

PACIFIC AQUACULTURE REGULATIONS

Approach to Managing Fish Transfer, Removal and Production in Aquaculture Facilities

Foreword

In response to the February 9, 2009 British Columbia Supreme Court decision in *Morton vs. British Columbia (Ministry of Agriculture and Lands)*, the Government of Canada through the Department of Fisheries and Oceans (DFO), has enacted the Pacific Aquaculture Regulations (PAR) under the authority of the *Fisheries Act (R.S.C., 1985, c. F-14)*. The regulations took effect on December 18, 2010, and provide the regulatory framework for the management of aquaculture activities in BC and in particular waters off its coasts.

The purpose of this document is to support the implementation of the new regulatory regime for British Columbia under the PAR. Marine finfish, shellfish and freshwater aquaculture operations now require a federal aquaculture license in order to operate legally in the province of British Columbia. Pursuant to the PAR, DFO may determine conditions of license for the range of issues.

Aquaculture depends upon the supply and movement of stock from the beginning to end of a production cycle, and at every point of intervention. With the transfer, removal and production of cultured and wild stock, there is risk of several potential for unintended impacts on the wild stocks or interactions between wild and cultured stocks. DFO is responsible for setting the regulations and conditions by which aquaculture activities occur in that province. This document provides guidance managing, monitoring and mitigating unintentional impacts on fish and fish habitat by activities involving the transfer, removal and overall production of fish related to aquaculture operations in the finfish, shellfish, freshwater and enhancement sectors.

Purpose

Through this Approach Guidance Document, DFO intends to provide direction on management measures, conditions of licence and the use of management plans and protocols for aquaculture activities related to managing movement, removal and production of fish and related potential implications.

Scope

As of December 18, 2010, finfish, shellfish and freshwater aquaculture operations within the province require a federal aquaculture licence issued under the Fisheries Act. This includes the following sectors: Enhancement Facilities (hatcheries); Freshwater Aquaculture; Marine Finfish Aquaculture; and Shellfish Aquaculture. Licence conditions enable DFO to tailor specific requirements to each sector.

This approach is meant to guide the management of all previously mentioned aquaculture sectors as related to movements, removal and overall production.

Context

The objective of successful management of the movement related activities (introductions, transfers, removal, and related production movements) for all aquaculture sectors is the reduction or elimination of risk factors that can negatively impact both cultured and wild fish stocks, habitat and the overall ecological environment. More specifically these objectives include:

- Protecting Genetic Integrity of Wild Stocks
- Mitigating Spread of Disease among cultured and wild Fish
- Protecting Wild Fish Stocks from negative impacts of other cultured / wild interactions – Aquatic Invasive Species, Escapes which compete for habitat, and predation by escaped fish for example
- Mitigating Impacts on Habitats

By identifying risk factors associated with the implementation of these objectives, operators can take action to manage, monitor and mitigate unintentional impacts on fish and fish habitat brought on by activities involving the transfer, removal and production of fish. Principal management practices such as stock management and facility integrity are important to manage appropriately so as to minimize various potential impacts on fish and fish habitat. In order to manage these activities there are many considerations which should be made and protocols followed to mitigate impacts such as fish escapes, disease spread, and environmental harm.

Stock Management Measures

All aquaculture facilities should have in place appropriate stock management measures, which would allow for tracking cultured fish through the various movement based activities over the course of a production period. Tracking movements and locations as well as production and harvest numbers are necessary in order to determine potential habitat impacts, avoid introductions of aquatic invasive species and escapes during transfers. Stock management is also important for fish health purposes in helping to mitigate disease transfer and prevalence.

Ensuring Facility Integrity

Measures to ensure the structural integrity of all aquaculture facilities used through each step of production are also important in mitigating the potential for escapes and opportunity for interactions between cultured and wild fish, on several levels. Such interactions could lead to potential impacts on habitat, genetic integrity and the health of wild and cultured fish. Ensuring facility integrity is done through ensuring that

containment structures and associated equipment – for example, cages, netting, and tanks, do not present the opportunity for escapes, and are kept well maintained and clean so as to deter and mitigate disease outbreaks. Facility integrity is also accomplished in monitoring for predators of cultured fish in and around the facility area, and monitoring for the accidental introduction of wild fish into the facility. It also involves the appropriate management of how siting is permitted – for example in relation to known wild species habitat and sensitive habitat.

