

British Columbia Shellfish Farming Industry

ENVIRONMENTAL MANAGEMENT SYSTEM CODE OF PRACTICE



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MESSAGE FROM THE BC SHELLFISH GROWERS ASSOCIATION

The formulation of an Environmental Management System is a key initiative for the development of BC's shellfish farming industry. The goal of this project is to provide BC shellfish farmers with guidance for maintaining and protecting environmental quality while improving production efficiencies.

Shellfish aquaculture is a marine-based industry that is affected by other land users such as tourism, recreation, forestry, agriculture, and urban development. The effects of these industries, as well as the shellfish aquaculture industry's impact on them, have been examined in a comprehensive manner in the development of this document. Prior to developing Codes of Practice, the BC Shellfish Growers Association consulted with community members, stakeholders, and other users of the marine resource to enable legitimate concerns and issues to be raised and solutions proposed. The BCSGA is confident this document forms an important step towards the pursuit of an ecologically sustainable shellfish farming industry in BC.

Ruth Salmon, Former Executive Director

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Instructions for this Manual

In this manual you will find background information for each environmental issue which concerns the British Columbia shellfish farming industry outlined in the beginning of each section.

The background summary for each issue is followed by an environmental objective which, when obtained, will allow the shellfish farming community to achieve their highest potential for environmentally sound management.

The objective is then followed by a summary of relevant existing legislation, which are foot-noted to their complementary Federal and Provincial Legislation Sources in the back of this manual. Web addresses to the provincial and federal legislations are also provided.

Recommended practices are also stated, which encourage British Columbia shellfish farmers to exceed the legislative practices in environmental stewardship and conduct.

Introduction

The following BC shellfish farming industry Code of Practice (COP) has been prepared in a public consultation process with representatives of the existing shellfish farming industry, government, and other interested marine resource user groups. As a result of the collective input of the above parties, consensus has been reached to adopt the following farm practices as part of the industry Environmental Management System (EMS).

This COP forms part of the shellfish farming industry's EMS which outlines the commitment that all shellfish farmers make to the maintenance of their individual and collective leadership role in marine environmental stewardship. It is intended to serve as a guide for shellfish farmers in addressing the principal areas of regulatory and public concern in the conduct of their normal farm practices, and to encourage the continued development of environmentally responsible shellfish aquaculture.



The BC shellfish farming industry is highly regulated, as the attached list of relevant legislation and regulations attests. In spite of the considerable regulatory challenges BC farmers face in the conduct of their routine operations, most operations meet or exceed the minimum regulated standards that already exist. In addition to complying with these minimum regulatory standards, the industry has provided additional recommended practices, which will further enhance our position as environmental stewards and good neighbours in the communities in which we live and operate.

This COP does not contain new regulations. Compliance with these existing regulations is already compulsory and sets the baseline standards for operation and the terms under which shellfish farmers are licensed and must continue to operate. This list of regulations may not be complete and may be updated from time to time. Additionally, farmers must adhere to regulations developed by any other statutory body including municipal and regional authorities. Obviously not all regulations, issues, or operations are covered in this document and farmers are encouraged to improve and add their own policies to increase the value of this COP to their own operations.



While many issues of public concern are adequately regulated, the accompanying recommendations are partially aimed at improving public support and acceptance of shellfish farming as a legitimate marine resource user. As such, a good neighbour policy will continue to strengthen the public acceptance of farm operations both for the individual farmer, and the industry as a whole.

Collectively these farm practices expand on the description of our industry's "Normal Farm Practices", and could serve as a guideline for regulatory agencies in resolving conflicts which may arise over the practices undertaken by shellfish farm operators.

As the BC shellfish farming industry continues to expand, improve husbandry practices, conduct research, and develop new technologies, this COP must also evolve to reflect these changes and related public expectations.

Recommendations for improvements to this Code of Practice should be made in writing to the EMS Committee of the British Columbia Shellfish Growers Association

ENVIRONMENTAL STEWARDSHIP ISSUES

Issue: Public Education

BACKGROUND

A significant challenge facing shellfish farmers is educating the general public about the industry and explaining our activities in a manner that affirms our commitment to protecting and enhancing the marine environment. In most instances we share similar concerns with other user groups regarding the impacts of human activities on the ocean. With a better understanding of what we do and our shared concerns, we will continue to improve support for our industry as a legitimate marine resource user group.

In many cases the public is unaware of the detrimental impact their activities have on the ocean and our operations. Generally other marine users, both commercial and recreational, show a willingness to improve their practices when they understand their impacts. Farmers must encourage positive efforts and lead by example in this area.



Heiltsuk Farm Tours

At the same time we need to recognize the concerns of the public about the impact of shellfish farming activities on their interests. While most farming activities are protected under the Farm Practices Protection Act, public support for the continued growth and development of the shellfish industry will be facilitated by a "good neighbour" policy that includes a recognition of the concerns of others and attempts to achieve reasonable compromise.

ENVIRONMENTAL OBJECTIVE

To foster a public attitude of commitment to protecting and enhancing our marine resources.

LEGISLATION

Farmers shall comply with all existing legislation relating to marine activities and encourage compliance by all other resource user groups.

RECOMMENDED PRACTICES

Farmers are encouraged to employ the following practices:

- a) Continue to set a positive public example of environmental stewardship in the conduct of all activities;
- b) Participate in efforts to increase public awareness of the importance of marine environmental stewardship;
- c) Take every reasonable opportunity to provide more public information about our industry and its practices;
- d) Where appropriate, provide tours of facilities and operations;
- e) Make boaters aware of the availability of farmers along the coast to provide assistance in the event of marine emergencies;
- f) Make recreational harvesters aware of ongoing shellfish monitoring efforts that growers support and advise them of information available regarding the closure of areas due to contaminants or naturally occurring circumstances;
- g) Maintain a dialogue with upland owners and neighbours to resolve concerns and conflicts at a personal level;
- h) Report the abuse of natural resources by pollution, poaching, illegal fishing, etc to the appropriate authorities; and,
- i) Advertise or post operator name and contact number to facilitate communication directly with those that have concerns or require information and/or assistance.

Issue: Waste Management

BACKGROUND

All human activity causes some environmental impact and most generates some waste. The shellfish farming industry enjoys a reputation as one of the most environmentally friendly marine resource users and must continue to maintain this position with effective and diligent waste management practices.

A significant concern to shellfish farm operators is the hazard posed by sewage contamination on or near their site. The safety of the food they produce is dependent on the sanitary standards of the waters from which it is harvested. All farmers must be diligent in ensuring that their sewage handling methods are maintained at the highest standards and should encourage all other marine resource users to meet these same standards.



