# Code of Containment

# For the Culture of Salmonids in

# Newfoundland and Labrador

**Aquaculture Development Division**

**Department of Fisheries, Forestry and Agriculture**

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## Background

The Code of Containment of Salmonids in Newfoundland and Labrador (herein referred to as "the Code") is a management strategy for the cage culture of salmonids in Newfoundland and Labrador. Effective containment of farmed fish is a fundamental aspect of sustainable aquaculture. All salmonid licensees are required to abide by the Code in Newfoundland and Labrador under the authority of the Aquaculture Act and regulations. The Code represents the province's commitment to maintaining sustainable development that is transparent, responsible and collaborative.

The Code is managed by the Department of Fisheries, Forestry and Agriculture (FFA) and the Department of Fisheries and Oceans Canada (DFO). Both regulators are responsible for ensuring that robust requirements are in place to minimize farmed fish escapes and to effectively deal with escapes if they do occur. Each regulator co-manages the Code but are effectively responsible for elements of the Code under their own respective mandates. The Code is also overseen by a Code of Containment Liaison Committee made of up government and industry stakeholders, non-government organizations and local government representatives. This committee meets annually to review Code compliance data and to discuss elements of the Code for revision.

This Code is modelled on a risk management approach, and is consistent with the Oslo Resolutions passed in 1994 by the North Atlantic Salmon Conservation Organization (NASCO), in recognition of the need to minimize escapement of farmed salmon, and to establish design standards for salmonid aquaculture cage systems. The Code also draws heavily on learning from other jurisdictions with salmonid containment standards in place and relies on recognizing global standards. As a result, the Code is reviewed often and the inclusion of new technologies and procedures incorporated as necessary.

## Record of Revisions

All revisions will be noted in the "record of revisions" section of this document, and will be reviewed with the Code of Containment Aquaculture Liaison Committee.

| **Section Revised** | **Changes made** |
|---|---|
| 3.1 Responsibilities | 1. Outlines requirements for staff training.<br>2. Delineates Federal and Provincial role clearer |
| 4.1.1 Net Design and Construction | 1. Bird netting - Not subject to net testing<br>2. Licensee SOP's must include cleaning and repair of bird nets and approved by FFA. |
| 4.1.1 Net Testing Requirements | 1. Modified areas to be tested.<br>2. Updated to only cover HDPE nets. |
| 4.1.1 Net Testing Requirements; Notification of Inspection | 1. No advance notification given by FFA for inspections. |
| 4.1.1 Net Testing Requirements Net Testing Audit | 1. Removed previous reference to statistically valid number of net. FFA will conduct audits of all nets. |
| 4.1.2 Cages and Moorings | 1. Addition of installation certification and submission of technical guidance documents to FFA<br>2. Moved table of net breaking strengths to Appendix 1.<br>3. Changed net attachment to cage collar, in a manner consistent with the engineered design of the site.<br>4. Installation and use of any additional equipment used on site must be according to manufacturer's instructions (not exclusive to type and size). |
| <u>Other:</u> | |

| | |
|---|---|
| Net Cleaning and Disinfection Report | Moved to Policy and no longer included in the Code. |
| New procedures/equipment | To be addressed in Licensee SOP's. |
| Handling Procedures : Towing, drop nets, sampling, fish handling | Removed from Code. To be reviewed and approved by FFA in submitted SOP's. |
| Reporting Escapes | Added requirements for verbal and email report to FFA and DFO. |
| NEW Appendix 6-Sample Recapture License | Sample of Recapture License |

## 1.0 Objectives

The objectives of the Code of Containment are to:

- minimize escapes of farmed salmonids;
- be forward-looking and seek continual improvement;
- be comprehensive in terms of both general and site-specific application and standards;
- be consistent with NASCO priorities concerning the containment of aquaculture salmonids; and
- be as stringent and robust as containment codes that currently exist in other jurisdictions.

## 2.0 Principles

Ensuring proper containment of cultured aquatic organisms is the aim of farming companies, regulators, and all interested stakeholders. Understanding this, the Code is based on the following robust principles:

- Licensees will ensure all farm equipment is in adequate working order and will take all precautionary steps to ensure cultured aquatic organisms remain contained and cage system integrity secured. FFA will conduct regular inspections and audits to ensure compliance with approved Management Plans and Standard Operating Procedures on file with FFA.
- Sites will be appropriately designed for specific site conditions.
- Licensees will develop and adhere to Management Plans and Standard Operating Procedures for fish handling events to mitigate fish escape. Plans will be approved by FFA as part of farm management/Incident Management System plans.
- Licensees will maintain accurate Inventory Records of cultured aquatic organisms and reports related to net testing, net cleaning and inspections. These records shall be made available for FFA auditing.
- Licensees will adhere to recapture plan requirements, approved by DFO, and will ensure that staff are trained on how to use recapture gear and follow the recapture license

conditions that are managed by DFO.

- Licensees will adhere to all reporting requirements under the Code.

## 3.0 Responsibilities

### *3.1 Licensee responsibilities*

- Abide by license conditions and enact measures to the full extent of the Code to minimize escapes from sea cage culture.
- Provide information and maintain documentation, to be made available at the request of the FFA and DFO.
- Maintain equipment standards and employ practices as required and outlined in company Standard Operating Procedures and Management plans on file with FFA.
- Update Management Plans and Standard Operating Procedures as necessary when new equipment and methods are adopted, and ensure staff receive annual training on escape prevention and recapture.

