sea lice.

HP 8.1 NEW Any new non-medicinal treatment or technology for the control of sea lice and amoebic gill disease, or development to existing treatments/technology that could negatively impact on the welfare of the fish, must be referred to the RSPCA Farm Animals Department for review and decision before it can be used.

NEW The use of non-medicinal treatments is relatively new and as such, technology is developing at a rapid pace and the scientific knowledge, particularly in regard to the welfare impacts, is often behind industry application.

NEW Non-medicinal treatments for sea lice and amoebic gill disease – vessels

HP 9.1 NEW All vessels used for administering non-medicinal treatments must be approved for use by the farm assurance scheme assessing against these *RSPCA Welfare standards for farmed rainbow trout*.

HP 9.2 NEW Vessels arriving into the United Kingdom (UK) to work within UK waters must carry a valid certificate of disinfection from their country of origin.

HP 9.3 NEW Fish counting equipment must:

a) be installed and used at all times

b) be positioned according to manufacturer's guidelines

c) be fully maintained in good working order

d) be calibrated according to the manufacturer's guidelines

e) not cause damage or injury to the fish.

NEW Non-medicinal treatments for sea lice and amoebic gill disease – pre-treatment

HP 10.1 NEW Non-medicinal treatments must only be performed under veterinary advice.

HP 10.2 REVISED Prior to each use of the technology, non-medicinal treatments must be risk assessed against the impact they may have on the welfare of the fish.

HP 10.2.1 NEW Non-medicinal treatments must only be carried out where it is in the best welfare interests of the fish (as determined by the risk assessment).

The Farmed Fish Welfare Risk Assessment template in Appendix 3 can be used to record the activity outlined in standard HP 10.2.1.

HP 10.3 NEW The non-medicinal treatment risk assessment (standard HP 10.2) must be:

a) included in the VHWP

b) made available on request.

HP 10.4 NEW The choice of treatment must be appropriate for the i) health status and ii) size of the fish as evidenced in the non-medicinal treatment risk assessment (standard HP 10.2).

HP 10.5 NEW A written treatment plan must be:

a) agreed between farm management (including site staff), a veterinarian or health manager and the treatment leader/operator prior to operations commencing

b) implemented

c) kept on farm for 2 years

d) made available on request.

HP 10.6 NEW The treatment plan must include:

a) the reason for the need to treat the fish

b) a pre-treatment risk assessment (see standard HP 10.2)

c) the average weight and number of fish to be treated, both for the site and for each enclosure

d) the location of fish populations both pre- and post-treatment

e) the pre-treatment fasting period

f) the health status of the fish

g) the non-medicinal treatment to be used

h) any relevant contingency plans (see standard HP 10.7)

i) the named person responsible for the treatment (see standard HP 10.9)

j) the agreement and signatures of the site manager, veterinarian, health manager and the person in charge of the treatment.

HP 10.7 NEW A written contingency plan(s) must be in place to detail courses of action to be undertaken should any unexpected issues arise that compromise the welfare of the fish.

HP 10.7.1 NEW The contingency plan must include the:

a) potential impacts on the fish

b) actions that can be taken to address the issues identified.

HP 10.8 NEW Fish must not be subjected to more than one non-medicinal treatment within a 28 day period unless approved by a veterinarian.

HP 10.9 NEW There must be a designated person responsible for the welfare of the fish during the non-medicinal treatment process.

HP 10.10 NEW All personnel involved in the handling of fish during a non-medicinal treatment must:

a) have access to a digital or paper copy of the current version of the *RSPCA Welfare standards for farmed rainbow trout*

b) be familiar with the relevant content

c) understand and be able to apply the relevant content

d) have completed a recognised fish welfare course

e) understand the likely stress factors or welfare risks fish may be subjected to

f) understand the times and circumstances where fish are prone to welfare problems during the treatment event

g) be able to recognise signs of normal and abnormal behaviour.

ⓘ **NEW Examples of recognised courses include, the University of the Highlands and Islands (UHI) Shetland Fish Welfare Training Course and the Pharmaq Analytiq Fish Welfare Training Course.**

HP 10.11 NEW Prior to treatment, the fasting period must be as short as possible and, in any case, not exceed the following:

a) 54 degree days for physical delousing

b) 70 degree days for freshwater bathing.

ⓘ **NEW The fasting period may only be extended if this is beneficial to the welfare of the fish and on the written advice of the veterinary surgeon or health manager.**

HP 10.12 NEW Thermal delousers must adhere to the following limits:

a) maximum water temperature must not exceed 34°C

b) maximum delta temperature must not exceed 22°C

c) maximum length of time in thermal delouser must not exceed 35 seconds.

HP 10.13 NEW When fish are bathed in freshwater on a wellboat, the maximum stocking density in the well must be based on the liveweight of the fish as follows:

Liveweight (kg)	Maximum stocking density (kg/m^3)
5.0	125
4.0	110
3.5	100
3	90
2	75
1	60
0.1	45

HP 10.14 NEW A full welfare outcome assessment of the fish treated on the site must be performed:

a) within seven days of a non-medicinal treatment commencing

b) again, within 14 days of the treatment completing, unless this may have a detrimental impact on the welfare of the fish and on the written advice of the veterinarian or health manager

c) by a suitable competent person who has received fish welfare training.

NEW Non-medicinal treatments for sea lice and amoebic gill disease – during treatment

HP 11.1 NEW Water flow throughout the entire process must:

a) be sufficient to facilitate constant movement of the fish

b) not be so strong as to cause the fish injury.

HP 11.2 NEW Pumps and pipes must be installed and positioned to minimise the height and distance that the fish have to be pumped and/or discharged.

HP 11.3 NEW During physical delousing events, checks of the fish to examine i) lice numbers and ii) welfare outcome indicators, must:

a) take place regularly, at least hourly, and each time operating parameters are changed, and

b) be recorded.

HP 11.4 NEW In relation to standard HP 11.3 the following welfare indicators must be scored, as a minimum

a) skin damage

b) scale loss

c) eye damage

d) gill bleeding.

ⓘ **NEW These regular checks are to be used to ensure that the treatment is achieving the desired lice clearance whilst not causing undue negative welfare impacts to the fish.**

HP 11.5 NEW In the event of obvious and serious welfare concerns being identified during the treatment, the treatment must be stopped.

HP 11.6 NEW Operating parameters, including the starting parameters and any changes made during the procedure, must be recorded throughout the treatment process.

HP 11.7 NEW For freshwater bathing, the following water quality parameters must be complied with and action taken if the limits are breached:

Parameter	
Min Oxygen (O_2) mg/l	7
Carbon dioxide (CO_2) mg/l	<20
pH	>6.8

HP 11.8 NEW All crowding of fish must be clearly recorded using CCTV.

HP 11.9 NEW Footage relating to standard HP 11.8 must be kept for at least 14 days.

NEW Non-medicinal treatments for sea lice and amoebic gill disease – post-treatment

HP 12.1 NEW After the completion of the treatment for a site, a post-treatment report must:

a) be completed within 14 days

b) form part of the VHWP.

HP 12.2 NEW The post-treatment report in standard HP 12.1 must include details of the following:

a) mortality for each enclosure and for the site as a whole

b) efficacy of lice removal (where applicable)

c) results of welfare outcome assessments (showing a comparison for pre- and post-treatment)

d) where any issues have been identified relating to increased mortality, less than expected lice removal, and/or increased welfare scores, an action plan developed to avoid/improve on the issue/s in the future.