Solid waste is generated in the normal course of farm operations. Waste may also be introduced into the environment accidentally as a result of weather or sea conditions. Wherever possible farmers must attempt to minimize their contribution to the waste stream by employing responsible waste reduction and control measures.

ENVIRONMENTAL OBJECTIVE

To minimize the environmental impact of waste produced by, and released from, shellfish farming activities.

LEGISLATION

Farmers shall comply with existing legislation including, but not limited to, the following:

- a) Sewage may not be deposited into the waters of a shellfish site (33);
- b) Sewage may not be deposited into a marine area designated as a no-dumping zone (13);
- c) Sewage facilities constructed on land must comply with regulations and construction standards (33);
- d) Toilet facilities must be provided for use by employees (35);
- e) All domestic sewage must be disposed of in an approved sewage treatment facility (33); and,
- f) All garbage and waste must be collected and disposed of in an approved manner or at an approved facility (33).

RECOMMENDED PRACTICES

On Site Sewage

Farmers are encouraged to employ the following practices regarding sewage:

- a) Support and promote a policy of no direct discharge of sewage into the marine environment;
- b) Have a sewage plan and facility for all sites;
- c) Provide a toilet facility for all their employees at all sites and ensure it is used;
- d) Ensure that the contents of portable toilets are emptied only into approved disposal systems and cleaned before being returned to the site; and,
- e) Encourage all other resource users (marine and up-land) to be more responsible in their handling and discharge of sewage into the marine environment.

Solid Wastes

Farmers are encouraged to employ the following practices in the handling of garbage and other wastes:

- a) Practice the principles of reduction, reuse, recycling, and recovery;
- b) Purchase materials with a long lifespan or which are reusable or recyclable;
- c) Ensure that all wastes produced by the farm operation are collected and disposed of responsibly, according to local waste management regulations;
- d) Dispose of shells and non-edible wastes in such a manner that it does not become an attractant to vermin or insects and contamination of food does not occur;
- e) Encourage suppliers and manufacturers of shellfish equipment and packaging to develop and adopt a recycling and disposal plan for the products they sell;
- f) Encourage all other marine resource user groups to be more responsible in the collection and disposal of garbage and wastes; and,
- g) Continue to participate in volunteer clean-up efforts of the waters and coastline surrounding farms.

Issue: Access, Private Property and Riparian Rights

BACKGROUND:

In BC, the Crown retains title to lands below the upland natural boundary and grants the privilege of public access in most circumstances. Waterfront property owners have a common law right of unimpeded access to and from their property at every point along the shoreline into deep water for the purposes of navigation as well as access to, and passage along, the foreshore (riparian rights). Improvements cannot be constructed in such a manner as to impede the upland owner's access without the upland owner's consent (and the approval of the appropriate regulating authorities).

The riparian right of access requires that the waterfront property owner be able to get to and from deep water in a navigable craft of reasonable size at every point along the waterfront property, and from every point along the foreshore directly in front of it. Provincial guidelines provide that at lowest tide, a 40-foot boat should still have comfortable access to every point along the foreshore adjacent to the waterfront, and to and from deep water with enough room to maneuver and turn around.

A license of occupation issued to a shellfish grower does not give the holder the right to restrict public access across the tenure area.

A lease gives the holder the right to restrict public access to and across the tenure by posting or other notice. Leaseholders are encouraged to provide public access where it is clearly not detrimental to the interests of the leaseholder.



ENVIRONMENTAL OBJECTIVE

To ensure the legal rights of public and private access to Crown land and navigable waters are maintained.



LEGISLATION

Farmers shall comply with common law respecting the access of citizens to their property, Crown Land, and navigable waters.

RECOMMENDED PRACTICES

Farmers are encouraged to employ the following practices:

- a) Recognize the needs of other marine resource users and promote methods to minimize user conflicts;
- b) Ensure farm sites are well marked and posted to provide public information and direction;
- c) Maintain communication with any upland owner to reduce personal conflicts and develop a cooperative relationship;
- d) Obtain approval from upland owner to gain access to farm site through their property;
- e) Ensure that seed storage piles and other temporary materials stored on intertidal tenures are neat and tidy, clearly marked, and do not exceed two metres in height;
- f) Ensure that any tenure modifications or constructions (e.g. rock walls, protective fencing) are approved for construction; and,
- g) Provide clearly marked public access through or around shellfish tenures.

Issue: Noise

BACKGROUND:

Shellfish farmers are steadily improving the productivity and efficiency of their operations. In many circumstances increases in productivity and reductions in injuries are being supported with increasing reliance on motorized equipment. A consequence of the necessary use of more equipment is the incidental noise generated by its operation. Responsible operators make every reasonable effort to minimize the impact of noise generated by all their equipment.

Due to the seasonal shift of "working tides" from daytime into evenings during fall/winter months, intertidal farming activities including harvesting will also shift to nighttime. These activities require the operation of equipment and vessels as well as verbal communication. Consideration should be given to potential impacts on nearby residents in conducting normal farm operations.

Some shellfish nurseries (e.g. floating upwelling systems or FLUPSYS) use powered circulation of water (paddlewheels or airlifts) to promote more intensive nursery culture. Diesel, electric, or propane power are used to operate these systems continuously (24h/day, year round) and these systems will generate some noise that could potentially travel outside the farm site.

Noise travels very well across water and at night. This noise can be of concern to employees on site and to nearby residents depending on the circumstances.



ENVIRONMENTAL OBJECTIVE

To minimize noise impact on employees, local residents, and other users of coastal marine areas.



LEGISLATION

Farmers shall comply with existing legislation including, but not limited to, the following:

- a) Moderate noise levels on site to less than 85 dBa (35); and,
- b) Comply with local noise bylaws.

RECOMMENDED PRACTICES

Farmers are encouraged to employ the following practices:

- a) Make every reasonable effort to minimize noise during regular farming activities;
- b) When possible, schedule activities on site from 0800 hrs to 1700 hrs;
- c) Maintain vessels and other marine equipment to ensure noise levels are minimized;
- d) Employ well-maintained sound suppression devices including mufflers, barriers, and baffles while operating equipment;
- e) Minimize the impact of recreational radios while working on tenures, particularly at night;
- f) Reduce vessel speed along near-shore areas, and employ safe operating practices to reduce noise levels and minimize shore disturbances; and,
- g) In areas with nearby upland residents, caution employees to reduce verbal communication to the minimum necessary level at night.