### *3.2 Department of Fisheries Forestry and Agriculture responsibilities*

- Responsible for implementing and enforcing the regulations and procedures Licensees must abide by for containment of cultured aquatic organisms.
- Review and approve Licensee Management Plans and Standard Operating Procedures for adherence to the Code.
- Review Inventory Reconciliation information required by the Code.
- Provide the necessary monitoring and inspection to ensure containment practices and procedures outlined in the Code are followed and enforced.
- Coordinate annual stakeholder review and updates of the Code.

### *3.3 Fisheries and Oceans Canada responsibilities*

- Monitoring and enforcement of the recapture component of the Code.
- Monitor compliance with the practices and procedures of the Code through independent audit, site inspection/visits, or other investigations.
- Coordinate with FFA on stakeholder review and updates of the Code.

## 4.0 Elements of the Code

The Code targets the areas of cage culture that have the greatest potential for escape. Analysis of loss profiles in other jurisdictions has shown that equipment failure, and in particular net failure, has been the leading cause of cultured fish escape incidents. While similar research is lacking in Atlantic Canada, evidence indicates that in Newfoundland and Labrador, human error is the leading cause of loss. For these reasons, the Code focuses on the elements of:

- **Equipment Standards**
- **Handling Practices**
- **Documentation / Reporting**
- **Inspections**

### *4.1 Equipment Standards*

In order to maintain cage system integrity and contain cultured aquatic organisms, cage system design and installation relies on various levels of expertise and globally recognized standards. This knowledge is applied to the cage site design and installation which takes into account the specific site conditions, including current action, wave height, depth, wind, ice, etc. The Code requires licensees to meet ISO certified or third party certified engineer stamp of approval on cage site designs and installation for all cage site system components.

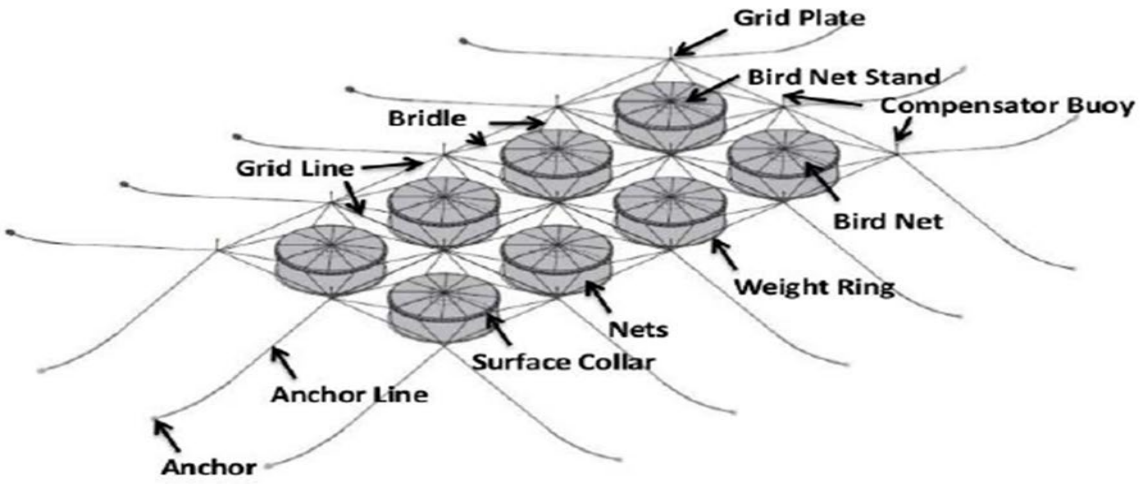


**Figure 1-** Standard marine cage system in Newfoundland and Labrador[1]

### 4.1.1 Net Testing Requirements, Net Storage and Record Keeping

*Net Design and Construction*

- Licensees are required to use containment and predator nets on all sites and must adhere to predator control and mitigation outlined in Licensee Management Plans on file with FFA
- All nets shall be manufactured by suppliers whose designs meet or exceed standards referenced in this document (Appendix 1 Net Testing Breaking Strength; Tables 1 – 6).
- Bird netting is not subject to minimum strength requirements. Licensee Management plans and Standard Operating Procedures on file with FFA for predator control must address bird netting, including cleaning and repairs prior to use and while installed onsite. Cultured fish shall be placed in nets of the appropriate industry standard mesh size – i.e. one-third ($^1/_3$) the size of the widest part of the fish body. Current industry guidelines are:
    - 1 1/8" stretch mesh minimum fish size 50 grams
    - 2 1/4" stretch mesh minimum fish size 450 grams
- All nets over three years of age must be tested for strength before they are deployed using the

1 Bridger, C.J., Fredriksson, D.W., and Jensen, Ø. 2015. Physical containment approaches to mitigate potential escape of European-origin Atlantic salmon in south coast Newfoundland aquaculture operations. DFO Can. Sci. Advis. Sec. Res. Doc. 2015/072. vi + 54 p.

"Four Stress Test" procedure outlined in Appendix 1. Nets less than three years of age do not require testing.