HP 12.3 NEW The following records must be kept of all treatments:

a) dates of treatments

b) enclosures treatment

c) treatment method used

d) number of fish treated

e) average weight of fish treated.

HP 12.4 NEW Vessels must be thoroughly examined and disinfected after completion of treatments and before moving to a new site.

HP 12.5 NEW Disinfection logs must be:

a) completed

b) made available on request.

NEW **Every effort should be made to continuously improve non-medicinal treatments to minimise the welfare impact on fish. Challenges and recorded issues should be documented and rectified. Outdated technology should not be used where possible.**

NEW Enrichment

NEW **Some forms of environmental enrichment have been shown to improve the health and welfare of captive fish. As this area of knowledge is still relatively new and developing, particularly in commercial farming systems, the RSPCA strongly encourages further trial work to determine appropriate forms of enrichment in all rainbow trout farming enclosures.**

We will be looking to update the standards in future publications, as knowledge develops in this important area.

Equipment and environmental quality

The units in which fish are kept should be designed with full consideration of their welfare needs, and should 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 should maintain the highest environmental quality at all times.

Tank, pond, raceway and net pen enclosure construction, situation and maintenance

E 1.1 The siting of tanks, ponds, raceways and net pen enclosures must be carefully considered with regard to fish welfare.

E 1.2 All facilities for housing fish must be designed with their welfare as a major consideration, with no sharp protrusions which may be injurious to the fish.

E 1.3 Inlets and outlets must:

a) be screened and designed to prevent fish escape, ingress of wild stock and other materials

b) be easily accessible for cleaning.

E 1.4 If there is evidence of fish jumping out of their accommodation, then jump screens must be put in place.

E 1.4.1 If nets are used, they must be a suitable size for the fish in the tank to prevent escapes and fish becoming entangled.

E 1.5 Flow rate must be such that it:

a) enables fish to be able to hold their position in the water column easily and,

b) ensures that it removes dead fish and metabolites but,

c) is not so great that it erodes the walls of the particular facility such as a pond.

E 1.6 Intake water must contain the same level of oxygen as required in standard FW 1.6.

E 1.7 Biosecurity measures which have been carried out between batches of fish must be documented in the VHWP.

E 1.8 Enclosure nets must be regularly checked for holes and fouling and maintained accordingly.

E 1.9 Net pen enclosures must be adequately tensioned and weighted to prevent distortion.

Lighting

E 2.1 Lighting must be maintained at a level suitable for each stage of development (as detailed in the VHWP – see standard H 1.1).

E 2.2 Fish must be protected from distress caused by high levels of UV light or sudden changes in lighting levels (see standards E 2.3 to E 2.4).

E 2.3 Tank covers must be removed or lights provided at least 12 hours before transfer to sea in order to habituate fish to brighter light.

E 2.4 Enclosures must be of adequate depth to prevent damage from ultraviolet radiation.

Climate change and animal welfare

REVISED **Changing weather patterns attributable to climate change are affecting all farmed species. These include high temperatures, rapid and unpredictable temperature fluctuations, high and low rainfall, strong winds, and increased sunlight and humidity.**

Climate change will likely lead to increased water temperatures in both fresh and sea water environments which can have negative welfare impacts, including reduced availability of oxygen, increased pathogen and water-borne insult pressure and increased acidification. Sustained and/or sudden rainfall can lead to run-off events into water sources, increasing turbidity and suspended solid loads as well as potentially introducing nutrients like phosphorus and nitrogen to the environment. More extreme weather events may also become more common, which could impact and/or damage enclosures and increase the risk of escape events and/or injury to trout.

Producers need to react to, think ahead, and consider what can reasonably be done to mitigate any negative effects that adverse weather conditions may have/be having on the welfare of farm animals now, and in the future.

Future planning – including the development of contingency plans – needs to take the above scenarios into account to safeguard welfare against these more extreme weather events.

Feeding

Fish should 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.

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 The use of veterinary medicinal products in food is prohibited except for essential therapeutic use (i.e. in 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 Fish must be observed at least once a day 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.

Fasting/food withdrawal

F 4.1 Feed withdrawal, when required for any situation, must not exceed a maximum of 54 degree days.

F 4.1.1 REVISED With regards to standard F 4.1, if the maximum feed withdrawal period permitted must be extended for any reason then this must be:

a) signed off by a veterinary health professional

b) subject to a welfare risk assessment (see Appendix 3), which concludes that this is in the best welfare interest of the fish

c) recorded in the VHWP, including full details of why this was necessary, along with the welfare risk assessment.

F 4.2 After any period of fasting, food must be reintroduced in a way that:

a) encourages the fish to resume feeding

b) minimises waste

c) can be demonstrated not to compromise fish welfare.

F 4.3 Records must be kept of the period for which the fish were fasted and when feed was reintroduced.

Health

Fish should be protected from pain, injury and disease, through good management and husbandry practice, and by rapid detection and treatment of disease. All producers should develop a health and welfare plan in consultation with a designated veterinary surgeon. Disease is a major cause of poor welfare and mortality in farmed fish. 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 site specific Veterinary Health and Welfare Plan (VHWP) must be drawn up, reviewed and updated:

a) At the start of every production cycle or on an annual basis

b) By those with responsibility for the health and welfare of the fish, which may include the vet, health manager, stockpersons, nutritionist or other relevant personnel

c) Details of the review must be made available on request.

H 1.2 The VHWP (see standard H 1.1) must include sections on:

a) future husbandry plans

b) risk assessments

c) monitoring and control of fish health and diseases.

H 1.3 **NEW** The VHWP must be treated as a live document.

H 1.4 **REVISED** After a fish health and welfare event, the VHWP (see standard H 1.1) must:

a) be updated accordingly as soon as is practically possible

b) include a programme of remedial action if appropriate.

NEW In relation to standard H 1.4, the term 'as soon as practically possible' means that the VHWP is to be updated as soon as the event has been investigated and identified. Therefore, it is acknowledged that there may be a period of time before the VHWP is updated following an event to allow for any investigation required. However, if the time to investigate the event is likely to extend beyond two days, this is to be noted in the VHWP along with an estimated time for completion, and the VHWP updated as the investigation proceeds and is concluded.

H 1.5 All relevant legislation regarding notifiable diseases must be understood and adhered to.

H 1.6 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 1.7 Fish condition must be continuously monitored for signs of disease or problems with the environment or handling practices.

H 1.8 Any fish suffering from overt physical damage, or disease symptoms, must be:

a) segregated

b) treated/humanely euthanised without delay.

H 1.9 REVISED Where the level of fish mortality exceeds the threshold figures shown below, this must be:

a) recorded

b) investigated

c) reported to the farm assurance scheme responsible for the assessment of these standards within 72 hours of the end of the reporting period.

Freshwater:

Stage	Max. Weekly mortality (%)
Egg to first feed	6
First feed to 5g	3
Over 5g	1.5

Seawater:

Site average weight (g)	Max. Weekly mortality (%)	Max. 5 week rolling mortality (%)
Under 750	1.5	6
750+	1.0	4

Casualty killing

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 REVISED Fish must only be culled using the following methods:

a) anaesthetic overdose (as specified in the VHWP) by immersion in a solution of the agent, under veterinary prescription

b) electrical stun-to-kill

c) a non-recoverable percussive blow to the head, using a priest or mechanical percussive device, of sufficient force to render the fish immediately unconscious, for fish over 5 grams only.