Issue: Light

BACKGROUND

Shellfish farming is conducted year-round regardless of limitations due to weather and visibility.

Lights may be required on a site to comply with navigational safety issues as directed by law, to provide security and safety, or to permit night operations depending on the circumstances.

Due to the seasonal shift of "working tides" from daytime into evenings during fall/winter months, intertidal farming activities including harvesting will also shift to nighttime. Night operations require the use of artificial lights (generated by battery, fuel, or generator) and can create impacts outside the tenure area in some circumstances.



A strong light that is poorly directed or reflecting from the water can create an annoyance to vessel operators and upland owners several kilometers away. The use of some lights can create a hazard to ocean navigation depending on how they are directed. Neighbours may be affected by lights during periods when they would normally be asleep.

Farmers must consider the impacts of the use of artificial lighting outside their tenure area.

ENVIRONMENTAL OBJECTIVE

To minimize the impact of artificial lighting outside the farm site for purposes other than navigational safety.

LEGISLATION

Farmers shall comply with existing legislation including, but not limited to, the following:

- a) Farm operators shall assure that all lights and markers required for navigational safety are properly deployed and operational at all times (10); and,
- b) Vessel operators shall not employ spotlights for navigation purposes (13).

RECOMMENDED PRACTICES

Farmers are encouraged to employ the following practices:

- a) Bright lights should not be shone seaward in a manner such that they interfere with safe navigation;
- b) Make every effort to minimize the use of lights on site;
- c) Point all directional lights away from the upland area; and,
- d) Where possible, lights should be shielded from all but essential directions. If spot lights must be used, they should be positioned as high above the water as possible so that penetration is maximized and reflection is minimized.

Issue: Odour

BACKGROUND:

Normal farm operations generate some odours related to the handling of their stocks and the related natural bio-fouling that coexists with them.

In high concentrations some farm odours can be offensive to persons outside the farm site. Reasonable farm practices reduce this impact to minimal levels.

ENVIRONMENTAL OBJECTIVE

To minimize the impact of farm generated odours outside the growing site.

RECOMMENDED PRACTICES

Farmers are encouraged to employ the following practices:

- a) Store all equipment at sea when conducting deep-water operations such as tray culture;
- b) Be conscientious about the storing or drying of equipment in areas where the foreshore has multiple users;
- c) Keep all vessels, equipment, and vehicles clean and well maintained at all times; and,
- d) Respect the concerns of others when using public facilities such as docks and loading ramps.



Issue: Chemicals, Fuels and Lubricants

BACKGROUND:

A variety of chemicals, fuels, lubricants and cleaners are in common usage during normal farm operations.

Appropriate use, handling, storage, and disposal of these materials is necessary to ensure that they do not injure employees or enter and potentially contaminate the marine environment.

ENVIRONMENTAL OBJECTIVE

To minimize the environmental impact of chemicals, fuels, lubricants, and cleaners on the marine environment during their normal use and handling.

LEGISLATION

Farmers shall comply with existing legislation including, but not limited to, the following:

- a) Comply with WHMIS standards for appropriate handling and storage of all chemicals (35);
- b) Obtain and retain Material Safety Data Sheets (MSDS) for all chemicals in use (35);
- c) Ensure that used or discarded chemicals are collected and disposed of in an appropriate manner to an authorized waste handling facility (33); and,
- d) Report spills of chemicals to the appropriate authority (5,33).

RECOMMENDED PRACTICES

Farmers are encouraged to employ the following practices:

- a) Minimize the use of any chemicals that could potentially enter the marine environment;
- b) Exercise caution to prevent the careless or accidental spillage of chemicals during their normal use;
- c) Use biodegradable products where appropriate;
- d) Prevent direct or indirect contact of toxic chemicals and compounds including creosote, wood preservatives, tin based paints, etc. with the marine environment;
- e) Continue to discourage other marine users against the use of toxic chemicals and compounds;
- f) Establish a spill response plan to handle emergencies and have appropriate spill response equipment on hand;
- g) Ensure that spills are contained and appropriately cleaned up should they occur;
- h) Separate fuel containers from product holding areas on marine vessels; and,
- i) Maintain only the minimum reasonable necessary quantity of fuels and lubricants on site to carry out operations.

Issue: Site Density

BACKGROUND:

Basic farm husbandry practices dictate that crops will typically be cultured in densities greater than they would occur naturally. Given that farmers must diligently manage and protect their stocks to maximize their production and economic returns, significantly greater production is possible using existing two and three-dimensional shellfish culture systems. Provincial government policy, including the annual rental fee structure, reinforces the need for more intensive use of shellfish tenures to maximize production. There are also other compelling economical and practical reasons for farms to be generally grouped together in the same area.

As the shellfish industry develops, more farmers are employing polyculture techniques to increase the diversity of species cultured on their sites. Additionally, the naturally occurring fouling organisms, which thrive on shellfish culture equipment, add to the diversity and productivity in the waters in and around shellfish sites.

Under some circumstances there is the potential for site development density and loading rates to exceed the carrying capacity of surrounding waters. Should this occur, there is the potential for growth rates to be reduced under certain conditions at certain times. Naturally occurring filter feeding animals could also be impacted. Such conditions are quite site specific. There is no evidence to indicate that this has been a concern in BC waters.

Farmers have a strong incentive to ensure that their productivity is not limited by exceeding the production capacity of their site or the region.

The shellfish industry is currently supporting pilot studies to examine the issue of carrying capacity in two BC regions where shellfish farming is maintained at higher densities. Preliminary analysis indicates that site density concerns in these areas are unfounded, as the biological capacity exists to support significantly greater production.

ENVIRONMENTAL OBJECTIVE

To maintain and enhance the productive capacity of shellfish growing waters through appropriate farm husbandry techniques.

LEGISLATION

Farmers shall comply with existing legislation including, but not limited to, the following:

- a) Farmers shall provide and adhere to an approved development plan for their site (17); and,
- b) Farmers shall obtain approval to exceed production levels by more than 20% on their site (17).

RECOMMENDED PRACTICES

Farmers are encouraged to employ the following practices:

- a) Monitor the quality of shellfish on their site and respond accordingly with appropriate husbandry practices;
- b) Consider the merits of polyculture on their sites; and,
- c) Continue to support research into the development of appropriate carrying capacity models.



