

PACIFIC AQUACULTURE REGULATIONS

Approach on the Use of Light

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 (GoC), 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. This approach document supports the development of licence conditions pertaining to light.

Purpose

This document provides direction on the management of light in aquaculture operations.

Scope

This policy applies to the following categories of aquaculture in British Columbia:

- Marine finfish operations (e.g., salmon, sablefish)
- Shellfish operations
- Point-source discharges operations
- Diffused discharges into freshwater bodies operations
- Enhancement operations

Light Management Context

a) Finfish

Due to the costs associated with adding and running lights in finfish net pens, fish farm operators deploy and run light units necessary to achieve the desired effects on farmed finfish species. The cost of lighting tends to prevent excessive and irresponsible use of lights.

DFO intends to collect additional information about the use of underwater lights to enable further assessment of practices. No restrictions have previously been implemented to regulate the use of lights and DFO does not intend to implement management measures for use of lights in aquaculture operations at this time.

Recent Pathways of Effects (PoE) analysis indicates artificial illumination of marine finfish net pens as being a common practice used to improve fish productivity by delaying maturation. Use of intensive underwater lights in salmon finfish aquaculture is a wide-spread practice. From September to May, electric lights are submerged in the centre of aquaculture net pens and constantly illuminated during the evenings and nights. Constant illumination prevents grilising (maturing) of salmon before the next year's harvest. While there is much evidence to indicate that marine organisms are attracted or avoid light at night, there is little information on the attraction or aversion of marine biota to illumination of net pens.

b) Shellfish

In practice, underwater lights are not used in shellfish aquaculture.

c) Point-Source Discharges (e.g. tanks on land)

Use of intensive lights is not expected to affect aquatic ecosystems of point-source discharge operations.

d) Diffused Discharges into Freshwater Bodies (e.g. suspended cages in lakes)

Use of intensive lights is not a usual practice, as freshwater cages are used mostly to harbour smolt before transporting to marine grow-out sites.

e) Enhancements

Use of intensive lights is not expected to affect aquatic ecosystems in enhancement operations.

Light Management Measures

There are currently no measures in place and there is no direct science to advise that lights are a concern and require management measures. Therefore, there are no specific measures at this time for incorporation of indicators of impact and thresholds for use of lights. Reporting on light usage is sought as a condition of licence to understand better the type, extent and impact of light usage in marine finfish aquaculture operations. The requirement for this information will be regularly assessed based on results of field observations. Licence holders are required to maintain accurate records of field monitoring data as specified in the Condition of Licence.