*Net Testing Requirements*

- Test nets in accordance with the following "Four Stress Test" procedure as follows;
  - The stress test shall be completed with an electronic dynamometer or similar tension scale instrument;
    - For each component tested, the mesh shall be tested until it reaches or exceeds the stated breaking strength as outlined in Appendix 1 Tables 1-6. The mesh does not need to be broken if it surpasses established breaking strengths. Each region listed below must be tested three times.
    - The four components to be tested on each net see Figure 2 below:
      1. the jumpskirt (area between the water line and the top line);
      2. top half of the side wall;
      3. bottom half of the side wall; and
      4. the bottom.
    - If component 1 fails the stress test, the net may be repaired to meet the standard and put back into operation. If components 2, 3 or 4 fail the test, the net shall be condemned.
    - Predator nets must be tested in components 2, 3 and 4. If components 2, 3 or 4 fail the test, the net shall be condemned.
    - Record all net tests and retain records of such tests for a period of at least two years. This record shall include a form (Example - Form A.1, Appendix 1) exhibiting the date of the tests, net type, dimension, mesh size, results of the Four Stress test, and whether or not the net passed, failed or required repair as per the requirements above.

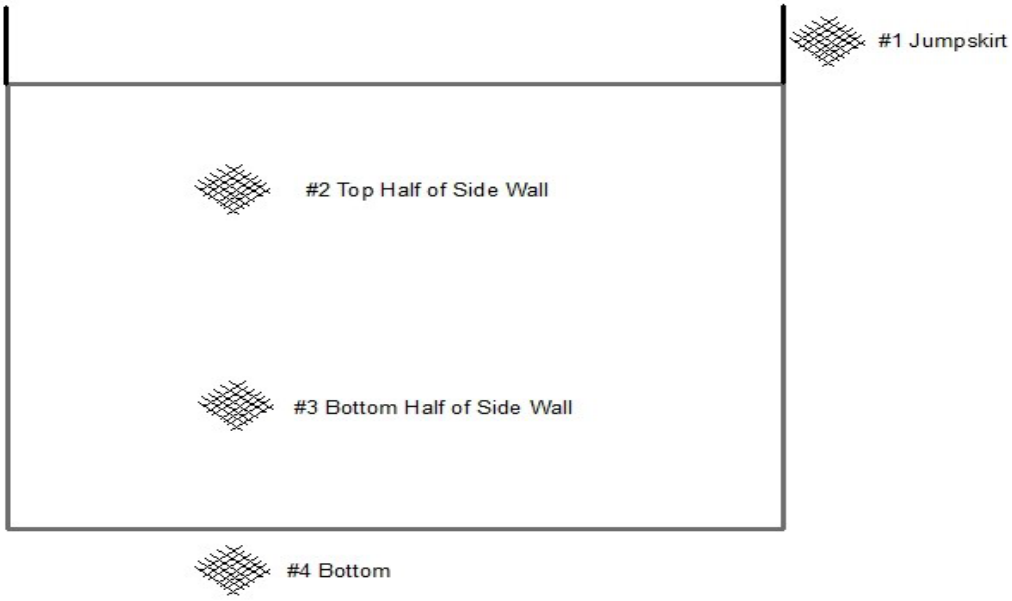


Figure 2 Net testing areas

- Licensees shall maintain records of all net testing results including details of net testing failures and repairs made for a period of two years, which will be made available to FFA staff.
- Nylon nets over three years of age shall be tested every 18 months.
- High-Density Polyethylene (HDPE) nets over three years of age require testing before deployment. This can be completed after last deployment or at any point before redeployment.
- HDPE nets over three years of age which are serviced and tested for breaking strength and stored for an undetermined period of time, must be kept in a manner ensuring there is no further degradation of the breaking strength during the period of storage.
- Nets stored outside are required to be stored as follows: outside storage of HDPE nets must include protection from damage by man-made and natural threats. Nets must be on dry land; not in direct contact with the ground. Key considerations when storing nets must include biosecurity, weather and UV protection, and monitoring/exclusion of rodents.

*Licensee shall*

- Clearly tag all nets with an inventory net number and ensure tag is visible from the surface at the site.
- Maintain an accurate inventory of all nets in use and indicate type, net and mesh size, net manufacture and testing dates to align with the table in Appendix 2 and whether net has been retired from service. Net inventories shall be submitted to FFA in an Excel spreadsheet in the format displayed in Appendix 2 by January 31 of each year.
- Provide proof of net purchase or manufacturer to verify net age in the event of lost tags, discrepancies or net age audit.
- Prior to fish entry, provide to FFA an inventory of nets in use and proof that the nets have been tested and certified. Upon request, provide evidence to FFA of nets' age for nets less than three years of age.
- Inspect nets via diver inspection or with the use of a Remote Operated Vehicle (ROV) every 30 days, document the dive and status of the nets, including any holes or repairs and submit to FFA for audit or inspection. If a dive cannot be performed at the specified interval, the Licensee must notify FFA and complete the dive report explaining why the dive inspection was not conducted and when the inspection will be completed.
- Licensees must demonstrate that nets have been stored correctly, according to the net manufacturer's recommendations, and in a biosecure manner. This may be achieved via a record of the storage parameters submitted to FFA upon request for auditing purposes. The record must include date of testing, how the net is stored and location.
- Visually inspect nets prior to the deployment of the net/entry of fish. The person conducting the visual net inspection must sign a statement noting the integrity of the net storage method, date of the net inspection, date of net deployment, and net tag number. This statement must be submitted to FFA.