Issue: Interaction with Wildlife Including Predator Control

BACKGROUND

Shellfish farming operations are conducted in an environment that is rich in diverse populations of wild plants and animals, both terrestrial and aquatic. Farmers recognize that the health and safety of these animals is necessary to preserve the biodiversity of an area. Most naturally occurring plants and animals have no negative impact on farming operations and many positive impacts. A few select species (including starfish, Japanese drills, moon snails, crustaceans, and some birds) can have significant economic impact depending on their frequency and the type of farm operation. Farmers are entitled to take reasonable steps to prevent the destruction of their crops by pests and predators. In many cases the proper design, construction, and management of farm operations will reduce the need for significant efforts to remediate predator control issues.

Potential benefits of shellfish culture to wildlife have also been identified:

- Intertidal oyster beds provide habitat for a variety of benthic and epibenthic invertebrates and some finfish, and have been shown by some studies to bear a greater species diversity than eelgrass meadows;
- Studies have shown no significant difference between the diversity of infaunal species under clam predator netting and control plots (uncultivated areas), with a greater abundance occurring beneath the clam net;
- The oyster bed community may provide greater forage for wading birds such as great blue herons and other shorebirds; and,
- Mussel fouling on deepwater culture apparatus may provide important food sources for migrating and over-wintering flocks of diving ducks (scoters, etc.). This is a mutually beneficial relationship, as the reduction in mussel fouling is a significant benefit to farmers.

There is strong public opinion about the impact of farm practices on naturally occurring wildlife and all farmers must ensure that their practices are conducted in a manner that is sensitive to these valid concerns.

OBJECTIVE

Farmers shall use all feasible methods to minimize impact on naturally occurring wildlife.



LEGISLATION

Farmers shall comply with existing legislation including, but not limited to, the following:

- a) Fish or fish habitat shall not be destroyed (5);
- b) Migratory birds and their nests may not be killed, captured, injured, or destroyed (9);
- c) Pest control products shall only be used and handled as authorized (11); and,
- d) Animals identified as "Species at Risk" and their habitats are specifically protected (12).

RECOMMENDED PRACTICES

Farmers are encouraged to employ the following practices:

- a) Any modification of tenure substrate (e.g. removal of rocks, gravelling) should be conducted in compliance with an approved management plan and should be planned to minimize impact on other naturally occurring wildlife and fish habitat;
- b) Predator exclusion devices (such as predator netting on clam beaches and vertical fencing) shall be secured at all times to ensure they do not present an unnecessary risk to entangle or injure wildlife;
- c) Farmers shall endeavor to shield their stocks from predators rather than attempt to destroy them; and,
- d) Predator control practices should be targeted at specific animals and have limited additional impacts on fish and wildlife habitats.

- e) If an intertidal tenure lies near to an area of critical habitat to birds, such as an important breeding or nesting area (i.e. Heron Rookeries), then every effort should be made to identify the seasons during which the areas would be of greatest importance to the birds. Activities during these periods should allow for minimum disturbance on bird activities.
- f) Predator netting must be secured so that it does not float up in the center, or around the edges, to allow sections where diving birds can get under the net; the use of finer plastic mesh (Vexar 'car cover') should be encouraged.
- g) A regular maintenance schedule must be maintained to ensure that all beach netting is maintained and secured properly (ie. once every tide cycle).



h) The following practices to avoid predation on mussel farms should be employed:

- The best method of predation control is to host a combination of techniques causing the birds to leave the site in search of a less disturbed area.
 - To develop a strategy to control mussel predation, knowledge of how many birds that are feeding on the farm is essential. The best time to count birds is right before the work day begins when there is less disturbance.
 - Since human activity seems to be a reliable method of deterring bird predation and enhances the overall effect of physical barriers, schedule normal activities around the site particularly during peak bird season.
 - Implement a “scaring” technique on the site prior to production of any shellfish and immediately upon arrival of early migrating birds. Steps should be taken early on to discourage mussel predation since it is easier to deter a small number of birds in comparison to a large established population.
 - The use of protective barriers such as predator nets with raft culture is effective and required only during times of bird activity i.e. bird migration and overwintering.
 - Use protective netting of a mesh size that is too small to trap diving birds.
 - All physical barriers should be visible to birds if protection is to be maximized, and to minimize entrapment and potential injury to birds (ie. white netting is more effective than black netting).
- To prevent diving birds from surfacing inside the protective netting and becoming trapped, avoid the use of a horizontal surface net and vertical net panels should either be hung deep enough to exceed possible diving limits of ducks (minimum of 20 m) or a bottom net should be installed.
 - A possible addition to bottom netting is to place structures around the raft that are 0.5m high (such as plastic mesh netting), which will inhibit birds from landing within the centre of the raft.
 - Longline culture is not amenable to the use of protective barriers and hence deterrence techniques are recommended; early implementation of scaring techniques and regular human activities at the site would combine to provide the most effective deterrence to predation.
 - Other methods which protect individual mussel ropes/socks such as lantern style nets or plastic trays may be used.
 - Avoid lethal methods of predator control as they have not been shown to be effective in the long term.

Issue: Transplant and Import of Stocks

BACKGROUND:

The BC shellfish industry is currently based on the culture of species that were deliberately or accidentally introduced to BC waters in the last century. These species, including Pacific oysters, Manila clams, and Japanese Weathervane Scallops, have naturally thrived and make a significant contribution to rural economies in the farming, fishing and recreational harvesting sectors. BC shellfish are widely considered to be free of serious pests and diseases. To maintain this reputation and competitive advantage as producers of quality shellfish products, all seed imports must be certified disease free, comply with regulations, and detailed records must be maintained to track all imports.

As the industry continues to develop, the potential to culture existing naturally occurring species, and species not currently existing locally or in insignificant quantities, offers tremendous opportunity to continue to diversify the industry.

The potential exists to accidentally import or transplant undesirable species or disease if strict protocols for the certification and inspection of imports and transplants are not adhered to.

A National Code on the Introduction and Transfer of Aquatic Organisms is currently being drafted.



ENVIRONMENTAL OBJECTIVE

To promote environmentally sound shellfish aquaculture development while minimizing undesirable impacts from intentional introductions and transfers.



LEGISLATION

Farmers shall comply with policies and procedures outlined by the Provincial/Federal Introductions and Transfers Committee.

Relevant legislation to the introduction and transfer of shellfish can be found in the Fisheries Act, Wildlife Act, and the BC Fisheries Act.

RECOMMENDED PRACTICES

Farmers are encouraged to employ the following practices:

- a) Support the development of practical and scientifically responsible regulations;
- b) Obtain appropriate relay permits and certification prior to moving shellfish;
- c) Continue to support research into improved methods for control of introductions; and,
- d) Store all products including waste products (such as empty shell) appropriately before transferring to another ecosystem.