H 2.3 NEW Where an electrical stun-to-kill system is used in regard to standard H 2.2 (b):

a) the electrical parameters must be set to ensure fish are rendered unconscious immediately (within 1 second)

b) there must be no pre-stun shocks

c) post stunning, the fish must remain unconscious until death supervenes

d) visual inspection must take place on a regular basis to establish that fish have been effectively killed. Fish must have:

   i. no eye movement

   ii. no rhythmic opercular movement

   iii. only mild short term involuntary muscular twitches

   iv. no reaction to tail pinch.

H 2.4 Under no circumstances must seriously injured or sick fish be left to die in air.

H 2.5 Culling of any 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 in the case of 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.

It is recommended that producers obtain, read and where appropriate, apply the advice contained within the latest versions of the guidelines on *Responsible use of antimicrobials in fish production* and the *Responsible use of vaccines and vaccination in fish* issued by the Responsible Use of Medicines in Agriculture (RUMA) alliance (www.ruma.org.uk).

H 3.5 REVISED Any veterinary medicines used must be in accordance with current UK legislation for the species.

H 3.6 The medication must only be administered to fish:

a) by suitably trained staff

b) strictly in accordance with the instructions prescribed by the veterinary surgeon

c) must be on site before the treatment commences.

H 3.7 REVISED The potential for therapeutic agents to affect the environment, both locally and more widely, must be given full consideration.

H 3.8 Veterinary medicine withdrawal periods must be strictly adhered to.

H 3.9 NEW All relevant legislation and Codes of Practice must be adhered to when using medicinal products.

H 3.10 Veterinary products must be properly labelled and stored appropriately.

H 3.10.1 Records must be kept of all treatments.

H 3.11 All farms must have a written pharmaceutical waste policy.

H 3.12 NEW The use of antibiotics on-farm must be reviewed annually or at the end of a production cycle.

H 3.12.1 NEW This review (standard H 3.12) must form part of the VHWP.

H 3.13 NEW When reviewing the use of antibiotics on-farm, the following should be considered:

a) the different classes of antibiotic drug used

b) the health condition(s) treated

c) the species treated

d) the number of fish treated

e) which group/s of fish were treated

f) the average weight of the fish or the stage within the production cycle

g) the total amount of each individual drug that was used (in mg/kg) per occasion

h) the method in which the fish were treated.

H 3.14 NEW In light of the findings of the antibiotic use review (see standard H 3.12), a written action plan aimed at reducing the use of antibiotics on the farm through improvements in animal husbandry must be developed and implemented.

Mutilations

H 4.1 Mutilations involving the removal of sensitive tissue are prohibited.

H 4.2 Marking methods that cause distress or injury to fish must not be used.

Sea lice

NEW The RSPCA strongly supports and encourages research into new sea lice prevention tools and equipment.

If you would like to trial such technology, or are considering the possibility of implementing it, please contact the RSPCA Farm Animals Department.

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

H 5.1 Farms must take all reasonable steps to minimise the gravid lice population, as per the requirements of the relevant legislation.

H 5.2 Lice levels must be below the thresholds laid out by the relevant statutory/regulatory body.

H 5.3 Stock keepers must be able to recognise symptoms of lice infection.

H 5.4 Separation of year classes and fallowing of sites must be practised to help control sea lice populations as detailed in the VHWP/Environmental Impact Plan.

H 5.5 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 into.

H 5.6 Sea lice prevention and treatment programmes must be:

a) drawn-up with the designated veterinary health professional

b) fully detailed in the VHWP.

H 5.7 Sea lice damage to fish must be recorded during lice counts, and include:

a) condition of the fish: good/thin

b) site of lesions

c) skin condition

d) fish feeding behaviour.

H 5.8 Any fish with severe physical damage caused by sea lice must be:

a) removed

b) dispatched humanely without delay.

Welfare Outcome Assessment

NEW To ensure we are improving farm animal welfare we need to be able to measure it. Measuring welfare enables us to know what level is being achieved and therefore better understand what impact the resources being provided and management practices being implemented are having on the animals. Measuring welfare in this way is known as Welfare Outcome Assessment (WOA). This information is only useful if it is used to improve fish welfare via the Veterinary Health and Welfare Plan.

This section focuses on WOA for implementation on farm. However, we are currently investigating the potential to develop WOA for implementation at the time of slaughter/killing. This will be considered for inclusion into the next publication of the standards, following further investigation. Meanwhile, we strongly encourage producers to use the requirements set out under Appendix 2.

H 6.1 NEW Welfare Outcome Assessments must include scoring of the following indicators, as a minimum:

a) fin malformation – worst fin to be scored

b) eye loss/damage

c) jaw deformity

d) spine deformity

e) snout injury

f) scale loss, skin damage

g) physical wounds and lesions

h) operculum damage

i) sea lice damage (in seawater only).

NEW The fin damage assessment guide in Appendix 1 is the suggested scoring system for fins. However, producers may use other system/s, as long as the indicators in standard H 6.1 are assessed.

It is strongly recommended that all fins are scored during welfare outcome assessments, and this will be considered for implementation in the next publication of the standards.

H 6.2 NEW Welfare Outcome Assessments must be conducted:

a) in both freshwater and seawater

b) by a suitable competent person who has received fish welfare training

c) according to the following methods:

i. in freshwater, on at least four occasions (approximately evenly spread) throughout this stage. Each assessment must be undertaken on 30% of, or five (whichever is higher), enclosures and a minimum of ten fish per sampled enclosure

ii. in seawater, at least once every month, on a minimum of 50% of enclosures and a minimum of ten fish per sampled enclosure.

NEW During the freshwater stage, if fish are moved between sites, any previous welfare outcome assessment results should be passed onto the receiving site.

The minimum of four assessments during the freshwater stage can happen across different sites.

NEW It is preferable that Welfare Outcome Assessments are completed at the time of other handling events to minimise the number of times fish are handled.

In freshwater, this could include during grading and vaccination. For seawater, this could include during lice/gill checks.

H 6.3 NEW A record, either paper or digital, of the results of the Welfare Outcome Assessment must be kept:

a) on farm

b) for a minimum of two cycles or three years, whichever is longer

c) must be made available on request.

H 6.4 NEW With regard to standard H 6.3, the Welfare Outcome Assessment documentation left on farm must include the following information:

a) the date of the assessment

b) site name and enclosure ID

c) the name of the competent person who undertook the assessment

d) the average weight of the fish at the time of the assessment

e) any action to be taken (see standard H 6.5).

H 6.5 NEW Any health/welfare issue(s) identified as an area of concern must:

a) be recorded in the VHWP

b) investigated to establish the cause of the issue

c) be prevented from reoccurring by implementing effective prevention strategies.

ⓘ **NEW The Welfare Outcome Assessment may not always provide a definitive farm level prevalence of welfare for the measures assessed. The assessment should help to identify areas of welfare concern that are likely to be more wide-spread on the farm and therefore warrant further investigation and careful monitoring.**

ⓘ **NEW The RSPCA recognises the limitations of current Welfare Outcome Assessment protocols in gaining a fuller representation of the farmed fish population. The RSPCA encourages further research and trials into developments and advances in technology that might overcome these issues.**

Transport

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

T 1.1 Managers must ensure that all drivers/vehicle owners:

a) have a copy of the current version of the *RSPCA welfare standards for farmed rainbow trout* at each site

b) are familiar with its content

c) understand and apply its content

d) have a), b) and c) as part of their induction programme.