*Responsibility of FFA*

- Ensure that Licensees have submitted annual net inventories and evidence of net testing prior to issuing fish transfer permits.
- Ensure that Licensees are following net inspection requirements and reporting.
- Perform audits to verify net testing, age of nets, net inspections and storage as follows:
    - **Site Net Audit:**

      FFA will perform on-site inspections of the visible portion of nets in the water, record net tag numbers and net type. Licensees shall be required to provide proof of net testing upon request.
    - **Age of Net Audit:**

      FFA will conduct an audit of reported net ages. The Licensee shall provide evidence that the net is less than three years of age and should this not be available, the net shall be tested. The Licensee shall provide the required information within **one week** of receipt of the request from FFA.
    - **Net testing Audit:**

      FFA will conduct an audit of net testing results. The Licensee shall provide evidence that the net has been tested. Should this not be available, the net shall be tested. The Licensee shall provide the required information within **one week** or receipt of the request from FFA.
    - **Diver Net Inspections:**

      FFA will audit diver net inspection reports to ensure net inspections are occurring at established intervals. FFA will audit and monitor for submission every 30 days.
    - **Storage Audit:**

      FFA will audit net storage documentation provided by the licensee to ensure compliance with net storage requirements.

**4.1.2 Cages and Moorings**

- Documents shall be submitted to FFA which demonstrate that the farm mooring plan/cage design considers all calculated loads for that particular area, and site equipment is approved

and installed based on the professional certified engineer and manufacturer specifications. This information shall be provided to FFA prior to new fish entry to these systems.

- Documents shall be stamped/ signed by a professional certified engineer that confirms that the cage farm design and site set up is appropriate for the site conditions and area.
- Technical standards or guidance used in developing the technical specifications for the site shall be submitted to FFA.
- Nets shall be secured at all designated cage collar attachment points, in a manner consistent with the engineered design of the site.
- Any additional equipment utilized on a site, such as lice shields or other ancillary equipment attached to the cage collar, shall be appropriately sized and designed for the site and installed according to manufacturer's specifications and must not interfere with the containment capacity of the pen. Any such equipment must be included in a Licensees Management Plans for the site, and its installation and use must be subject to manufacturer's specifications. The Licensee shall have supporting documentation on the equipment, such as user manuals or details on its use in other jurisdictions available to submit to FFA upon request.
- Licensee shall be required to annually submit a Mooring Maintenance/Replacement Plan and Form, for each site that will be occupied with fish.

## *4.2 Fish Handling Practices*

- Licensees are required to handle fish taking into consideration all measures necessary to prevent fish escape. All handling (i.e. sea lice counts, harvesting shall be in accordance with the approved Management Plans and Standard Operating Procedures on file with FFA
- Licensee Standard Operating Procedures and Management plans must include use of catch nets to prevent fish loss during all fish handling events. Visual inspection of catch net for holes or other damage prior to use must be included in Standard Operating Procedures or Management Plans and followed during all handling events of fish.
- Licensees shall make written requests to FFA for alternate handling methods prior to handling.

## *4.3 Documentation and Reporting Requirements*

Inventory Monitoring and Reconciliation

- Licensees shall provide to FFA, an annual Inventory Reconciliation (IR) which will indicate numbers of fish introduced, mortalities, harvested starting number, ending number, counting deviation and escapes.
- The IR period shall be from January 1 to December 31 annually.
- Licensees shall complete the IR by submitting the electronic Excel form to FFA no later than January 31, at the request of FFA. FFA will provide the form template to the Licensee. The template is also available upon request.
- The IRs for trout shall be cage and year class based, with each year class appearing on a separate worksheet. All sites used during the year shall be listed on the bottom of the worksheet and the current location of cages at the time of IR submission shall be indicated.
- The salmon IRs shall be cage and site specific, with a separate worksheet used for each site.

## *4.4 Inspections*

### 4.4.1. Licensee Responsibilities

- Licensees shall formally monitor and inspect surface components of mooring systems, cages, nets and ropes on each site **once per week** and submit internal inspection form to FFA every 30 days.
- Licensees shall repair any identified damage to site equipment immediately, or within the timeline provided by the Compliance and Enforcement Division. Failure to do so may result in sanctions including fines, restrictions, suspension, or cancellation of the aquaculture license.

### 4.4.2 Department of Fisheries, Forestry and Agriculture Inspections

- Inspections will be conducted by FFA at a **minimum of twice yearly** (one in the spring, after fish entries; one in the fall/early winter) with **advance** notice to the Licensee
- Licensees shall provide the FFA inspector with the site inspection records at least one week before the scheduled inspection. Inspectors conducting the audits/inspection shall examine

copies of all site inspections performed by employees on the site.

- FFA shall provide a copy of the completed Code of Containment inspection form to the Licensee upon completion of inspections.

### *4.5. Recapture Plans/License*

- Licensees will keep on file with FFA and DFO a recapture plan which includes reporting requirements, equipment, personnel, relevant licenses, and strategies to execute. Plans must comply with provisions set out by DFO and contained within Appendices 3-6.