Issue: Biofouling Control

BACKGROUND

A positive environmental impact of coastal shellfish operations is the creation of small floating or near-bottom "artificial reefs" which provide a habitat for naturally occurring marine plants and animals. While much of the positive impact occurs at the lower end of the food chain, it may not be immediately apparent to the casual observer. The increased abundance of fish and marine birds around shellfish sites is a direct response to this improved habitat and available food source. Most farmers witness a significant increase in the natural abundance of marine plants, animals, and wildlife around their farms as a result of the creation of this new habitat.

During the normal course of farming operations, naturally occurring biofouling including: mussels, barnacles, marine plants, and other marine invertebrate animals can collect on cultured shellfish and the associated culture equipment. The types and frequency of naturally occurring biofouling varies considerably depending on numerous factors including: location of the site, type and location of crops and equipment, depth, seasonality, flow, temperature, etc.

It is a normal farm practice to wash shellfish on site at the time of harvest to ensure that product is delivered to the processing plant in a clean and sanitary manner. Ongoing maintenance of crops and equipment will often necessitate on-site washing to control biofouling and prevent it from adversely affecting growth and efficient operations. Under normal circumstances, most sites should be capable of absorbing the impact of the biofouling generated from, and released to, the site.

In most cases naturally occurring biofouling has no significant direct negative impact on the crops being cultured. However, it can create other significant indirect negative impacts including: competition for food, restricting flow to the crop, increased cleaning required at harvest, providing a food source for other predators that could later threaten crops, and significantly increase weight of floating crops and equipment necessitating higher maintenance and capital costs. There is strong economic incentive for farmers to develop management practices that reduce the impact and requirement to discard non-target species on their crops and equipment, while ensuring their site can be operated in a long-term sustainable manner.

ENVIRONMENTAL OBJECTIVE

To minimize the amount and impact of organic material which must be discarded within the farm site.

LEGISLATION

Farmers shall comply with existing legislation including, but not limited to, the following:

- a) Farmers shall not discharge biofouling waste outside their farm site without permit (33); and,
- b) Farmers shall ensure that the storage or discharge of biofouling waste does not adversely affect sensitive marine habitat such as eel grass beds, subtidal kelpbeds, or rocky reef habitats (5).



RECOMMENDED PRACTICES

Farmers are encouraged to employ the following practices:

- a) Minimize the potential for over settlement of non-target species by selecting sites and culture methods which avoid areas known to attract fouling in high densities;
- b) Adopt operating and maintenance practices such as regular cleaning which reduce the potential for non-target species to become a significant factor;
- c) Facilitate probiotic control measures such as the polyculture of sea urchins to reduce fouling impact;
- d) Where biofouling must be washed or removed, attempt to reduce its impact by spreading the debris over a larger area within the site; and,
- e) Monitor the bottom of the site to observe for potential impact of biofouling control measures and adjust practices as required to ensure production from the site is conducted in a sustainable manner.

Issue: Tenure Modification

BACKGROUND:

Modification to enhance the productive capacity of the shellfish farm site is typically required if crops are to be raised in greater densities than would occur naturally. These modifications vary according to the site, species, and culture methods being employed.

Tenure modification in deep-water operations is generally quite limited as crops are raised on equipment brought to, and suspended over, the bottom.

Tenure modification in intertidal operations varies in scale depending on the site characteristics. While removal of rocks is a normal farm practice, any improvements which significantly alter the site, and could potentially impact sensitive fish or wildlife habitat, require prior approval from the appropriate regulatory agency. Approval can be subject to conditions sensitive to mitigating the potential impact on spawning or migration periods and tide cycles. Any improvements that could potentially create a hazard to navigation such as rock walls and fences also require prior approval.

With appropriate permission, normal farm practices to enhance the productive capacity of the site may include: addition or removal of gravel to enhance the substrate, beach contouring, construction of low walls to reduce erosion or movement of crops, tilling the substrate to facilitate planting or harvest, and clearing of rocks or debris. This type of work may involve approved use of assorted heavy equipment and/or barges.



ENVIRONMENTAL OBJECTIVE

To prevent negative impacts on sensitive fish or wildlife habitat when enhancing the productive capacity of a site through tenure modification.



LEGISLATION

Farmers shall comply with existing legislation including, but not limited to, the following:

- a) Farmers shall not significantly alter or damage sensitive fish or wildlife habitat (5);
- b) Farmers shall not construct works (such as rock walls over 14 inches) without approval (10); and,
- c) Farmers shall comply with their approved development plan when modifying their site (17).

RECOMMENDED PRACTICES

Farmers are encouraged to promote public education and understanding of the positive benefits of improving productive capacity of a farm site through tenure modification.

Issue: Vehicle Operations

BACKGROUND:

Vehicles are a vital component in the transportation system necessary for the safe and efficient handling of shellfish products. In addition to the typical highway use for product transport, vehicles may also be required for the safe and efficient transport of employees, equipment, and shellstock over intertidal areas.

Vehicle operation in the intertidal zone has the potential to cause unnecessary environmental impact if they are operated inappropriately; particularly if operators deviate from appropriate routes and into areas of sensitive fish or wildlife habitat. Typically these sensitive areas are softer ground and should discourage most operators.

Vehicle operation along stable intertidal areas that do not contain sensitive fish or wildlife habitat, and are on shellfish tenures, is not prohibited.



ENVIRONMENTAL OBJECTIVE

To minimize the environmental impact of vehicle operation in intertidal areas.

LEGISLATION

Farmers shall comply with existing legislation including, but not limited to, the following:

- a) Vehicles operated on roads and highways must comply with all licensing and operating regulations (27);
- b) Vehicles operated off road and along intertidal areas must not damage sensitive fish or wildlife habitat (5, 34); and,
- c) Vehicles and their contents shall be appropriately constructed and maintained to prevent the discharge of fuels, oils, and lubricants onto beaches or into the ocean (4,14,33).

RECOMMENDED PRACTICES

Farmers are encouraged to employ the following practices:

- a) Minimize use of vehicles on the beach to what is absolutely necessary;
- b) Operate vehicles in a safe and professional manner;
- c) Restrict route selection in intertidal areas to hard surfaces along the upper intertidal zone;
- d) Cross the shore at a designated place each day and not at multiple points so disturbance to the fore-shore is minimized;
- e) Ensure vehicles are serviceable and appropriate for the type of terrain to be crossed;
- f) Prepare a contingency plan for addressing vehicle breakdowns in the intertidal zone; and,
- g) Obtain upland owner's consent prior to traveling on their property to access tenure.

