National Unit specification: general information

Unit title: Aquaculture: Live Fish Handling

Unit code: H03D 11

Superclass: SJ

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Summary

The purpose of this Unit is to provide candidates with the basic knowledge and competence necessary to carry out a range of routine fin fish handling operations. The importance of conducting operations according to the Standard Operating Procedures (SOP) while maintaining fin fish welfare is emphasised and includes the safe use of anaesthetics. Current legislation relating to the safe movement and receipt of live fin fish and records that have to be maintained, are also covered. Candidates must have access to a fin fish farm to achieve the practical competences.

The Unit is suitable for candidates who are either new entrants or those already working in aquaculture.

This is a mandatory Unit in the NPA in Fish Husbandry (SCQF level 5) and is also available as a freestanding Unit.

Outcomes

1 Describe routine fin fish handling operations including the precautions taken to reduce fish stress during handling.
2 Conduct fin fish stock capture operations.
3 Sample fin fish from a farmed population.
4 Grade farmed fin fish to satisfy given objectives.
5 Transport a population of live fin fish.
6 Handle and transport individual fin fish.

Recommended entry

Entry is at the discretion of the centre.

General information (cont)

Credit points and level

1 National Unit credit at SCQF level 5: (6 SCQF credit points at SCQF level 5*)

**SCQF credit points are used to allocate credit to qualifications in the Scottish Credit and Qualifications Framework (SCQF). Each qualification in the Framework is allocated a number of SCQF credit points at an SCQF level. There are 12 SCQF levels, ranging from Access 1 to Doctorates.*

Core Skills

Achievement of this Unit gives automatic certification of the following Core Skills component:

- Critical Thinking at SCQF level 4

There are also opportunities to develop aspects of Core Skills which are highlighted in the Support Notes of this Unit specification.

National Unit specification: statement of standards

Unit title: Aquaculture: Live Fish Handling (SCQF level 5)

Acceptable performance in this Unit will be the satisfactory achievement of the standards set out in this part of the Unit specification. All sections of the statement of standards are mandatory and cannot be altered without reference to SQA.

All activities must be carried out according to current legislation and Standard Operating Procedures (SOP).

Outcome 1

Describe routine fin fish handling operations including the precautions taken to reduce fish stress during handling.

Performance Criteria

(a) Describe routine fin fish handling operations and handling equipment.
(b) Describe the common causes of stress to live fin fish during handling operations.
(c) Describe the precautions taken to reduce the stress to fin fish stocks during fish handling.
(d) Describe the role of legislative authorities and current legislation in the control of fin fish movements.

Outcome 2

Conduct fin fish stock capture operations.

Performance Criteria

(a) Prepare a fish holding Unit for fin fish stock capture.
(b) Capture fin fish stock according to the recognised SOP.
(c) Maintain the captured fin fish at a density appropriate to the handling operation.
(d) Remove the fin fish from the captured population at a rate appropriate to the requirements of the handling operation.
(e) Return the holding Unit to its normal condition following the completion of the handling operation.

Outcome 3

Sample fin fish from a farmed population.

Performance Criteria

(a) Prepare sampling equipment appropriate to the size of fin fish to be sampled.
(b) Capture an appropriate fin fish sample representative of the total population according to recognised procedures.
(c) Weigh and count the fin fish sample accurately.
(d) Calculate the average weight of the fin fish sample.
(e) Maintain accurate and complete records of the fin fish sample.

National Unit Specification: statement of standards (cont)

Unit title Aquaculture: Live Fish Handling (SCQF level 5)

Outcome 4

Grade farmed fin fish to satisfy given objectives.

Performance Criteria

(a) Prepare and calibrate grading equipment to meet the objectives of the grading operation.
(b) Supply fin fish to the grader at a rate appropriate to the grading method used.
(c) Conduct periodic sampling of the graded fin fish to ensure accuracy and make appropriate adjustments to ensure the objectives of the grade are met.
(d) Measure the bulk and sample weights for the graded fin fish.
(e) Maintain and complete accurate records of the bulk and sample weights for the graded fin fish stocks.

Outcome 5

Transport a population of live fin fish.

Performance Criteria

(a) Prepare fin fish transportation equipment according to the SOP.
(b) Stock the transport vessel with a given weight or number of fin fish.
(c) Transport fin fish stocks in accordance with SOP.
(d) Comply with current legislation in relation to fin fish movements and non-target species.