## 5.0 Suspect and Confirmed Reporting Requirements:

1. All suspected and confirmed escapes from a licensed finfish aquaculture site shall be reported to the Director of Aquaculture Development of FFA at: 709-292-4111 (office), 709-290-3768 (cell) and by email: and Regional Manager of Aquaculture Management of DFO at 709-765-2843 (cell) and by email DFO.NLITC-CITTNL.MPO@dfo-mpo.gc.ca as soon as reasonably feasible not later than 24 hours.
2. Licensees shall investigate escape immediately upon suspicion of an escape and shall seek direction from DFO on recapture efforts within 24 hours.
3. All suspected and confirmed escapes shall be publicly reported within 24 hours after FFA notification of the suspected escape and/or confirmation of the escape.
4. For all suspected and confirmed escapes, the Licensee shall verbally report to the Director of Aquaculture Development of FFA and Regional Manager of Aquaculture Management of DFO, as soon as reasonably feasible, followed in writing within 24 hours, the following:
    a) Date and time reported to FFA and DFO;
    b) Name of Licensee;
    c) Site affected (AQ # and name);
    d) Contact Information (both email and telephone);
    e) Species;

f) Strain;

g) Age or year class;

h) Average weight of the animals;

i) Total number of animals on the aquaculture site/facility; and

j) Total number of cages/tanks/holding units on site.

5. Treatment and health records for any escapes must be made available to the Chief Aquaculture Veterinarian.

6. For all suspected escapes, the Licensee shall publicly report on their corporate or industry association website:

a) Site(s) of the suspected escape;

b) Species escaped; and

c) Any other information deemed by the department to be reportable.

7. For all confirmed escapes events, Licensees shall publicly report on their corporate or industry association website:

a) Site(s) of the escape;

b) Species escaped;

c) Strain escaped;

d) Cause of the escape;

e) Estimated number of fish escaped;

f) Recapture plan for escaped animals; and

g) Any other information deemed by the department to be reportable.

8. All statements shall be submitted to the Director of Communications, Chief Aquaculture Veterinarian and the Director of Aquaculture Development of FFA.

9. Licensees shall file a written report (Annex 1) within 72 hours of the escape event, to the Regional Manager, Aquaculture Management, DFO via email DFO.NLITC-CITTNL.MPO@dfo-mpo.gc.ca. Reports will be forwarded by DFO to FFA.

10. Licensees shall maintain records of all recapture fishing activity in accordance with conditions of licence, in the form of a logbook (Annex 2). Daily recapture numbers are to be reported to both the FFA Director of Aquaculture and the DFO Regional Manager until DFO advises that reporting/recapture can cease.

## 6.0 Compliance and Enforcement

The Code is a condition of all salmonid licenses. Therefore, the Code of Containment and the Newfoundland and Labrador Aquaculture Health Management Plan will be affected by:

- Inclusion of all practices, procedures and provisions of the Code of Containment as a condition of licence under the provincial Aquaculture Act;
- Provision of monitoring and enforcement by FFA and DFO to ensure practices and procedures are followed;
- Approval of introduction and transfers being contingent on implementation, monitoring and the enforcement of the provisions of the Code of Containment; and
- Imposition of sanctions on the Licensee under the Aquaculture Act, which would include restrictions, suspension or cancellation of the aquaculture license.

## Appendix 1: Net breaking strength

### Net Testing Breaking Strength Tables

| Table 1: Net Cage Dimension Classification | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Circumference** | Up to 50m (164 ft.) | > 50m to 60m (197 ft.) | > 60m to 70m (230 ft.) | > 70m to 80m (262 ft.) | > 80m to 90m (295 ft.) | > 90m to 110m (361 ft.) | > 110 m |
| **Depth** | | | | | | | |
| Up to 5m (16 ft.) | A | A | B | C | D | D | E |
| >5m to 10m (33 ft.) | A | A | B | C | D | D | E |
| >10m to 15m (49 ft.) | A | B | B | C | D | D | E |
| >15m to 20m (66 ft.) | B | B | C | D | D | D | E |
| >20m to 30m (98 ft.) | D | D | D | D | D | E | E |
| >30m | E | E | E | E | E | E | E |

Note: A to E establishes net cage dimension classification. Depth is from waterline rope to net cage bottom. Circumference refers to the line bounding the top of the net cage.

| Table 2: Dimension Classification A | | |
|---|---|---|
| **Mesh Size** | Minimum strength below water | Minimum strength above water |
| < 22 mm (7/8") | 20 kg (44 lbs.) | 18 kg (41 lbs.) |
| > 22 mm (7/8") to < 38 mm (1½") | 26 kg (58 lbs.) | 24 kg (52 lbs.) |
| 38 mm (1½") | 31 kg (68 lbs.) | 28 kg (62 lbs.) |
| > 38 mm (1½") | 41 kg (90 lbs.) | 38 kg (83 lbs.) |

| Table 3: Dimension Classification B | | |
|---|---|---|
| **Mesh Size** | Minimum strength below water | Minimum strength above water |
| < 22 mm (7/8") | 25 kg (56 lbs.) | 24 kg (52 lbs.) |
| > 22 mm (7/8") to < 38 mm (1½") | 31 kg (68 lbs.) | 28 kg (62 lbs.) |
| 38 mm (1½") | 41 kg (90 lbs.) | 38 kg (83 lbs.) |
| > 38 mm (1½") | 46 kg (102 lbs.) | 43 kg (94 lbs.) |