Issue: Vessels and Marine Equipment

BACKGROUND:

Marine vessels and equipment of assorted descriptions are in common usage with all shellfish farming operations. This equipment is necessary for the safe and efficient transport of employees and equipment as well as for handling and harvesting product.

There is the potential for unnecessary environmental impact as a result of the operation of this equipment in an inappropriate manner, under adverse weather conditions, or due to accidental spills. There is also the potential for numerous other marine resource users to negatively impact the environment through the inappropriate operation of their vessels and equipment.

Given the significant investment farmers have in their vessels and marine equipment, there is strong incentive to ensure these items are operated and maintained in an appropriate manner at all times.



ENVIRONMENTAL OBJECTIVE

To minimize negative impacts of marine equipment operation including the risks of spills from contaminants.



LEGISLATION

Farmers shall comply with existing legislation including, but not limited to, the following:

- a) Vessel and equipment operators shall not damage fish or wildlife habitat (5);
- b) Vessel operators shall comply with regulations regarding the safe and appropriate operation of marine vessels (13);
- c) Vessel and equipment operators shall not permit the release of contaminants from their equipment into the marine environment (5);
- d) Operators shall promptly report all spills regardless of the source and take appropriate action to minimize the impact of such spills (13,5); and,
- e) Vessel and equipment operators shall be appropriately qualified and trained in the proper and safe use of their equipment (13,35).

RECOMMENDED PRACTICES

Farmers are encouraged to employ the following practices:

- a) Receive adequate and appropriate training in the operation and maintenance of all their marine equipment;
- b) Regularly maintain vessels and equipment to ensure seaworthiness;
- c) Regulate vessel speed appropriately to reduce the impact of wake on other marine users and the foreshore area;
- d) Use safer biodegradable oils and products where feasible;
- e) Minimize the risk of spills of substances from vessels and equipment through appropriate design, employing appropriate containment devices (such as drip pans), and prompt cleanup of all spills and leaks;
- f) Have a spill kit on site capable of handling the contents of the largest container of contaminants;
- g) Have a spill response plan to deal with own spills and those of other marine resource users;
- h) Ensure that all used oils, lubricants, filters, and contaminated materials are disposed of in an appropriate manner;
- i) Report hazards and obstructions of safe navigation to appropriate authorities; and,
- j) Be prepared to render assistance to other marine resource users in the event of emergency.

Issue: Visual Quality

BACKGROUND:

Most farmers attempt to maintain their sites in a clean and orderly manner as this facilitates efficient operation and safety. The individual interpretation of aesthetic appeal is subjective and varies considerably depending on perspective.

Farmers must be prepared to recognize and address this issue in the normal conduct of their operations as a legitimate marine resource user. The industry recognizes that some upland owners will never be satisfied with any visual impact on the water. However, farmers must be prepared to make reasonable efforts to minimize the visual impact of their operations for their own sake and that of the rest of the industry.

In general terms, an orderly, well maintained and uniformly laid out site indicates a responsible and efficient farm operation. This appearance is typically supported by most other marine resource users and reasonably minded upland owners.



ENVIRONMENTAL OBJECTIVE

To construct and maintain farm sites in such a manner as to minimize reasonable public aesthetic concerns.

LEGISLATION

Some regions have zoning bylaws regulating the type and construction of marine structures. Check with your appropriate regulating authority.



RECOMMENDED PRACTICES

Farmers are encouraged to employ the following practices:

- a) Ensure that site layout and construction complies with submitted development plans;
- b) Floating buildings and structures should be constructed and maintained in a fashion that will minimize the visual impact and comply with local zoning where applicable;
- c) With the exception of navigational safety aids, select subdued colours for floatation and structures;
- d) Where reasonably possible, select floatation of uniform shape and colour;
- e) Maintain farm sites and infrastructure in a clean and orderly manner;
- f) Equipment not in use should be stored in an orderly manner to minimize visual impact;
- g) Ensure that all equipment including storage areas and anchor lines are within site boundaries;
- h) Remove unserviceable or damaged equipment from site; and,
- i) Respond to reasonable public concerns in a constructive manner.

Issue: Navigational Safety

BACKGROUND:

Navigable waters are generally described as any body of water over which any description of vessel may operate. Virtually all shellfish operations occur in navigable waters. Approval is required prior to the construction of all works located below the high water mark in any navigable waters which may constitute a significant interference with navigation. A "work" is defined as any structure, device, or thing ...on, in or under the water... that may interfere with navigation. Red concrete clam tenure boundary markers are not a hazard to navigation.

Responsible farmers ensure that any constructed works are installed, marked, and maintained in accordance with the guidelines of the Navigable Waters Protection Act administered by the Canadian Coast Guard. All works and site plans must be approved prior to the commencement of construction. As a condition of approval, the use of private aids and markers may be required. When required, these aids are conditional on appropriate markings, which the operator must establish and maintain in accordance with regulations and all applicable standards. Depending on the circumstance, the operator may be re-

quired to mark the site or obstacle by day and by adequate light at night.

Many farmers experience significant loss or damage as a result of accidental or negligent marine vessel operation around their sites. The potential for accidents and personal injury to other marine vessel operators is increased during periods of limited visibility. By ensuring their sites and equipment are clearly marked at all times, farmers will reduce the potential for commercial and recreational marine traffic to approach or enter their site in an unsafe manner.



ENVIRONMENTAL OBJECTIVE

To enhance public marine safety in the areas surrounding shellfish operations.

LEGISLATION

Farmers shall comply with existing legislation including, but not limited to, the following:

- a) Farmers shall obtain approval from the appropriate regulatory agency prior to constructing any works (10);
- b) Farmers shall establish and maintain all required aids to navigation including lights, navigational floats, and markers in accordance with regulations and applicable standards ((13); and,
- c) Farmers shall construct and operate their sites in accordance with their approved development plan (17).

RECOMMENDED PRACTICES

Farmers are encouraged to employ the following practices:

- a) Promote public awareness of the need for caution when operating vessels around shellfish operations;
- b) Ensure anchor lines and cables are clearly marked or submerged to prevent obstruction;
- c) Ensure floating equipment is securely fastened and regularly maintained;
- d) Repair any storm damaged equipment in a timely fashion;
- e) Ensure that rebar used to secure predatory nets is U-shaped to prevent potential accidents or injury;
- f) Ensure that predator nets are tightly secured to prevent them from floating more than 14" off bottom and that tears are quickly repaired;
- g) Promote public awareness of the availability of shellfish farmers to respond to marine emergencies;
- h) Post and maintain speed limits in shellfish growing areas; and,
- i) Encourage other marine users to reduce speed in marine areas for safety purposes.