T 1.2 All journeys must have an up to date transport plan, which covers important aspects of the journey, including:

a) journey times

b) water qualities

c) contingency plans

d) the identity of those responsible for fish welfare.

T 1.3 NEW There must be a named and agreed person/s present that is responsible for overseeing the transport operations.

For clarity, regarding standard T 1.3, the term 'agreed person' is defined as a person that has been agreed by the following parties to oversee the transport operation:

- **those supplying the fish**
- **those receiving the fish**
- **those transporting the fish.**

T 1.4 Any handling of fish prior to transport must be:

a) kept to a minimum

b) conducted in such a way as to prevent any unnecessary distress to the fish.

T 1.5 NEW Pipes used for moving fish must be an appropriate diameter for the size of the fish to ensure the fish can flow through the pipe with ease.

NEW **For clarity, regarding standard T 1.5, the fish should flow freely through the pipes without frequently contacting the side, should not form blockages at any time and should not easily be able to turn to swim against the flow of water. This is all to minimise the potential for injury and harm to the fish and to minimise the time spent in the pipe.**

T 1.6 All equipment that the fish rely on for life support must be constantly monitored throughout the journey.

T 1.7 If any faults are found in the equipment (see standard T 1.6) then:

a) fish in transit must be inspected

b) any problems must be corrected immediately.

T 1.8 Delays in transport must be kept to the absolute minimum possible.

T 1.9 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 1.10 Oxygen levels must be maintained at a minimum of 7mg/litre.

T 1.11 Excessive changes in water temperature and pH during transportation must be avoided.

T 1.12 Care must be taken to ensure dead fish are not loaded for transport.

T 1.13 Sick or seriously injured fish must:

a) not be transported

b) be humanely destroyed.

T 1.14 Any fish which die during transportation must be separated from live fish as soon as possible after arrival.

T 1.15 Records must be kept of any deaths or injuries that occur during transportation.

T 1.16 To prevent disease, transport containers must be cleaned and disinfected after each consignment of fish is transported.

T 1.17 All persons involved in transportation of fish must be familiar with, and transport fish in accordance with, all relevant legislation.

Juvenile transport

These juvenile transport standards are to be considered in conjunction with, and as a supplement to, the general transport standards.

Juvenile fish transport – general

JT 1.1 There must be a named member of staff responsible for monitoring the welfare of the fish during loading and unloading.

JT 1.2 Records of procedures relating to transporting vessels must:

a) be maintained

b) include details of any casualties or compromises to the welfare of the fish.

JT 1.3 There must be a pre-transport plan in place that identifies all areas of risk associated with the journey.

JT 1.4 Should a journey require the use of a roll-on-roll-off ferry, procedures must be in place to ensure the welfare of the fish during any stationary time.

JT 1.5 The ferry must be pre-booked prior to sailing.

JT 1.6 Drivers must be able to gain access below deck during the journey, to be able to check on the welfare of the fish.

JT 1.7 Fish must be monitored throughout the journey.

JT 1.8 The following records must be kept in relation to the transport process:

a) time since last handling

b) time since vaccination

c) time since last treatment (including anaesthetic)

d) feed withdrawal time

e) any clinical signs of disease

f) crowding records (how often/duration etc.)

g) oxygen levels during crowding

h) numbers of fish in each tank to be transported

i) stocking densities of tanks being used for transport

j) numbers of fish to be put in each receiving enclosure

k) numbers of fish in each tank and the stocking density of each tank.

JT 1.9 Producers must be able to demonstrate that they have done everything possible to ensure maximum survival when fish are transferred to sea.

JT 1.10 Only healthy, undamaged fish must be transported.

JT 1.11 Any bath treatment must be recorded in the VHWP.

JT 1.12 All staff working with, or handling the fish must be:

a) trained and competent

b) aware of their duties

c) aware of any risks to welfare involved.

JT 1.13 Records of training relating to standard JT 1.12 must be kept.

JT 1.14 All equipment must be:

a) cleansed and disinfected prior to use

b) fit and suitable for the purpose for which it was intended.

JT 1.15 To minimise thermal shock and to avoid the inhibition of oxygen release into the water, the water temperature used for transportation must be as close as possible to that from which the fish came.

As a guide, a difference of more than 3 or 4ºC would not be expected. Where the difference is greater, transport water should be mixed with receiving water in order to acclimatise the fish.

JT 1.16 Fish must not be transported at temperatures which may compromise their welfare.

JT 1.17 No fish must be out of water for more than 15 seconds.

JT 1.18 There must be at least 50% more oxygen available than is needed for the journey.

JT 1.19 Water must be free from contaminants which may be detrimental to the welfare of the fish.

JT 1.20 If fish pumps are to be used, they must be suitable for the size of fish being pumped.

JT 1.21 To avoid physical injury to the fish, any bends or joins in the pipes must be kept to a minimum, or ideally avoided altogether.

JT 1.22 There must be no joints, kinks or rough internal edges on, or in the pipes which may cause physical injury to the fish.

JT 1.23 There must be a procedure in place to ensure that all fish are removed from any pipes or other equipment used at the end of loading and unloading.

JT 1.24 The drop from the end of any pipe must be such that it:

a) avoids injuring the fish

b) allows them to disperse without others landing on top of them.

JT 1.25 Hand nets must:

a) be of the correct size so that they can be easily lifted such that the fish at the bottom of the net are not injured

b) have a suitable mesh size for the size of the fish that does not allow the fish to escape

c) not be filled to a level which is likely to inflict physical damage to the fish.

JT 1.26 Fish must not be netted before they are ready to be received at the transport tanks/helicopter buckets.

JT 1.27 The netting of the last fish in any tank must be undertaken with a great deal of caution and care so as not to injure any fish.

Pushing/towing enclosures

JT 2.1 The speed of pushing/towing must be suitable for the size of the fish.

JT 2.2 Nets must be tensioned to avoid the problems associated with the nets bagging, which could compromise fish welfare.

JT 2.3 Nets must be clean before they are used for pushing/towing.

JT 2.4 There must be a person on the enclosure monitoring the behaviour of the fish to ensure their welfare.

JT 2.5 There must be a clear method of communication between the skipper and the person on the enclosure.

JT 2.6 The speed of the pushing/towing must not be faster than the speed of the swimming fish.

JT 2.7 Extreme care must be taken to avoiding pushing/towing the enclosure through a fluther of jellyfish or algal blooms.

Road transport – (relating to both internal and external journeys)

JT 3.1 The driver of the vehicle must:

a) be fully aware of the transport regulations relating to fish

b) understand the needs of the fish being transported

c) drive in a manner which will not adversely compromise the welfare of the fish.

JT 3.2 Tank insulation must be such that it allows the water to remain at a constant temperature +/– 1.5ºC from the start of the journey.

JT 3.3 Before leaving the site, the driver must:

a) perform a visual check of the oxygen levels and rates of aeration into the tanks

b) record the oxygen levels on the record sheet.