| Table 4: Dimension Classification C | | |
|---|---|---|
| **Mesh Size** | Minimum strength below water | Minimum strength above water |
| < 38 mm (1½") | 36 kg (79 lbs.) | 33 kg (73 lbs.) |
| 38 mm (1½") | 46 kg (102 lbs.) | 43 kg (94 lbs.) |
| > 38 mm (1½") | 51 kg (113 lbs.) | 47 kg (104 lbs.) |

| Table 5: Dimension Classification D | | |
|---|---|---|
| **Mesh Size** | Minimum strength below water | Minimum strength above water |
| < 38 mm (1½") | 41 kg (90 lbs.) | 38 kg (83 lbs.) |
| 38 mm (1½") | 51 kg (113 lbs.) | 47 kg (104 lbs.) |
| > 38 mm (1½") | 62 kg (136 lbs.) | 57 kg (125 lbs.) |

| Table 6: Dimension Class E | | |
|---|---|---|
| **Mesh Size** | Minimum strength below water | Minimum strength above water |
| < 38 mm (1½") | 46 kg (102 lbs.) | 43 kg (94 lbs.) |
| 38 mm (1½") | 62 kg (136 lbs.) | 57 kg (125 lbs.) |
| > 38 mm (1½") | 77 kg (169 lbs.) | 71 kg (156 lbs.) |

| **Form A.1 – Four- Stress Test Inspection** | |
|---|---|
| Date | |
| Licensee | |
| Location of Test | |
| Date of Net Manufacture | |

| Tag Number<br>FFA / Manufacturer | Net Type<br>(mesh size, type, dimensions) | Jumpskirt<br>Breaking strength (lbs.) | Next 2 m below Jumpskirt<br>Breaking strength (lbs.) | Side panels<br>Breaking strength (lbs.) | Bottom<br>Breaking strength (lbs.) | Final Grade<br>(Pass or fail) |
|---|---|---|---|---|---|---|
| | | | | | | |
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Minimum breaking strength is determined from Table 1 (previous page).

Is net treated with Antifoulant? Yes _____ No _____

Signature (Inspector): _____

Signature (Licensee): _____

## APPENDIX 2: NET INVENTORY TEMPLATE

| Tag Number | Net Dimensions | Net Type (i.e. nylon, dyneema, smolt, market 210/60, 210/80) | Mesh Size (i.e. 1 1/8", 2 ¼") | Manufacture Date | Date Last Tested |
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***This template is to be used in an excel spreadsheet for all net inventory submissions.**

## Appendix 3: Measures for the Recapture of Escaped Fish

### Introduction

In 1999, the Minister of Fisheries and Oceans authorized the use of all-female diploid rainbow trout and Northwest Atlantic salmon strains for marine cage culture, subject to the adoption of a Code of Containment that described measures to prevent and respond to escape incidents. While the focus of the Code is on measures intended to minimize the potential for escape incidents, it is acknowledged that escape incidents may periodically occur. In the event of an escape incident, consideration of recapture of escaped salmonids is a requirement under the Code.

Objectives of recapture efforts are to provide an opportunity for Licensees to recover their losses, reduce the amounts of escaped salmonids in nature, and contribute to minimizing the potential for interactions between wild and farmed fish. Recapture strategies may include directed recapture fishing by Licensees and use of other commercial, recreational, or Indigenous fisheries.

While all incidents are reported, not all escape incidents shall trigger recapture efforts. Authorization of recapture is at the discretion or direction of DFO, in consultation with the Licensee and other stakeholders, as needed. It shall consider the life history stage of the escaped fish, the time of year, incident-specific factors, and conservation objectives for wild fish populations.

1. **Purpose**

   These measures have been prepared to provide the Licensee with a clear and concise statement of their obligations and DFO's policy respecting the recapture of escaped farmed Arctic char, Atlantic salmon, and steelhead trout in Newfoundland and Labrador.

2. **Eligibility for Recapture Licence**

   1. The recapture licence shall be issued to the Licensee or to a designated third party, suitably equipped to recapture escapees on behalf of the Licensee.

2. To be considered for a recapture licence, the Licensee shall be required to have DFO approved recapture plan and have personnel trained in the deployment and retrieval of fishing gear.

**3. Activation/ Trigger**

In the event of an escape incident the incident shall be deemed to constitute an escapement and the Licensee shall be required to commence discussions with DFO and FFA within 24 hours of the incident, to determine if recapture efforts should be initiated.

**4. Recapture Gear**

1. Licensee shall have access to a minimum of two sets of gear and a set of gear for every two active aquaculture sites. A 'set of gear' is defined as four 50-fathom-long gill nets, one of each mesh size: 3½", 4", 4 ½" and 5" (89mm, 102mm, 114mm, and 127mm, respectively).
2. Recapture activity shall be permitted to use gillnets and seines with mesh sizes ranging from a minimum of 38mm to a maximum of 127mm.
3. Licensees engaged in recapture activity may be permitted to use traps (maximum mesh size 35mm) and/or angling gear. The Licensee shall discuss with DFO prior to the use of any additional gear types.
4. The 'Minimum Gear' guideline is intended to provide an initial response capacity to escape incidents. If necessary, it is expected that the Licensee shall collaborate, by sharing recapture gear, or enter into arrangements with commercial fish harvesters to ensure that adequate recapture efforts are implemented.