Issue: Harvesting

BACKGROUND:

Farmed shellfish products are regularly and routinely harvested for processing and sale using a variety of techniques. Harvesting may occur at any time of day depending on season, tides, and weather conditions and is usually the most active phase of the growing cycle.

Typical harvesting activities cause environmental impact that is non-persistent in nature. There is strong incentive for farmers to ensure there are no persistent or detrimental impacts resulting from regular harvesting operations.

The primary concern of farmers is to ensure that their harvested product is safe for human consumption. Most operations have quality standards and control measures that ensure their product exceed the minimum standards established by regulation.



Many farmers participate in a coast-wide system of water quality monitoring to ensure the quality of shellfish growing waters is accurately and routinely assessed.

Harvesting activities generate concern from the public and other marine resource users as this is typically the period of greatest activity on a farm site. Farmers need to be sensitive to the reasonable concerns of observers to reduce potential conflicts over issues such as noise, lights, odour, access, hours of operation, waste management, and aesthetics.

ENVIRONMENTAL OBJECTIVE

To reduce the environmental impact of routine harvesting operations to non-persistent effects of short duration.



LEGISLATION

Farmers shall comply with existing legislation including, but not limited to, the following:

- a) All shellfish intended for sale must be harvested from an approved harvesting area (CSSP);
- b) Farmers shall only harvest the species for which they are licensed to culture within the boundaries of their site (5,17);
- c) Waste products including synthetic materials may not be discharged into the marine environment (33); and,
- d) Farmers may not damage or destroy sensitive fish or wildlife habitat in the conduct of their harvesting operations (5,34).

RECOMMENDED PRACTICES

Farmers are encouraged to employ the following practices:

- a) Confine activities and their related impact to the tenure area;
- b) Minimize harvest impact on the marine environment, other marine resource users, and upland owners;
- c) Employ well maintained sound devices on harvesting equipment;
- d) Minimize the effects of noise and lights outside the tenure area at night;
- e) Establish a protocol to ensure that synthetic material waste (e.g. oyster blue) generated in harvesting operations does not re-enter the marine environment at any point after harvest;
- f) Continue to participate in water quality and PSP monitoring efforts in coastal waters for the benefit of all marine users; and,
- g) Continue to advocate for no sewage or industrial discharge from any source into marine waters.



Issue: Seed Collection, Setting and Nursery Operations

BACKGROUND:

Shellfish farmers require a consistent supply of quality seed on a continuous basis. Depending on the species, this seed can be obtained from a variety of sources and then set and reared in a variety of manners while in the juvenile stages.

Licensed shellfish farmers have the authority to deploy oyster spat collection equipment in shellfish reserves (Pendrell Sound and Pipestem Inlet) for subsequent transfer to their tenures. Shellfish reserves remain open to the public and are popular tourist destinations in summer months.

While shellfish reserves are still viable oyster seed sources, they have largely been replaced with seed supplies from hatcheries in BC and the USA. Eyed oyster larvae may be purchased and set on cultch using remote setting practices. Some of the equipment used in this process (heaters, blowers, etc) may generate significant noise which may travel outside the tenure area. Remote setting techniques may involve the deployment of tarps suspended in deep-water or the intertidal zone to con-

tain larvae while setting. Due to the temporary nature of "large sets", it is often not practical to employ high construction standards.

On completion of setting, cultch is frequently stored in intertidal zones to harden seed and reduce fouling and predation. Selection and layout in this storage site is important to ensure that the underlying substrate is appropriate.

Farmers must remain sensitive to the impact and appearance of their operations at all times regardless of location.



ENVIRONMENTAL OBJECTIVE

To minimize the environmental and aesthetic impact of seed collecting and setting activities.



LEGISLATION

Farmers shall comply with existing legislation including, but not limited to, the following:

- a) Ensure that waste materials do not enter the marine environment (33);
- b) Ensure that floating structures in shellfish reserves are appropriately anchored and marked (10); and,
- c) Ensure that materials stored in intertidal areas do not damage sensitive fish habitat (5).

RECOMMENDED PRACTICES

Farmers are encouraged to employ the following practices:

- a) Adequately identify all equipment temporarily placed in a shellfish reserve;
- b) Ensure equipment is of orderly appearance and securely anchored within shellfish reserves;
- c) Remove all shellfish equipment from reserves by 01 Dec and not reoccupy before 01 June;
- d) Continue to participate in volunteer clean-up initiatives in shellfish reserves and surrounding areas;
- e) Ensure intertidal cultch does not smother habitat by adequately spacing or elevating it;
- f) Remove and store all temporary remote setting materials and equipment on conclusion of operations;
- g) Operate setting equipment only during working hours where practical;
- h) Keep inter-tidal shell storage piles to less than two metres in height, mark appropriately and store in an orderly manner with a concern for appearance; and,
- i) Develop a fire control plan and ensure adequate fire equipment is on hand during heating operations.



Issue: Equipment and Construction Standards

BACKGROUND:

The shellfish farming industry is rapidly developing new equipment, techniques, and construction standards to enhance productivity. With this development, a variety of assorted equipment and designs are being researched and constructed, while older less efficient methods are steadily being replaced.

Historically the industry has appealed to some people with limited financial resources who may have built their operations starting with most readily available and affordable materials. In some cases these materials were not designed to operate under extreme marine conditions and gradually need replacing. They are frequently visually unappealing and have higher maintenance costs.

Materials that rapidly breakup, decompose, or have limited, short-term single use are becoming unacceptable as environmentally sound choices. Damaged or abandoned equipment is an issue of public concern.

BC shellfish farmers pride themselves on personal innovation and equipment design and continue to pioneer new culture techniques. This spirit is necessary for BC's shellfish industry to continue to flourish in the future, but must be balanced with public expectations of acceptable appearance and environmental impact related to the lifespan, durability, and safety of such innovations.

As the shellfish industry achieves the critical mass necessary to support the production of economical, purpose built equipment, the standards of equipment design and construction should continue to improve.



ENVIRONMENTAL OBJECTIVE

To continue to improve the standards of equipment design and construction thereby improving its lifespan and appearance.



