

Measurement Assurance and Certification Scotland

Version 1 | September 2024

Performance Standard | Finfish Aquaculture

Sea lice surveillance

**Contents**

[1 Introduction 1](#_Toc156546755)

[2 Scope 2](#_Toc156546756)

[3 References 3](#_Toc156546757)

[3.1 Text references 3](#_Toc156546758)

[4 Terms and definitions 4](#_Toc156546759)

[5 Resource requirements 5](#_Toc156546760)

[5.1 Personnel 5](#_Toc156546761)

[5.2 Equipment 5](#_Toc156546762)

[5.3 Control of documents 6](#_Toc156546763)

[5.4 Control of records 6](#_Toc156546764)

[6 Monitoring 8](#_Toc156546765)

[7 Methods for conducting counts 9](#_Toc156546766)

[7.5 Manual method 9](#_Toc156546767)

[7.6 Automated method 9](#_Toc156546768)

[9 Control of non-conforming work 11](#_Toc156546769)

[10 MACS document review and control 12](#_Toc156546770)

1. **Introduction**

The Scottish Environment Protection Agency is Scotland’s principal environmental regulator. We regulate to protect our environment and communities from harm. We regulate to help Scotland adapt to our changing environment. And we regulate to improve the quality of our environment for people and nature.

We expect all our regulated operators to comply with their environmental obligations. We also expect those operators to be responsible for managing and understanding their own impact on the environment.

In certain sectors, this means that operators have an obligation to monitor and report back to us in support of our regulation of authorised activities. The data they submit forms part of the range of evidence we use in our compliance verification work.

To maintain confidence in our regulatory decision making, all operator monitoring data must meet our minimum quality requirements. To help operators meet those requirements, we have established Measurement Assurance and Certification Scotland (MACS) – our quality assurance certification scheme.

MACS comprises a range of performance standards and technical guidance documents, each designed to ensure that operator monitoring data is fit for regulatory assessment. Its remit extends across the entire monitoring process; from planning and scheduling of monitoring activity to sampling, analysis and data reporting.

Where an organisation conforms with the requirements of MACS, the monitoring data will be of a standard that meets our minimum quality requirements. To ensure that this remains the case, those organisations will be routinely audited.

Further information on MACS is available on [our website.](http://www.sepa.org.uk)

1. **Scope**
	1. This MACS performance standard is applicable to organisations that are required to carry out sea lice counts at marine pen fish farms (MPFFs) and where the data produced from those counts requires to be reported to SEPA.
	2. Sections 5 to 8 lay out the detailed requirements that those organisations **must** adhere to when carrying out that activity.
	3. In conjunction with this document, international standard ISO 16541 (ref. 3.1 a) and complementary technical guide MACS-FFA-TG-01 (ref. 3.b) may be consulted for guidance.
2. **References**
	1. **Text references**
3. BS ISO 16541:2015 – Methods for sea lice surveillance on marine finfish farms, ISBN 978 0 580 82453 1.
4. MACS Technical Guide MACS-FFA-TG-01, Finfish Aquaculture – Dealing with non-conformance, Scottish Environment Protection Agency, 2022.
5. **Terms and definitions**

For this MACS performance standard, and unless the context requires otherwise, the following definitions apply:

**concession** – a written approval, granted to release a non-conforming product or service for use or delivery. For example, a written agreement from SEPA explicitly permitting the submission of data associated with a quality control failure.

**counts** – sea lice counts.

**metrological traceability** – the property of a measurement result whereby the result can be related to a reference through a documented, unbroken chain of calibrations, each contributing to the measurement uncertainty.

**operator** – an individual or company responsible for the operation of an authorised activity or activities that are subject to monitoring requirements.

**organisation** – an entity performing an activity or activities required under operator monitoring. In the context of this performance standard, this term encompasses an operator, or a body appointed by that operator to undertake sea lice surveillance on its behalf.