JT 3.4 All transport tanks and life support systems must:

a) be designed and be fit for the purpose of transporting fish

b) be without leaks, chips or cracks.

JT 3.5 Fish must be allowed to settle before departure.

JT 3.6 After the required density has been reached, all tanks must be filled to the top with good quality water from where the fish were loaded.

JT 3.7 The following stocking densities must be adhered to during transport:

Size of fish (grams)	Max stocking density (kgs/cubic metre)
1 to 4	40
5 to 19	85
20 to 49	95
50 to 99	110
100 to 224	130
225 to 449	140
450 to 999	160
1000 +	150

JT 3.8 Oxygen levels must be:

a) continuously monitored

b) maintained at a minimum of 7mg/litre.

JT 3.9 Diffused oxygen must be spread around the water column by the use of an oil free compressor.

JT 3.10 There must be sufficient aeration to avoid deadspots.

JT 3.11 All lids, outlets and any other openings must be fully secured before departure.

JT 3.12 During the journey, if oxygen levels fluctuate, the driver must:

a) be able to visually check the fish for signs of stress

b) be able to identify the reasons for the oxygen instability

c) take appropriate action to ensure the welfare of the fish.

JT 3.13 All equipment that the fish rely on for life support during the journey must be monitored throughout the journey.

JT 3.14 If any faults are found in the equipment (see standard JT 3.13) then:

a) fish in transit must be inspected

b) any problems must be corrected immediately.

JT 3.15 When arriving at the discharge site, the driver must:

a) ensure compliance with any biosecurity requirements

b) have been aware of these before arrival on site.

JT 3.16 After arrival at the site, discharge must take place without undue delay.

JT 3.17 The lorry must be sited to ensure that all tanks can be fully emptied, taking into account any camber which may be in the ground.

JT 3.18 Valves must be suitable for more than one fish to pass through at any one time.

JT 3.19 All pipes must be securely attached to prevent fish from escaping during the unloading process.

JT 3.20 All unloading must be through appropriate valves, rather than netting fish from the tanks.

JT 3.21 Any pipes used for unloading must be able to be adjusted to account for any rise and fall in the tide.

JT 3.22 Water must always be in the tanks during unloading in order to avoid the last fish from becoming dry.

JT 3.23 There must be a system for flushing the tanks at the end of unloading to ensure that the last fish is removed.

JT 3.24 Tank design must facilitate the discharge of the last fish by having sloping floors which guide the fish to the outlet.

Wellboat transport

JT 4.1 Wellboats arriving into the United Kingdom (UK) to work within UK waters must carry a valid certificate of disinfection from their country of origin.

JT 4.2 Only wellboats with the ability to run on closed valves are permitted.

JT 4.3 There must be no unnecessary delays in loading/unloading the fish once the vessel has docked.

JT 4.3.1 There must be written contingency plans to accommodate unforeseen circumstances that could affect the welfare of the fish during the journey.

JT 4.4 There must be trained competent staff available at the site that is to receive fish.

JT 4.5 Vessel crew members and skippers must have completed, or be able to demonstrate that plans are in place to complete, a recognised fish welfare course.

JT 4.5.1 In relation to standard JT 4.5, there must be plans in place for staff that have been unable to complete a recognised training course to attend the course at the next available opportunity.

REVISED **With reference to standard JT 4.5, examples of recognised courses include, the University of the Highlands and Islands (UHI) Shetland Fish Welfare Training Course and the Pharmaq Analytiq Fish Welfare Training Course.**

JT 4.6 Maximum stocking densities must:

a) be within 40–50 kg/m^3

b) be set so that water quality can be maintained over the length of the journey.

JT 4.7 If fish counting equipment is in place, it must:

a) be over a dewaterer

b) be fully maintained

c) be regularly calibrated to maintain accuracy

d) be of a design not likely to cause damage or injury to the fish.

JT 4.8 The number of fish to be loaded must be known in order to be able to verify compliance with the stocking density.

JT 4.8.1 At the start of loading, the wells must contain sufficient water to prevent fish suffering injury through hitting each other, the walls or the bottom of the well.

JT 4.9 There must be enough light in the well to enable easy inspection of the fish.

JT 4.10 Any pumps and pipes used for unloading must be positioned to minimise the height and distance that the fish have to be pumped.

JT 4.10.1 Pumps and pipes must be free of any rough edges which might damage the fish.

JT 4.10.2 There must be a method in place to ensure that there are no fish left in the pipes after pumping or during a breakdown.

JT 4.10.3 A humane process must be in place to safeguard fish welfare when removing the last fish from the well.

JT 4.11 Adjustments must be made to the trim/balance of the wellboat to ensure fish are aligned with the discharge point.

JT 4.12 Water flow through the wells at discharge must:

a) be sufficient to facilitate movement of the fish

b) not be so strong as to cause the fish injury.

JT 4.13 Oxygen levels must be maintained at a minimum of 80% saturation and/or a minimum of 7mg/litre.

JT 4.13.1 Water must be chilled at a maximum of 1.5°C per hour down to a maximum of 50% of the starting ambient temperature.

JT 4.13.2 The pH of the water must always be between 6.8 and 8.

JT 4.13.3 **REVISED** Carbon dioxide levels of the water must not be detrimental to fish welfare and, in any case, never exceed 20mg/l.

JT 4.13.4 The water temperature must remain within the range of 4–16°C.

JT 4.13.5 The total suspended solids content of the water must not be detrimental to fish welfare.

JT 4.13.6 Excessive changes in water temperature and pH during the journey which could compromise fish welfare must be avoided.

JT 4.13.7 Only disinfected water must be discharged upstream of another site.

JT 4.13.8 Any onboard/onshore water treatment/filtration methods must be:

a) recorded

b) made available upon request.

JT 4.14 A system must be in place to ensure that the number of fish to be discharged into each receiving enclosure is pre-planned and reported to wellboat staff before discharge begins.

JT 4.15 Any fish that die during transportation must be separated from live fish as soon as possible after arrival.

JT 4.15.1 Records must be kept of any deaths or injuries that occur during transportation.

JT 4.16 The pipe layout, angle and drop must:

a) lead to a good distribution of fish into the enclosure

b) minimise the risk of collisions between fish.

JT 4.17 The nets at the reception enclosure must:

a) be set at a sufficient depth to permit inspection

b) not be so shallow that fish are stressed by strong sunlight.

JT 4.18 The fish must be given humane protection from birds and marine predators.

JT 4.19 The unloading of fish must not take place if adverse weather conditions are likely to compromise the welfare of the fish.

JT 4.20 Dead and moribund fish must be disposed of humanely and hygienically.

JT 4.21 REVISED Records of all dead and moribund fish must:

a) be kept for at least one year

b) include the cause of death where possible and any other information relating to the health and welfare of the fish

c) be made available upon request.

JT 4.22 Producers must be able to demonstrate that they have done everything possible to ensure maximum survival when juveniles are transferred to sea.

Live haul harvest wellboats

These live haul harvest wellboats standards are to be considered in conjunction with, and as a supplement to, the general transport standards.

HWB 1.1 Wellboats arriving into the United Kingdom (UK) to work within UK waters must carry a valid certificate of disinfection from their country of origin.

HWB 1.1.1 Wellboat cleaning procedures must comply with the current operational Marine Scotland disinfection/decontamination guide.