Outcome 6

Handle and transport individual fin fish.

Performance Criteria

(a) Prepare fin fish and equipment for handling
(b) Capture fin fish with minimal stress and place in a suitable position for handling.
(c) Use anaesthetics in accordance with SOPs and current legal requirements.
(d) Handle and transport fin fish ensuring it is not at risk of being dropped and damaged.

National Unit Specification: statement of standards (cont)

Unit title Aquaculture: Live Fish Handling (SCQF level 5)

Evidence Requirements for this Unit

Evidence is required to demonstrate that candidates have achieved all Outcomes and Performance Criteria. Candidates must have access to a fin fish farm to achieve the practical competences. All activities must be carried out in accordance with current legislation.

Outcome 1 — Written and/or oral recorded evidence that demonstrates that the candidate can:

- describe three routine fin fish handling operations, including the equipment required.
- describe two causes of stress to fin fish during handling operations, including visible symptoms.
- describe two precautions that can be taken to reduce stress in fin fish during handling operations.
- describe a minimum of two roles of the legislative authorities in relation to fin fish movements.
- describe two pieces of current legislation that can be implemented for the control of fin fish movements.

Evidence will be produced in closed-book conditions.

Outcome 2 — Performance evidence that demonstrates that the candidate can:

- perform the following tasks during routine fin fish capture activities:
  - prepare a fin fish holding unit for a capture activity for a minimum of two types of holding unit.
  - capture fish according to the SOP on three occasions.
  - maintain fin fish at an appropriate stocking density, while monitoring for signs of stress on three occasions.
  - remove fin fish from the captured stock at a rate appropriate to the handling operation on three occasions.
  - return fish holding unit to its normal condition after each handling operation for a minimum of two types of holding unit.

Evidence will be produced in supervised, open-book conditions.

Outcome 3 — Written and/or oral recorded evidence and performance evidence is required.

The candidate must be able to perform the following tasks on a minimum of three separate sampling activities:

- prepare sampling equipment appropriate to the size of fin fish to be sampled
- capture fin fish samples representative of the total population according to recognised procedures
- weigh and count fin fish samples accurately
- calculate the average weight of fin fish samples
- maintain accurate and complete records of sampling

Evidence will be produced in supervised, open-book conditions.

National Unit Specification: statement of standards (cont)

UNIT Aquaculture: Live Fish Handling (SCQF level 5)

Outcome 4 — Written and/or oral recorded evidence and performance evidence is required.

The candidate must be able to perform the following tasks on a minimum of two separate fin fish grading activities:

- prepare and calibrate grading equipment.
- supply fin fish to the grader.
- ensure the objectives of the grade are being achieved by routine sampling.
- measure and record the bulk and sample weights.
- maintain and complete accurate records of the bulk and sample weights.

Evidence will be produced in supervised, open-book conditions.

Outcome 5 and 6 — Performance evidence is required:

The candidate must be able to perform the following tasks on a minimum of two separate occasions during routine fin fish transportation activities:

- prepare fin fish transportation equipment according to the SOP
- stock the transport vessel
- transport fin fish socks in accordance with SOP

Candidates must comply with current legislation in relation to fin fish movements and non-target species.

The candidate must be able to perform the following tasks on a minimum of three separate occasions when handling and transporting individual fin fish:

- prepare fin fish and equipment for handling
- capture and handle fin fish
- ensure fin fish have entered the appropriate stage of anaesthesia
- handle and transport a fin fish correctly

Evidence will be produced in supervised, open-book conditions.

National Unit specification: support notes

Unit title: Aquaculture: Live Fish Handling (SCQF level 5)

This part of the Unit specification is offered as guidance. The support notes are not mandatory.

While the exact time allocated to this Unit is at the discretion of the centre, the notional design length is 40 hours.

Guidance on the content and context for this Unit

This is a mandatory Unit in the NPA in Fish Husbandry (SCQF level 5) and is also available as a free-standing Unit.