**Minimum Gear**

| # OF AQUACULTURE SITES | # OF SETS REQUIRED |
|---|---|
| 2 | 2 |
| 3 | 2 |
| 4 | 2 |
| 5 | 3 |
| 6 | 3 |
| 7 | 4 |
| 8 | 4 |
| 9 | 5 |
| 10 | 5 |
| 11 | 6 |
| 12 | 6 |
| 13 | 7 |
| 14 | 7 |
| 15 | 8 |

5. **Recapture Licence and Conditions**

    1. Licence conditions specify the type, size and quantity of fishing gear and equipment permitted to be used; the manner in which it is permitted to be used; the specific locations at which fishing gear is permitted; the period during which fishing is permitted to be carried out; and information that the licence holder shall report. This is the type of information required by DFO to issue the annual recapture licence. See Appendix 6 for example issued recapture licence.
    2. For the purposes and protection of fish, the conditions of a licence may be amended.
    3. Biological samples from catches may be required and the number and nature of samples will be determined by DFO.
    4. Appendix 5 identifies the type of information collected by the licensee for recapture and provided to DFO on a daily basis.

6. **Incidental Catch or Bycatch**

   Where possible, all wild fish, except those exhibiting clinical signs of infectious disease, are to be released alive and in a manner that causes them the least harm.

7. **Recapture Plan**

   The recapture plan is submitted with the site applications and updated periodically.

## APPENDIX 4: ESCAPE REPORT

This form or template of information is to be completed and faxed to: 709-772-3628 or emailed to DFO.NLITC-CITTNL.MPO@dfo-mpo.gc.ca with the Aquaculture Management, Ecosystems Management Branch, Department of Fisheries and Oceans, within 72 hours of an escape incident.

Site Licence #: _____

Location: _____

Licensee: _____

Contact Name: _____

Telephone: _____

E-mail: _____

**Details of the Escape**

Date/Time of Occurrence: _____

Cause of Escape: _____

_____

_____

_____

Species/Strain of Fish Escaped: _____

Number of Cages Subject to Loss: _____

Estimated Number of Fish Escaped: _____

Average Size of Fish Escaped: _____

Amount of Time from Escape Event to Deployment of Recapture Gear: _____

Additional Notes/Comments:

**Post Escape/Incident Review**

All escapes or incidents with potential for escape shall be reviewed by FFA and DFO to determine if the incident(s) require new amendments to the Code of Containment or the adoption of other management strategies to prevent such incidents from happening again.

Licensee shall submit the attached **Escape/Incident Report** once the site involved has been secured and any associated recapture efforts have been concluded. FFA and DFO will conduct a review of the escape/incident as follows:

- The **Escape/Incident Final Report** shall be reviewed to determine:
    - Cause of the escape/incident;
    - Whether the escape/incident was preventable;
    - Level of remedial actions taken by the Licensee;
    - Success of recapture effort (if any); and
    - Appropriateness of proposed future preventative measures for that type of incident.
- History of site and Licensee regarding escapes and incidents.
- Assessment of site documentation required by the Code of Containment (Weekly Site Surface Inspection/Net Inspection).
- Review of the previous Code of Containment Inspection undertaken by FFA.

Upon completion of the review, the following steps will be undertaken:

1) If it is determined that the Licensee has performed its due diligence with regards to escape prevention, mitigation and response and the incident was not preventable, then no further action is required.

2) If it is determined that the Licensee's proposed escape/incident prevention measures are inadequate, the Licensee shall be required to resubmit new prevention measures for reevaluation.

3) If it is determined that the Licensee has not demonstrated due diligence with regards to the Code or has a history of similar escapes, FFA may take action under the *Aquaculture Act*.

4) If it is determined that escapes of a similar nature have occurred industry-wide, FFA/DFO may propose changes to the Code of Containment to address the specific area of concern and present it to the Code of Containment Liaison Committee for inclusion into the Code.

All escape incidents or incidents that may have led to an escape will be identified in the Annual Compliance report, including what was done to prevent future escapes of a similar nature.

**Escape/Incident Final Report**

**Incident Description:**

_____

_____

_____

**Date of Incident:**

_____

**Identified Causes of the incident:**

_____

_____

_____

**Escape Response Efforts:**

_____

_____

_____

| Date | Gear Deployed | Numbers Captured |
|---|---|---|
| | | |
| | | |
| | | |

**Follow-up Measures to Prevent Future Escapes:**

_____

_____

_____

_____

_____

## APPENDIX 5: RECAPTURE DATA

**THIS IS AN EXAMPLE OF TYPE OF INFORMATION COLLECTED BY DFO ON RECAPTURE EFFORTS**

Licensee:

Location of Escape Event:

| Date (DD/MM/YY) | Species | # of Fish Recaptured | Location of Recapture | Time of Recapture | By- Catch | |
|---|---|---|---|---|---|---|
| | | | | | Species | # of |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
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## APPENDIX 6: SAMPLE RECAPTURE LICENCE

Recapture plans are submitted to DFO as per recapture licence application process and are authorized annually, in accordance with the following conditions:

Pursuant to Section 52 and Section 56 of the Fishery (General) Regulations, permission is hereby granted to **(Company Name)**, or designates, to fish, collect biological samples, and transport farm-origin Atlantic salmon and wild Atlantic salmon mortalities subject to the following conditions:

1. This licence is valid from **January 1 to December 31, 20xx.**

2. **Purpose:** To remove and/or biologically sample suspected and known farm-origin Atlantic salmon in fish-bearing waters and from aquaculture sites to identify the origin of escaped farm-origin Atlantic salmon and to determine the biological characteristics of escaped or wild Atlantic salmon in order to evaluate and mitigate potential impacts on wild Atlantic salmon populations.