HWB 1.1.2 There must be written contingency plans to accommodate unforeseen circumstances that may affect the welfare of the fish during the journey.

HWB 1.1.3 Multi-site collections are prohibited, i.e. collections of fish from different sites that have different disease control areas.

HWB 1.1.4 Intra-site collections and collection from neighbouring sites of the same year class are allowed, but must be recorded.

HWB 1.1.5 The wellboat must be fitted with movable bulkheads.

HWB 1.1.6 The wellboat must be able to monitor and record the numbers of fish loaded into each well.

HWB 1.1.7 There must be sufficient natural or artificial lighting to enable continuous inspection/monitoring of the fish throughout the well.

HWB 1.1.8 All crowding, loading and unloading of fish must be recorded using CCTV.

HWB 1.1.9 Footage relating to standard HWB 1.1.8 must be kept for a minimum of 14 days.

HWB 1.2 Wellboats must be equipped with water quality monitoring and maintenance equipment.

HWB 1.2.1 All wellboats registered to operate in Scottish waters must be fitted with auto-logging systems which can:

a) Record their position

b) Determine whether all inlet-outlet and bottom valves are either open or closed at any one time

c) Enable the information relating to a) and b) to be available in real time and retrospectively.

HWB 1.2.1.1 Information relating to standard HWB 1.2.1 must be kept for a period of at least 14 days.

HWB 1.2.2 Where the maintenance of water quality is reliant on automatic equipment, this equipment must be alarmed and underpinned by fully operational back-up systems. This includes water quality control methods, such as oxygenators/aerators and carbon dioxide strippers.

HWB 1.2.3 Weekly checks must be made and recorded for the calibration accuracy on automatic equipment.

HWB 1.2.3.1 Where calibration is not possible (see standard HWB 1.2.3), there must be a demonstrable way of ensuring the equipment is working accurately.

HWB 1.3 All auto-logging systems must have been certified as being accurate and fit for purpose by a competent independent expert.

HWB 1.3.1 The maximum stocking density in the well for harvest fish must be based on the liveweight of the fish, as shown below +/- 10%:

Liveweight (kg)	Max. stocking density (kg/m^3)
5.0	125
4.0	110
3.5	100

HWB 1.3.2 There must be no unnecessary delays in unloading the fish once the vessel has docked.

HWB 1.3.3 Pumping of the fish from the well to the slaughter plant must be done in a way that:

a) does not demonstrably compromise fish welfare

b) ensures that slaughter personnel can maintain an efficient stunning and bleeding procedure.

HWB 1.4 There must be a method in place to ensure that there are no fish left in the pipes after pumping or during a breakdown.

HWB 1.4.1 Extraneous species must be treated in accordance with the relevant legislation.

HWB 1.4.2 The maximum dwell time in the pipe must be no longer than ten minutes.

HWB 1.4.3 The following records must be kept for inspection, and be available on request:

a) wellboat movements

b) fish movements

c) times of fish movements

d) disinfection logs

e) number of fish loaded

f) fish size distribution

g) route covered during transport

h) timing of open and closed valve operations.

HWB 1.5 Vessel crew members and skippers must have completed, or be able to demonstrate that plans are in place to complete, a recognised fish welfare course.

HWB 1.5.1 In relation to standard HWB 1.5, staff that have been unable to complete a recognised training course must attend the course at the next available opportunity.

Water Quality

HWB 2.1 Oxygen levels must be maintained at a minimum of 80% saturation and/or a minimum of 7mg/litre.

HWB 2.1.1 Water must be chilled at a maximum of 1.5°C per hour down to a maximum of 50% the starting ambient temperature.

HWB 2.1.2 The pH of the water must always be between 6.8 and 8.

HWB 2.1.3 Carbon dioxide levels of the water must not be detrimental to fish welfare.

> **As a guide this level should not go above 20 mg/l.**

HWB 2.1.4 The water temperature must remain within the range of 4–16°C.

HWB 2.1.5 The total suspended solids content of the water must not be detrimental to fish welfare.

HWB 2.1.6 Excessive changes in water temperature and pH during the journey which could compromise fish welfare must be avoided.

HWB 2.1.7 Only disinfected water can be discharged upstream of another site.

HWB 2.1.8 Any onboard/onshore water treatment/filtration methods must be:

a) recorded

b) made available upon request.

Stunning beyond recovery/killing

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

NEW Please refer to the section on fasting/food withdrawal for permitted feed withdrawal times.

S 1.1 All fish must be humanely stunned/killed.

S 1.2 Crowding and handling prior to stunning/killing must be kept to an absolute minimum.

S 1.3 The method of stunning/killing used must rapidly, and without pain and distress, render the fish insensible, until death supervenes.

S 1.3.1 NEW The following killing methods are inhumane and must not be used:

a) bleeding (exsanguination) or decapitation without prior stunning

b) asphyxia

c) evisceration

d) live chilling

e) ice slurry or bath

f) carbon dioxide narcosis.

S 1.3.2 REVISED Trout must be stunned/killed using one of the following methods:

a) an effectively applied automated, mechanical percussive blow, followed by bleeding

b) electronarcosis followed by bleeding

c) electronarcosis followed by an effectively applied automated, mechanical percussive blow, followed by bleeding

d) electrical stun-to-kill.

S 1.3.3 A ‘priest’ must be available throughout the killing process to allow a manual percussive blow to be administered in an emergency.

S 1.3.4 When used, the use of mechanical devices must be monitored to ensure that they are working properly and that they are delivering the stun at the correct location.

S 1.4 NEW The flow of fish into the percussive stunning system must be of an appropriate speed so that:

a) fish are not out of water for longer than is necessary

b) only one fish enters the stunning system at a time

c) operators have sufficient time to handle individual fish with care to, for example, carefully reposition any fish that have entered the system in any way that could impact the effectiveness of the stun (e.g. upside down or the wrong way around).

S 1.5 REVISED When applying a percussive blow, each fish must receive a percussive blow:

a) to the top of the head, just behind the eyes

b) of sufficient force to kill the individual, or cause immediate loss of consciousness that lasts until death.

S 1.6 NEW When receiving a percussive blow, the head of the fish must be free to move up and down to ensure an effective stun.

S 1.7 NEW There must be sufficient time after stunning, and safeguards in place, to:

a) assess the effectiveness of the stun in all fish

b) ensure all fish that have not been effectively stunned are re-stunned immediately.

S 1.8 Where fish have to be bled, bleeding must follow within 10 seconds after the animals have been stunned.

S 1.9 All staff involved with the stunning/killing process must have received full training to ensure they have the knowledge and skill to perform their task humanely and efficiently.

S 1.10 There must be a named person responsible for fish welfare throughout the killing process who has attended a recognised training course in humane killing of fish and who has the authority to stop the harvest if poor welfare for whatever reason is suspected.

S 1.11 NEW During the slaughter/killing process, if poor welfare for whatever reason is suspected then:

a) the slaughter/killing process must be stopped immediately

b) the issue/s must be rectified prior to re-starting the slaughter/killing process.

S 1.11.1 NEW If the slaughter/killing process is stopped, a record must be kept that:

a) includes details of:

i. the issue/s

ii. the number of fish affected

iii. the action taken to rectify the issue/s

iv. the date of the event

v. the time of the event

vi. the name of the person responsible for overseeing the issue

b) is made available on request.

