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Methods for sea lice surveillance on marine finfish farms

Méthodes de surveillance des poux de mer dans les exploitations de pisciculture marine

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 234, *Fisheries and aquaculture*.

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Introduction

The term “sea lice” refers to several species of naturally occurring marine copepods that parasitize fish. They attach themselves to the skin, fins, and gills of wild and farmed fish, and feed on host mucus and skin. If an infestation is severe, it can negatively impact the health of affected fish.

The abundance of sea lice can be amplified on marine finfish farms and a concern is that farms can then act as a reservoir, releasing lice back into the broader marine environment. Farms could thus act as a source of infestation for wild fish, particularly salmonids. While it is possible to control lice levels on farms through integrated pest management approaches and the use of therapeutants, the same intervention cannot easily be applied to wild fish populations. For this reason, many jurisdictions place requirements on farmed salmon producers to carefully monitor lice levels on farms and to take appropriate actions to reduce on-farm lice populations where lice have been identified as a concern.

Where sea lice are identified as a concern to be managed, counts may be used in a number of ways. Over the past decade, it has become increasingly common for regulators to establish upper limits to abundance of lice on farms with the intent of minimizing potential impacts to wild fish populations. Farming companies can also monitor lice abundance to maintain appropriate fish welfare conditions. In addition, the development of reduced sensitivity to in-feed medication (following similar trends seen for bath treatments in the 1990s), is a concern to both regulators and producers. Clear and standardized sea lice counts are necessary for the early detection of any such trends. Both the aquaculture industry and pharmaceutical suppliers of ecto-parasiticides would then be in a position to make better and earlier determination of situations in which treatments were beginning to lose effectiveness, and thus, to initiate appropriate mitigation strategies.

Over the past two decades, a range of counting methods have been developed across countries, and sometimes within countries, such that it is often difficult to know how to interpret the sea lice levels reported from farm sites. The goals of this International Standard are to ensure that the sea lice counts carried out on marine finfish farms are accurate and fit for purpose and to establish a method for sea lice on-farm surveillance that can be carried out in any farming area, affording accurate, consistent estimates of lice. A standardized methodology will yield results that can better be compared across jurisdictions and geographic regions, supporting the development and implementation of effective lice management approaches and increasing public confidence that effective control measures are being implemented.

This International Standard has been developed in consideration of the

— intended use of the results of sampling,

— practical and economic constraints of sampling,

— species of lice of concern in an area,

— cage and site configurations,

— seasonal or environmental conditions, and

— potential impacts on fish health and welfare.

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Methods for sea lice surveillance on marine finfish farms

1 Scope

This International Standard specifies both a method for sea lice counts on marine finfish farms and a method for sea lice surveillance that can be carried out in any farming area to provide consistent estimates of sea lice infestation.

It specifies the best practices associated with monitoring sea lice levels on marine finfish farms for various purposes including the assessment of abundance, prevalence, and treatment efficacy. This will include identifying minimum requirements for specific monitoring program elements (e.g. number of fish and cages to be sampled, frequency of sampling, the level of detail recorded, etc.). The standard will apply to all marine finfish farms which experience infestation with any of the range of "sea lice" (copepodid) parasites.

2 Normative references

There are no normative references in this International Standard.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
sea lice
copepods of one of a number of lice species

Note 1 to entry: The most commonly occurring sea lice, depending on location, being the various salmon lice *Lepeophtheirus salmonis* Krøyer, *Caligus elongatus*, *Caligus clemensi*, *Caligus rogercresseyi*, etc. and the cod louse *Caligus curtus*.

3.2
sea lice stages
sea lice metamorphose to different life stages

Note 1 to entry: Sea lice stages includes the nauplii (free-swimming stage) through the copepodid stage (infectious stage) to various stages of chalimus growth (attached stages) where they are attached to a single point on the fish host. They then develop to pre-adult (for some lice species) and finally, adult stages, at which point they are able to move around on the fish host (motile stages).

3.3
finfish
fish of the class Osteichthyes

3.4
facility
collective structures used for the purposes of finfish aquaculture; including the enclosures (net pens), walkways, barges, floats plus associated lines and anchors

3.5
enclosures
containment structures, including net pens, cages, or similar structures used to contain finfish for the purposes of aquaculture

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