The Unit is aligned to the following LANTRA Sector Skills Council's National Occupational Standard (NOS) Units:

- Aqu 1 Prepare holding Units to receive fish
- Aqu 2 Stock fish into holding Units
- Aqu 3 Gather fish
- Aqu 4 Grade fish
- Aqu 5 Harvest fish
- Aqu 6 Prepare to and feed fish
- Aqu 7 Collect information of fish growth and development
- Aqu 12 Monitor the aquatic production environment
- Aqu 13 Maintain environmental conditions within holding Units
- Aqu 14 Treat health problems in fish
- Aqu 15 Spawn fish and fertilise fish eggs
- Aqu 16 Establish and maintain green egg incubation
- Aqu 17 Prepare to and maintain fish eggs in a hatchery
- Aqu 18 Care for juvenile fish
- Aqu 19 Prepare for the transport of live fish
- Aqu 20 Transport live fish
- Aqu 37 Work safely in an aquatic environment

Candidates must have access to a fin fish farm to achieve the practical competences. This Unit could be delivered in the context of any farmed fin fish, although the handling practices contained are most typical of a salmonid farm.

Outcome 1 — The candidate should develop knowledge of routine fin fish handling operations such as, fin fish capture, grading, sample weighing and transportation. The design and operation of the fin fish handling and grading equipment required for these operations could be discussed in the context of intensive salmonid production. Candidates should develop knowledge of the practices necessary to ensure high standards of fish welfare are maintained during routine fin fish handling operations such as grading, netting, transportation and handling. The procedures necessary to condition fin fish prior to any handling operation should also be described, including the causes of stress and measures that could be taken to prevent or reduce stress.

National Unit specification: support notes (cont)

Unit title: Aquaculture: Live Fish Handling (SCQF level 5)

Candidates should be made aware of the requirements to comply with current legislation and industry codes of practice in relation to fin fish movements and health and safety. The legal requirements for accurate movement records to be maintained and the importance of those records to the site health plan, traceability, containment and SOPs should be emphasised

Outcome 2 — The techniques required to capture and crowd a stock of fin fish ensuring minimal stress should be demonstrated. Candidates should be taught how to recognise the signs of stress such as surface swimming and gasping. The measures that can be taken to relieve stress should also be demonstrated.

Outcome 3 — Hand netting skills should be developed at the outset, keeping the quantity of fin fish in the hand net within safe limits to avoid damaging and stressing the stock.

Basic training in table and manual box grid grading should occur before candidates are introduced to automatic grading systems. Table grading is recommended to develop the candidate's net control as the stock have to be released at a regulated rate.
The importance of controlling the outcome of the grade by sampling fin fish coming off the grader and making re-adjustments should be emphasised and practised. Emphasis should also be placed on the importance of accurate record keeping for farm stock control.

Outcome 4 — Candidates should understand why accurate sample weighing is essential to fin fish farm stock management and how sampling accuracy can be improved. Frequent practise in routine sampling, including capturing a representative sample, fin fish counting and weighing is recommended to develop the candidates speed and accuracy.

Outcome 5 — Candidates should be aware of the relationship between the weight of stock transported, the water temperature and their oxygen requirement. This should include how the weight of stock transported relates to the volume of the transportation unit when calculating the stocking density.

Instruction in the regulation of oxygen supply from a pressurised oxygen bottle should be received prior to involvement with fin fish transport operations.

Outcome 6 — A basic knowledge of external and internal fish anatomy would be an advantage before candidates are taught how to handle individual fin fish. The importance of correct hand placement to avoid damage to internal organs whilst ensuring a secure hold on the fin fish should be emphasised and demonstrated. It is recommended candidates with limited previous experience should practise on a dead fish before attempting to handle live stock. At all times live fin fish should only be held near to ground level to avoid the risk of severe damage if they were accidentally dropped during training. The use of anaesthetics as an aid to moving and handling fin fish should also be taught to candidates. The various stages of anaesthesia should be described and demonstrated, and how the effects of this are linked to the condition of the fish. Candidates should be trained in the use of anaesthetics and be fully aware that the work must be carried out in line with current health and safety legislation and according to SOP, using appropriate personal protective equipment (PPE).

National Unit specification: support notes (cont)

Unit title: Aquaculture: Live Fish Handling (SCQF level 5)

Guidance on learning and teaching approaches for this Unit

This Unit lends itself to a range of teaching and learning approaches that give consideration to the Curriculum for Excellence capacities and Equalities legislation, through reasonable adjustment for all candidates. Some formal teaching may be used to introduce fin fish anatomy, the causes and effect of stress on fin fish and anaesthesia.