S 1.12 NEW The number of fish that have not been effectively stunned must be recorded.

S 1.13 NEW Where fish have not been effectively stunned:

a) they must be effectively restunned immediately

b) this must be reported without delay to the named person responsible for fish welfare (standard S 1.10), and the stunning/killing operator/s

c) action must be taken immediately to rectify the issue/s as necessary

d) the action taken to rectify the issue must be recorded.

S 1.14 NEW A Standard Operating Procedure must be in place to detail the procedure for dealing with fish that have not been effectively stunned.

S 1.15 NEW Where the stun and/or bleed has not been effective, equipment and procedures must be:

a) checked immediately

b) adjusted to correct the fault before any further fish are slaughtered/killed.

S 1.16 Killing efficiency must be continuously monitored to ensure that every fish is effectively stunned/killed and does not regain consciousness prior to death.

S 1.17 A sample of fish must be examined during, and at the end of the process and checked to ensure that there are no signs of consciousness.

S 1.18 The results of these checks must be recorded and be made available upon request.

S 1.19 All blood and mucus from killing operations must be contained and disposed of ashore.

The RSPCA is examining all new developments associated with the killing of farmed fish. If any of these alternative methods are shown to maintain or enhance the welfare of the fish, then consideration will be given to incorporating them into the RSPCA welfare standards in the future.

NEW **The RSPCA strongly recommends that all trout are electrically stunned, which is then followed by a percussive blow to the head and bleeding for larger trout. We believe that this approach currently offers the best method to safeguard trout welfare at the time of killing.**

We acknowledge that there are some issues to be addressed in the short-term with electrical stunning, and we strongly support and encourage further research and work to address these issues as soon as possible.

We will be monitoring this research with the intention of requiring electrical stunning to be incorporated into the killing process under these standards within the next five years.

We strongly encourage the adoption of this killing process as soon as possible.

S 1.20 NEW Producers must:

a) humanely cull any extraneous/non-target fish that are present

b) be aware of, and adhere to, any legislation relating to protected species.

Electronarcosis followed by bleeding/electrocution

NEW Electricity can be used within the stunning and slaughter process in two distinct ways, i.e. to stun (electronarcosis) and then to kill (electrocution). In order to have a humane process set up to safeguard fish welfare, it is important that these differences are understood.

Electronarcosis is the process of *stunning* with electricity, to result in an immediate loss of consciousness but not cause death, and is a reversible process. As such, it requires a separate, humane, killing method to be applied before consciousness is regained.

Electrocution is the process of *killing* with electricity, which results in cardiac arrest and/or the loss of the breathing reflex. When done effectively, it does not require a separate killing method. Electrocution without pre-stunning is painful, so it is critical that fish are humanely rendered unconscious immediately prior to electrocution (and remain so until death supervenes), which is usually achieved via electronarcosis. This process, whereby the fish are electrically stunned first and then killed using electricity, is called a stun-to-kill process.

The system in use should pass enough current through the body of the fish for a sufficient duration, which either renders the fish insensible until it has been bled or death by anoxia supervenes.

S 2.1 REVISED Whatever electrical stunning/killing process is used (batch, continuous flow etc.):

a) insensibility of the fish must be immediate (within one second)

b) there must be no pre-stun shocks

c) fish must remain unconscious until death

d) fish must be assessed on a regular basis to ensure they have been effectively stunned and demonstrate the following:

   i. no eye movement

   ii. no rhythmic opercular movement

   iii. only mild short term involuntary muscular twitches

   iv. no reaction to tail pinch

   v. fish turn over and remain upside down (if in water).

S 2.2 REVISED Fish must be presented to the stunner in a way that prevents:

a) mis-stunning

b) fish missing the stunner, e.g. falling from the stun table to the floor.

S 2.3 Any fish which fall to the ground during the process must be humanely dispatched.

S 2.4 Fish must be carefully observed throughout the process to ensure that none of them are showing any signs of recovery before any further handling of them.

S 2.5 All personnel must be able to identify when fish have been properly stunned/are dead.

S 2.6 All personnel must be competent and able to operate the electrical system safely.

S 2.7 All equipment must be operated in accordance with the manufacturer's recommendations.

S 2.8 All equipment must be fitted with visible means of checking that the correct level of current is being administered throughout the process as dictated by the manufacturer's recommendations.

S 2.9 All equipment must be:

a) cleaned and maintained regularly and, in any case, at least in accordance with the manufacturer's instructions

b) fit for purpose at all times.

S 2.10 Contingency plans must be in place to ensure that fish welfare is not compromised should there be an interruption in the electricity supply, loss of water, breakdown of the water pump or any other equipment or material failure.

S 2.11 A back-up manual percussion stunner must be available at all times to humanely dispatch fish which are showing signs of consciousness.

S 2.12 Personnel must be competent at percussively stunning and manually bleeding fish.

S 2.13 There must be a process in place which ensures that no fish are left in the system at the end of the procedure.

S 2.14 Dry stunning methods using electricity are prohibited.

NEW Slaughter/killing including cage-side harvesting – Closed Circuit Television (CCTV)

NEW The use of Closed Circuit Television (CCTV) in areas where live animals are present can assist those responsible for monitoring and enforcing animal welfare in ensuring that standards are maintained. It is strongly recommended that CCTV footage is also used for in-house training programmes.

S(TV) 1.1 NEW A functional CCTV system must be installed and operational to clearly monitor fish undergoing the following processes:

a) initial tank/dewaterer entry and exit

b) stunning, including entry and exit

c) killing

d) passing through the post-stun assessment area.

S(TV) 1.2 NEW CCTV cameras must be positioned to ensure a clear view of the processes being monitored is achieved at all times.

S(TV) 1.3 NEW It must be possible to observe clearly the view from each camera at all times via one or more monitors.

S(TV) 1.4 NEW CCTV footage must be recorded at all times where animals are undergoing any of the processes listed under standard S(TV) 1.1.

S(TV) 1.5 NEW The recorded CCTV footage must be:

a) retained for a period of at least three months

b) available for viewing upon request.

Environmental impact

The farm should be operated with respect for the natural environment and employees should recognise their duty to care for the wider environment. All reasonable steps should be taken to minimise the ecological impact of the farming system.

EVI 1.1 An Environmental Impact Plan must be drawn up and fully implemented at all times.

EVI 1.2 All relevant legislation, official guidelines and Codes of Practice must be understood and strictly adhered to.

These standards are primarily focused on the welfare of farmed fish. However, the potential for aquaculture to have wider environmental effects also needs to be considered. In addition to fully complying with all relevant legislation and recommendations, the farmer should demonstrably and positively review environmental protection policies as developments in research and technology allow. 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.

Escapees

EVI 2.1 Every reasonable step must be taken to prevent the escape of farmed fish.

EVI 2.2 Enclosures must be designed and sited in such a way that they are not likely to be damaged by adverse weather conditions.

EVI 2.3 Fish farms must have a containment plan in place with the aim of preventing fish escaping.

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.

EVI 2.4 The contingency plan, as referred to in standard M 2.5, must contain a section on actions to be taken in the event of fish escaping.

Extraneous species

EVI 3.1 Extraneous species must be returned to the wild, or humanely culled, as advised by the designated veterinary surgeon.