3. **Locations:** Coastal waters on the South Coast of Newfoundland.

4. **Fishing Gear:** Gill nets. All gear must be marked with licence number **NL-Licence #-Year.**

5. **Species:** Farm-origin Atlantic salmon and wild Atlantic salmon.

6. Fishing under authority of this licence will not commence prior to discussion with DFO Aquaculture Management. However, for incidents that occur where there is no breach in containment and farmed salmon are observed outside of the cage, employee(s) are authorized to use a handheld tool such as, a dip net, for immediate recapture efforts without first engaging DFO. If this event does happen, it is still subject to the notification protocols as defined in the Code of Containment for Salmonids in NL.

7. Each day will consist of six one-hour tended sets at locations determined in consultation with DFO.

8. Gillnetting efforts will be conducted daily unless otherwise directed by DFO.

9. All gillnet sets are to cease if recovery efforts result in **<u>two</u>** wild Atlantic salmon mortalities.

10. All living wild fish are to be immediately released back into the water in a manner that causes the least amount of harm.

11. Fish caught under the authority of this licence cannot be sold and must be destroyed following completion of experimental (recapture) efforts unless determined to be wild

Atlantic salmon. All wild Atlantic salmon mortalities must be held for collection by DFO.

12. Data and biological samples (scale sample and fin clips) to be collected as per attached sampling instructions and held for collection by DFO.

13. All fishing activities must be overseen by DFO personnel. Records of all fishing activity must be recorded and submitted daily to Chris Hendry (Christopher.Hendry@dfo-mpo.gc.ca). A "nil report" with explanation of why there was no fishing activity must be submitted for days when no fishing activities occur. **Recapture efforts will continue until DFO advises that recapture efforts will cease.**

14. Prior to activities taking place, the Conservation and Protection (C&P) Supervisor, C&P must be notified verbally of your activities (ex. **Marystown, 279-7850**).

15. This licence must be carried at all times and must be produced for inspection upon request of a Fishery Officer or Fishery Guardian.

16. **Marine Mammal Interactions**:

    You must provide information regarding all lethal and non-lethal marine mammal interactions during fishing trips. For the purposes of these conditions lethal and non-lethal marine mammal interactions is defined as interactions that include bycatch or collision of all marine mammals and all sightings of marine mammals entangled in fishing gear.

    You must complete the DFO Marine Mammal Interaction Form and it must be submitted as per the instructions provided on the form. The form is located online at https://www.dfo-mpo.gc.ca/species-especes/mammals-mammiferes/report-rapport/page01-eng.html

    This form can be completed and submitted online or if you prefer, you can fax or email the printed form. This form must be completed and submitted for all lethal and non-lethal marine mammal interactions.

    If there is a whale (alive or dead) caught in fishing gear during recovery efforts, call 1-888-895-3003 immediately.

    You must report all sightings of North Atlantic Right Whales by calling 1-888-895-3003 as soon as possible or at least 24 hours after sighting.

    It is prohibited to disturb a marine mammal. You are not permitted to move or entice or cause a marine mammal to move from the immediate vicinity in which it is found. You are not permitted to trap it or its group between a vessel and the shore or between a vessel and one or more other vessels. For additional prohibitions, please refer to the Marine Mammal Regulations.

17. **Species at Risk**

In accordance with the recovery strategy for the Northern Wolffish (Anarhichas denticulatus) and Spotted Wolffish (Anarhichas minor), the licence holder is permitted to carry out experimental fishing activities authorized under the Fisheries Act that may incidentally kill, harm, harass, capture or take the Northern Wolffish and/or Spotted Wolffish as per subsection 83(4) of the Species at Risk Act (SARA) subject to the following conditions:

Licence holders are required to return Northern Wolffish and Spotted Wolffish to the place from which it was taken, and where it is alive, in a manner that causes it the least harm.

Licence holders are required to report in the attached SARA Questionnaire any interaction with Northern Wolffish or Spotted Wolffish.

18. **Aquatic Invasive Species**

Best practices must be undertaken to prevent the introduction and spread of Aquatic Invasive Species (AIS), including:

- routine vessel maintenance (i.e. cleaning the hull and using anti-fouling paint to prevent bio-fouling)
- cleaning, draining and drying gear and ropes to prevent movement between Bay Management Areas
- avoiding transportation of large amounts of water from one location to another
- and recognizing and reporting any AIS to DFO for early detection at AIS-EAE.NL@dfo-mpo.gc.ca

More information and maps of aquatic invasive species in Newfoundland and Labrador can be found at Identify an Aquatic Invasive Species.

**Failure to comply the conditions of this licence will result in the cancellation of the licence.**