There is scope for candidate centred learning based on workbooks, web based resources and interactive ICT based learning objects presented within a virtual learning environment (VLE).

Interactive exercises and regular formative assessment, incorporating online multiple-choice is recommended, in order to develop the candidates understanding of fin fish anatomy and stress (cause and effect).

The main delivery of this Unit should be based on a commercial scale fin fish farm. Practical tasks should be demonstrated before candidates are encouraged to become involved with regular handling and husbandry routines which will help their skills and experience develop over an extended period.

Practical instruction in the use of anaesthetics approved for use on fin fish (under current legislation) should also be carried out by appropriately trained personnel. This should be done until candidates have become familiar with the following in relation to anaesthetics: health and safety, dose rates, signs of stress and levels of anaesthesia.
This will enable the candidate to complete a full range of handling activities on a fin fish farm without subjecting the fin fish to unnecessary stress at any time.

It would be advantageous to have learning packages for a range of species. Although a lot of fin fish species will share the same basic concepts in relation to handling and husbandry, there are major differences (marine environment, cage units) in scale, size of fish, equipment and techniques required to carry out handling operations.

Guidance on approaches to assessment for this Unit

Outcome 1 could be assessed using restricted response questioning or oral examination. Assessment could also be gathered using online assessments in a VLE, or through candidate portfolios.

Outcomes 2–6 require the observation of practical activity with the results recorded on checklists to satisfy the Performance Criteria. Additional evidence is required to satisfy the requirements of these Outcomes. This can be provided orally or written. Where the evidence for Outcomes 3–5 is given orally, it is recommended that there should be written evidence in the form of farm records or a diary. Candidates could maintain their own ongoing log of farm handling activities, containing the associated records and calculations. This could be stored in a candidate portfolio, either paper based or e-portfolio.

National Unit specification: support notes (cont)

Unit title: Aquaculture: Live Fish Handling (SCQF level 5)

Centres must be satisfied that the evidence submitted is the work of individual candidates. Assessor observation checklists and other assessment records should be maintained and kept up to date to keep track of candidate progress and to provide evidence for internal and external verification purposes.

Opportunities for the use of e-assessment

E-assessment may be appropriate for some assessments in this Unit. By e-assessment we mean assessment which is supported by Information and Communication Technology (ICT), such as e-testing or the use of e-portfolios or social software. Centres which wish to use e-assessment must ensure that the national standard is applied to all candidate evidence and that conditions of assessment as specified in the Evidence Requirements are met, regardless of the mode of gathering evidence. Further advice is available in *SQA Guidelines on Online Assessment for Further Education (AA1641, March 2003), SQA Guidelines on e-assessment for Schools (BD2625, June 2005)*.

Opportunities for developing Core Skills

In this Unit candidates will develop skills in a range of routine fin fish handling operations.

Candidates will:

- capture a stock of fin fish
- recognise the signs of stress such as surface swimming and gasping and implement appropriate measures to relieve stress
- ensure quantity of fin fish held in a hand net are within safe limits to avoid damage and stress of the stock.
- carry out fin fish counting and weighing
- maintain accurate records for farm stock control.
- carry out safe transportation of live fin fish by taking account of the relationship between the weight of stock, water temperature and oxygen requirement.
- handle individual fin fish correctly to avoid damage to internal organs
- identify the various stages of anaesthesia and how the effects are linked to the condition of the fish.
- use anaesthetics in line with current health and safety legislation and according to Standard Operating Procedures (SOPs).

As candidates are doing this Unit they will be developing aspects of the Core Skills of *Problem Solving, Communication* and *Numeracy*.

This Unit has the Problem Solving component of Critical Thinking embedded in it. This means that when candidates achieve the Unit, their Core Skills profile will also be updated to show they have achieved Critical Thinking at SCQF level 4.

National Unit specification: support notes (cont)

Unit title: Aquaculture: Live Fish Handling (SCQF level 5)

Disabled candidates and/or those with additional support needs

The additional support needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments, or considering whether any reasonable adjustments may be required. Further advice can be found on our website **www.sqa.org.uk/assessmentarrangements**

History of changes to Unit

Version	Description of change	Date
02	Core Skills Component Critical Thinking at SCQF level 4 embedded.	06/01/12

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