Fallowing

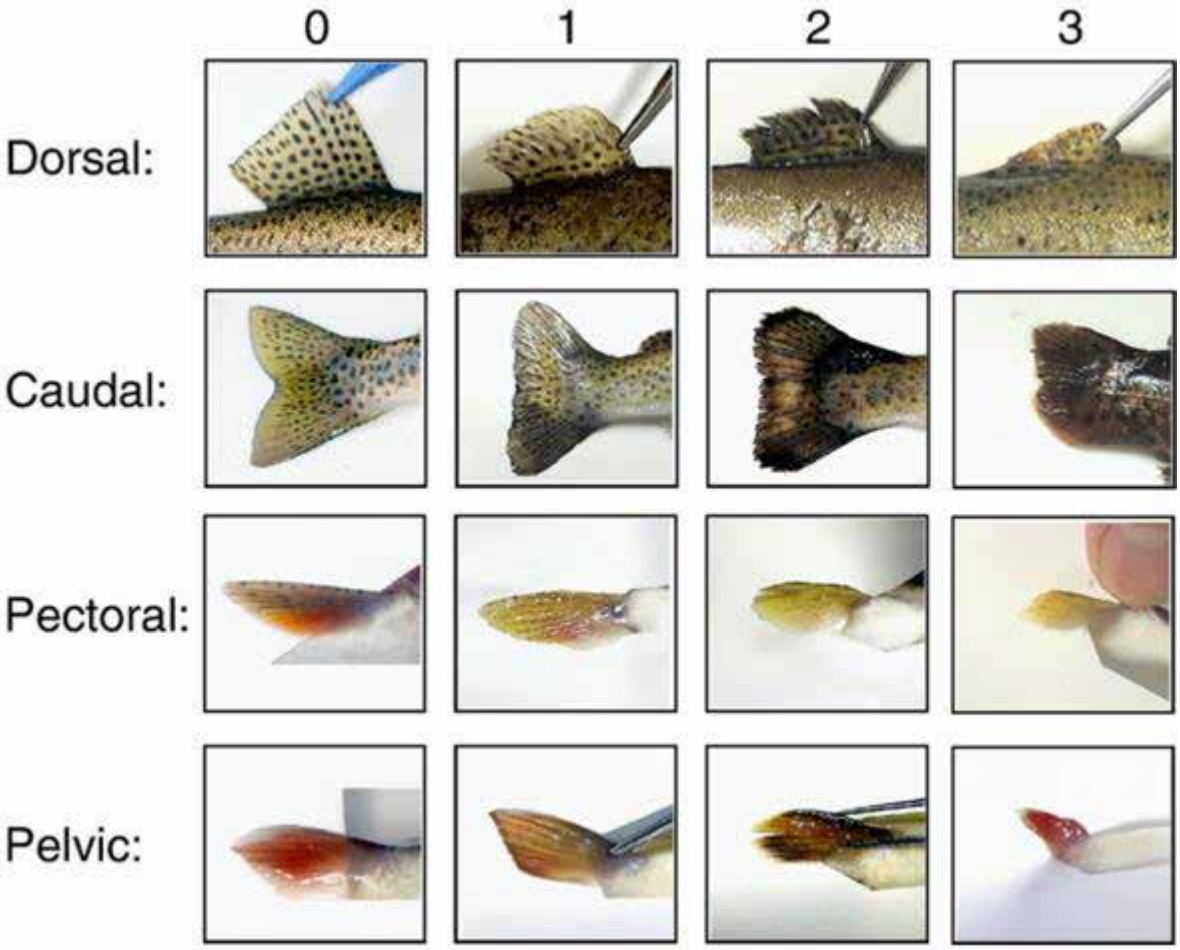
EVI 4.1 Net pen enclosures must be fallowed as detailed in the Environmental Impact Plan to allow recovery of the benthos.

Aesthetic

EVI 5.1 Sites must be kept tidy and all waste must be disposed of by an approved method.

Appendix 1

Fin damage assessment guide



Original photographs from the Centre for Environment, Fisheries and Aquaculture Science (CEFAS)/Imogen Hoyle. Amended by Peter Scott.

Appendix 2

Welfare Outcome Assessment at the time of slaughter/killing

In addition to further developing Welfare Outcome Assessment (WOA) for implementation on-farm (See the Section on Welfare Outcome Assessment), we are currently investigating the potential to develop WOA for implementation at the time of slaughter/killing. This will be considered for inclusion into the next publication of the standards, following further investigation. Meanwhile, we strongly encourage producers to use the requirements set out below.

We would be very interested to hear from any producers that are using these, or similar, requirements. If this is the case, please contact the Farm Animals Department.

WOA 1.1 Individual fish – a sample of 100 fish to be examined at the point of killing for the following outcomes:

a) fin damage (see appendix 1)

b) operculae damage

c) eye damage

d) any notable negative condition, such as abnormal behaviours, poor skin condition, spine or jaw deformities.

WOA 1.1.1 In relation to standard WOA 1.1, if 10% or more of fish in the sample score above 1, then this must:

a) be recorded in the VHWP

b) investigated to establish the cause of the issue

c) be prevented from reoccurring by implementing effective prevention strategies.

WOA 1.2 On making a visual appraisal of the fish during transfer, grading or any other handling procedure, if 10% or more of the fish are seen to be over a score 1 for any of the outcome measures listed under standard WOA 1.1, then this must:

a) be recorded in the VHWP

b) investigated to establish the cause of the issue

c) be prevented from reoccurring by implementing effective prevention strategies.

WOA 1.3 The following population measures must be recorded in the VHWP:

a) the percentage mortality of a population at an agreed time in their life cycle following a significant husbandry event, such as fry grading

b) the percentage of viable fish from a population start figure (culls as well as mortality) to the time of killing.

Appendix 3

Farmed fish welfare risk assessment template

RSPCA **Farmed Fish Welfare Risk Assessment**

SECTION 1

Company _____ **Designated fish welfare officer** _____

Type of fish

VET AVAILABLE IF REQUIRED

General description of event, including location and activity

Company _____ **Designated fish welfare officer** _____

Welfare at risk		Severity		Description
1	Freedom from thirst, hunger and malnutrition	**1**	**NEGLIGIBLE**	All welfare needs met at all times
2	Freedom from discomfort	**2**	**MINOR**	Welfare needs not met for a reasonable duration
3	Freedom from pain, injury and disease	**3**	**SERIOUS**	Welfare needs not met for an unreasonable duration
4	Freedom to express normal behaviour	**4**	**MAJOR**	Animal suffering unnecessarily
5	Freedom from fear and distress	**5**	**FATALITIES**	Animal dies unnecessarily of unnatural causes

PERSON(S) RESPONSIBLE

	Job title	Name	Signed
A	Designated fish welfare officer		
B	Staff member		
C	Staff member		
D			
E			
F			

By signing the above, I understand my responsibilities as set out in section 2 (overleaf).

Farmed Fish Welfare Risk Assessment

SECTION 2

Company _____ **Designated fish welfare officer** _____

Fish _____

Activity	Duration of activity	Probability/likelihood of negative welfare impact	Welfare at risk	Severity of risk	Control measure(s)	Person(s) responsible for control	Revised severity
	S		3	5		A, B, C	1

This Farmed Fish Welfare Risk Assessment (WRA) contains summary advice for the purpose of ensuring the welfare of fish. It is not intended to be a comprehensive statement of all the needsof the fish or how to meet them.

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RSPCA.

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