Approach

In managing the transfer, removal and overall production of fish for aquaculture purposes, there are a number of approaches to be taken by government and operators in helping to mitigate potential environmental impacts caused by the movement and production of cultured fish. These are applicable in varying detail to each of the aquaculture sectors.

Stock Management Measures

- ***Inventory Control***

There are two main elements of Inventory Control. These are control of production via limits set, and inventory planning and management by the aquaculturist with regards to their culture stock. In controlling production numbers of aquaculture facilities, impacts on the surrounding environment can be weighed and limited, helping to mitigate potential impacts of organic loading brought on by the presence of an aquaculture facility, and negative impacts to wild species and their habitat. By the aquaculturist using planning methods to track movements and keep production numbers up to date in accordance with events which would impact overall numbers (introductions, unexpected mortality, escapes etc), it is possible to manage potential impacts on fish and habitat that might be brought on by production in the area. Control of these elements means control of accidental introductions of aquatic invasive species, escapes of cultured fish, and aids in mitigating the spread of disease.

- ***Management of Movements***

The appropriate documentation and consideration of transfers related to cultured fish is a key means of mitigating potential impacts of disease, aquatic invasive species, and protecting the genetic integrity of nearby fish stocks. This is mainly done through mitigating the potential for interactions between wild and cultured fish being moved, mitigating and controlling escapes, and restricting movement of diseased fish. Appropriate management of movements is also done through tracking movements and details in order to keep a record from a proactive point of view, as well as adhering to conditions of movement such as requirements for containment during movements, requirements for cleaning equipment used during movements and requirements for when and where particular movements can occur.

- ***Management of Harvest***

Similar management measures around those for movements should be applied for harvests in order to mitigate the potential impacts of disease, aquatic invasive species, and protect the integrity of nearby fish stocks. Aquaculturists should include planning for harvests in their overall production planning both as a means of record keeping and as a means of being proactive in mitigating any potential impacts of the harvest – unintentional escapes, disease spread, and other related impacts.

Facility Integrity Approaches

- ***Site Location and Usage***

Site location and type of usage for aquaculture operations are important factors in understanding potential impacts on nearby fish and fish habitat and developing structured approaches will help mitigate impacts. Licensees should consider potential impacts prior to choosing their sites. The management of site locations by officials also allows for tracking locations and the management of equipment which if mismanaged could also have negative impacts.

Facility layouts should be documented as part of the application process and should also be inspected once installed. This is important to ensure the array is appropriate for the environment in which it has been installed (can handle weather and currents, etc) and to ensure its ability to contain the culture stock and prevent entry of wild fish.

- ***Vessel Use***

Proper use and storage of vessels for aquaculture purposes, in and around aquaculture sites is important to the maintenance of site or facility integrity, as well as in avoiding impacts on the surrounding environment that could be brought on by damage done by a vessel to a cage site, or by direct impacts from the vessel, such as accidental spills. It is also important that restricted use signs be posted and that restricted use to the public of aquaculture site locations be communicated as necessary to avoid trespassing of boats not involved in the aquaculture operation on site. This is important from both a biosecurity and site security perspective. The proper maintenance of vessels on site is also important in ensuring that oil spills or other potentials for pollution related to vessel usage are under control and mitigated.

- ***Containment Measures***

The Facility Integrity Approaches of ensuring proper containment measures, for both housing fish long-term in cages, for example, or for transferring fish, is important to the well-being of fish and the environment at several levels. Proper containment measures will ensure proper escape prevention measures as well as proper predator control measures.

- **Managing Escapes**

The licence holder and facility operator must take all reasonable precautions to prevent the escape of cultured fish and ensure that all employees are aware that they are not to release cultured fish from the facility. When an escape is suspected, it must be reported to the relevant government authorities, providing as much detail as possible. All reasonable efforts to control, mitigate, remedy and confine the effects of an escape, or a suspected escape, should be taken.

- **Predator Control**

Appropriate predator control measures include measures around non-lethal mitigation, lethal (if necessary) mitigation, linkages to containment requirements and the requirement for reporting of marine mammal mortalities. These measures ensure that there is minimal impact on wild species around a finfish facility. As such, licence holders should have a plan in place outlining management measures to minimize predator intrusions and steps to be taken in the cases of predator / cultured fish interactions and threats of predators.