**sea lice** – salmon lice, *Lepeotheirus salmonis*.

1. **Resource requirements**
	1. **Personnel**
		1. Organisations must ensure that all personnel performing activities relating to the requirements of this performance standard have been deemed competent in, and are authorised to undertake, those activities.
		2. Organisations must document and implement procedure(s) for:
* determining competence requirements;
* the training and supervision of personnel;
* assessing the initial competence of personnel;
* ongoing monitoring of the competence of personnel; and
* the authorisation of personnel.
	1. **Equipment**
		1. Equipment used must be suitable for the activities being undertaken and must not affect the scientific validity of reported result(s).
		2. Organisations must document the equipment necessary for the correct performance of their sampling activities.
		3. Organisations must have documented procedure(s) in place for the handling, transport, storage, use and planned maintenance of equipment, described at 5.2.1, to ensure its proper functioning.
		4. Organisations must verify that all equipment is functioning properly before placing or returning it into use.
		5. Measuring equipment used during counting must be calibrated when:
* the measurement accuracy or uncertainty will affect the validity of reported result(s); or
* calibration is required to establish the metrological traceability of reported result(s).
	+ 1. For all calibrated measuring equipment, organisations must implement an ongoing calibration programme to maintain confidence in the calibration status of that equipment.
		2. All measuring equipment requiring calibration must be clearly labelled, such that the user of the equipment can readily identify its calibration status.
	1. **Control of documents**
		1. Organisations must document all procedures used to satisfy the requirements of this performance standard.
		2. Organisations must implement a management system for the control of documents relating to the requirements of this performance standard.
		3. Such a system must ensure that all documents are:
* uniquely identified;
* suitably marked to indicate their current revision status;
* approved by authorised personnel prior to their issue; and
* periodically reviewed and updated where necessary.
	+ 1. Where obsolete documents are retained for any purpose, they must be clearly marked to prevent their unintended use.
		2. Copies of any documents relating to the requirements of this performance standard must be provided to SEPA upon request.
	1. **Control of records**
		1. Organisations must establish and retain records to demonstrate fulfilment of the requirements of this MACS performance standard.
		2. Such records must be retained for a minimum period of five years.
		3. Copies of these records must be provided to SEPA upon request.
1. **Monitoring**
	1. Counts must be made of adult female sea lice (gravid plus non-gravid).
	2. Table 1 sets out the number of fish that must be sampled for the purposes of each count.
	3. Where some pens are not sampled, organisations must document their approach to how pens are selected for sampling.

**Table 1: Number of farmed fish to be sampled in each weekly sea lice count**

|  | **Weeks during which sea lice limit conditions apply under the farm’s permit** | **Weeks during which no sea lice limit conditions apply under permit**  |
| --- | --- | --- |
| **Minimum\* number of fish that must be sampled** | 20 from every pen | 5 from every pen if the farm has 5 or fewer pens.5 from each of 5 pens, randomly selected, if the farm has more than 5 pens. |

\*Note: Where more fish are sampled, the results of all fish sampled must be reported.

1. **Methods for conducting counts**
	1. Counts can be conducted using manual methods (handling of the fish) or automated methods.
	2. Unless otherwise stated in this performance standard, sampling should conform to BSI ISO 16541:2015 (ref 3.1a).
	3. The methods used must be able to determine the following for gravid and non-gravid adult female sea lice:
* Number on each fish for each pen.
* Average number per fish for each pen.
* Average number per fish across all fish sampled.
	1. **Manual method**
		1. If fish are to be handled for the purpose of conducting a count, the method used must:
* Minimise the risk of dislodging sea lice from the fish.
* If adult female sea lice are dislodged, minimise the risk that the dislodged sea lice are not retained in any net or tub used for conducting the count.
* Include dislodged adult female sea lice retained in any net or tub when calculating the average number of adult female sea lice per fish.
	1. **Automated method**
		1. Any automated counter used must have documented testing results demonstrating that it can:
* Recognise adult female sea lice on a farmed fish with an accuracy and a precision that are similar to, or better than, achieved by a competent person.
* Avoid bias in the selection of fish on which it counts adult female sea lice (i.e. sample farmed fish randomly).
* Produce consistent and repeatable estimates of the average number of adult female sea lice per fish.
	+ 1. Operators must hold copies of the testing results referred to in paragraph 7.5.1 for inspection by SEPA on request.
1. **Control of non-conforming work**
	1. Organisations must have documented procedure(s) which are implemented when any aspect of their sampling activity does not conform with the requirements of this performance standard.
	2. As a minimum, these procedure(s) must provide for incidences of non-conforming work to be recorded, investigated, and evaluated for their significance; and require that a determination is made as to whether the results of that work valid.
	3. Where such an evaluation indicates that a non-conformance could recur, or that there is doubt around the conformity of an activity with either the organisation’s own procedure(s) or the requirements of this performance standard, then appropriate corrective action must be implemented.
	4. SEPA may accept submission of results associated with counts that have not been undertaken according to an organisation’s own procedure(s) or the requirements of this performance standard. In each case, a concession to report the affected results must be requested from SEPA.
	5. Concession requests must include a full assessment of the circumstances of the non-conformance and its potential impacts, and justification as to how the submitted data remains fit for its intended purpose. Where it is not possible to provide a suitable justification, then the non-conforming data will not be accepted by SEPA.
	6. SEPA must be notified of any non-conforming work no later than the Tuesday of the week following the week in which the non-conformance occurred.

NOTE: For additional guidance on dealing with non-conformance, please refer to complementary technical guide MACS-FFA-TG-01 (ref. 3.1.b).

1. **MACS document review and control**
	1. All MACS documentation will be subject to periodic review and may occasionally be amended. For the latest versions of all MACS performance standards, please refer to the [SEPA website.](http://www.sepa.org.uk)

For information on accessing this document in an alternative format or language, please contact SEPA by emailing equalities@sepa.org.uk

If you are a user of British Sign Language (BSL), the Contact Scotland BSL service gives you access to an online interpreter, enabling you to communicate with us using sign language.

[contactscotland-bsl.org](http://contactscotland-bsl.org/)