If lethal measures are to be taken to protect cultured stock from predators (only as allowed by the licence), it is important that the licensee keep records of animals lethally removed from a culture site area. It is also important that records be kept of mammals and other predators which may become entangled in cage array and require assistance in being removed. Such records are important in helping determine if there are any potential improvements that can be made to a site to mitigate cultured/wild fish interactions and in tracking the impacts which the positioning of the site may be having on the surrounding environment.

Management Tools

Plans, Reports, Operational Directives and Procedures

Under the guiding principles of Stock Management and Facility Integrity, at the center of managing movements within the aquaculture industry, there are a number of Plans, Reports and Operational Directives and Procedures documents noted in the conditions of licence pertaining to transfers, removals and production of cultured fish for all sectors of the aquaculture industry in BC. The follow sections outline the documents referenced for each of the three sectors, describing briefly their purpose.

A. *Finfish Sector*

Stock Management & Movement Requirements

Inventory Plan: To be submitted as a part of the licence application and as amended, with the purpose of assisting in ensuring that the levels of production are appropriate

and are being adhered to as determined for each culture location. This report should be submitted annually..

Harvest Plan: To be submitted to the Department as necessary, with the renewal of the licence annually, and as amended.

Population Harvest Declaration Form: To be included with harvested fish and provided to the processing plant.

Stock Transfer Plan - Transfer Approval: Given through the conditions of licence attached to a licence according to details supplied in the application concerning expected movements. Licensees must notify the Department of planned movements through the Stock Transfer Plan.

Facility Integrity

Operational Layout Diagrams and Containment Array Management Plan: To be submitted with the licence application. Details included here allow the Department to monitor and review current siting locations and ensure that equipment is being marked according to regulation.

Operational Directive on Escape Prevention: Outlines standards to be adhered to in preventing escapes on finfish marine sites.

Standard Operating Procedures on Net Cage Mesh Strength Testing Procedure for British Columbia Marine Finfish Aquaculture: Outlines standards in net strength testing procedures to aid in the prevention of escapes from marine finfish sites.

Escape Reporting: A written report (details outlined in conditions of licence) is to be submitted to the department upon the realization or suspicion of an escape event.

Escape Recapture Plan: Required to be put in place by the licensee as a policy for the site, outlining steps to be followed in the case of an escape or suspected escape. Requirements for this plan are outlined in conditions of licence pertaining to escape measures.

Predator Management Plan: Required to be submitted to the Department, laying out measures to minimize predator intrusions and the situations in which the need for lethal measures may be necessary for predator removal, as well as how this will be dealt with.

Predator Management Practices Annual Report: Must be submitted to the Department for each licensed site to continue to inform on the predator control measures being taken by facilities on a regular basis.

Marine Mammal Accidental Mortality Reporting Form and Lethal Removal of Marine Mammals (Seals only) from a Site: This form must be completed and submitted immediately to the Department to report any accidental drowning mortalities. Lethal

removal of a mammal may require further action as a condition licence, including requirements for reporting.

B. Shellfish Sector

Stock Management & Movement Requirements

Shellfish Site Management Plan: To be submitted to the department within a few months of licence application, and requirement amendments. Information required includes area usage as well as estimated production numbers.

Stock Transfer Plan / Transfer Approval: The licence holder must apply for and receive approval to transport and / or introduce fish to a culture environment, at the time of application or as required through an amendment.

Pacific Transfer/ Harvest Notification (Declaration) Form: Must be submitted to the Department prior to transfers and harvests for the purposes of managing and mitigating risks around shellfish movements, and for the purposes of traceability. This form must also accompany all movements.

Facility Integrity

Marine Mammal Accidental Mortality Reporting Form: This form must be completed and submitted immediately to the Department to report any accidental drowning mortalities. Lethal removal of a mammal may require further action as a condition licence, including requirements for reporting.

C. Freshwater Culture and Enhancement Facilities

Stock Management & Movement Requirements

Production Management Plan: To be submitted as a part of the licence application and as amended, with the purpose of assisting in ensuring that the levels of production are appropriate and are being adhered to as determined for each culture location. This report should be submitted annually.

Stock Transfer Plan - Transfer Approval: Given through the conditions of licence attached to a licence according to details supplied in the application concerning expected movements. Licensees must notify the department of planned movements through the Stock Transfer Plan.

Facility Integrity

Escape Reporting: A written report (details outlined in conditions of licence) is to be submitted to the department upon the realization or suspicion of an escape event.

Definitions

To be completed.

DRAFT