LEGISLATION

Farmers shall comply with existing legislation including, but not limited to, the following:

- a) Floating structures shall conform to the development plan submitted to the appropriate regulating authority (17);
- b) Unserviceable equipment shall be removed to an appropriate waste handling facility (33); and,
- c) Waste materials and equipment shall not be permitted to enter the marine environment (33).

RECOMMENDED PRACTICES

Farmers are encouraged to employ the following practices:

- a) Equipment should be designed and constructed to withstand the most extreme weather conditions anticipated at the site over time;
- b) The use of unprotected Styrofoam as floatation is unacceptable;
- c) Should the protective covering over Styrofoam become damaged it should be repaired or replaced as soon as practical;
- d) Manufacturers of shellfish farming equipment should be encouraged to develop a plan to reuse or recycle the materials they manufacture;
- e) Equipment should be designed and constructed with a view to long term durability as much as economically feasible; and,
- f) Damaged equipment should be repaired or removed from the site as soon as practical.

KEY FEDERAL AND PROVINCIAL LEGISLATION RELATING TO SHELLFISH AQUACULTURE

This synopsis is merely intended to serve as a guide to key legislation which may affect some farming operations. Farmers should refer to the specific legislation or contact the appropriate Department or Ministry for detailed descriptions.

Legislation is numbered for reference purposes with the COP.

FEDERAL LEGISLATION

1. Criminal Code..... <http://insight.mcmaster.ca/org/efc/pages/law/cc/cc.html>

Provides penalties for theft of oysters, shellfish, and other property of interest to an aquaculturist.

2. Customs Act..... <http://www.ccr-aadrc.gc.ca/customs/general/publications/indexcae-e.html>

This Act governs the importation and exportation of goods in and out of Canada. The act also regulates the transportation, movement, and storage of goods. A certificate of origin is required for all goods being imported into and goods being exported to the USA. This act provides for the appointment of inspectors and outlines their powers.

3. Environmental Assessment Act http://www.ceaa.gc.ca/0011/act_e.htm

This Act establishes the federal environmental assessment process. Its purpose is to ensure that environmental effects of projects are considered before the activity commences, development is sustainable and contributes to a healthy environment and economy, and to ensure that projects do not cause significant adverse effects outside the site that projects occur. The requirement to obtain Coast Guard approval under the NWPA may necessitate an environmental assessment.

4. Fish Inspection Act..... <http://laws.justice.gc.ca/en/F-12/>

This Act provides authority for the inspection of vessels, vehicles, processing plants, and product destined for interprovincial and international trade or imported in Canada from other countries. It includes action where fish products pose a danger to public health and safety, are of unacceptable quality, or are fraudulently or incorrectly marketed.

5. Fisheries Act..... <http://canada.justice.gc.ca/en/laws/F-14/text.html>

This Act provides for the management, protection, and conservation of fisheries resources and habitat in Canada. It provides for licensing, administration, and enforcement. The Act prohibits the destruction of fish or fish habitat or the deposit of deleterious substances into waters frequented by fish except as authorized by permit.

6. Fisheries Development Act..... <http://canada.justice.gc.ca/en/laws/F-21/text.html>

This Act provides for the development of the commercial fisheries in Canada through aquaculture and fishery resource research development.

7. Food and Drugs Act...http://www.hc-sc.gc.ca/food-aliment/english/publications/acts_and_regulations/food_and_drugs_acts/

This Act regulates the safe management of food, drugs, and cosmetics. All food must be safe and fit for human consumption from all perspectives including its production, processing, packaging, and storage.

8. Health of Animals Act.....<http://canada.justice.gc.ca/en/laws/H-3.3/fulltoc.html>

This Act covers the diseases and toxic substances that may affect animals or be transmitted by animals to humans, and the protection of animals. The Minister has the authority to control diseases and toxic substances that may affect animals or humans or may prohibit importation or introduction in Canada of animals and other substances.

9. Migratory Birds Convention Act.....<http://canada.justice.gc.ca/en/laws/M-7.01/index.html>

This Act implements a convention for the protection of migratory birds and their nests (but not specific habitat) in Canada and the USA. Migratory birds may not be killed, captured, injured, removed, or destroyed without permit.

10. Navigable Waters Protection Act (NWPA).....<http://www.tc.gc.ca/actsregs/nwpa/TOCnwpa.htm>

This Act provides terms and conditions for the protection of navigable waters. Navigable waters are generally described as any body of water over which any description of vessels may operate. Approval under the Act is required for all works located below the high water mark in any navigable water which constitute a significant interference with navigation. All plans must be approved prior to the commencement of construction and may require the use of private aids and markings to be established and maintained in accordance with regulations. These regulations are currently under review and revised regulations are expected within a year .

11. Pest Control Products Act..... <http://www.hc-sc.gc.ca/pmra-arla/english/legis/pestcont-e.html>

This Act regulates products used for the control of pests and organic functions of plants and animals. Control products must be used, handled, and stored in an authorized manner.

12. Species at Risk Act (SARA)..... <http://www.cws-scf.ec.gc.ca/sar/strategy/index.htm>

This Act provides for the protection of wildlife at risk of becoming extinct or lost from the wild and covers: birds, fish (including shellfish), mammals, insects, amphibians, and reptiles. The Act prohibits the killing, harming, harassing, capturing, or taking of species officially listed as threatened, endangered, or extirpated, and the destruction of their resources including critical habitats.

13. Shipping Act..... <http://www.tc.gc.ca/Actsregs/csa-lmmc/Toccsa.html>

This Act provides detailed regulations for Canadian commercial shipping. The discharge of any pollutant (including spilling, leaking, pumping, etc.) from any ship vessel is prohibited under any circumstance. Pollutants are defined as any substance that if added to any waters would degrade or alter the quality of those waters to an extent that is detrimental to their use by man or natural flora or fauna.

14. Transportation of Dangerous Goods Act..... <http://www.tc.gc.ca/actsregs/TDG/TOCtdg.htm>

This Act regulates the transportation of all dangerous goods in Canada including by rail, road, air, and water. All dangerous goods (including: gasses, flammable and combustible fluids, and any other substances deemed to be dangerous to humans or the environment) must be handled in compliance with all applicable regulations including marking, handling, transportation, and storage.

15. Wildlife Act<http://canada.justice.gc.ca/en/laws/W-9/index.html>

This act promotes wildlife policies and programs, public cooperation in wildlife conservation and interpretation, wildlife research, conservation, and investigation as they relate to wildlife and their habitat. This Act allows for the establishment of protected marine areas in any waterbody in Canada.

PROVINCIAL LEGISLATION, REGULATIONS AND POLICIES**16. Agricultural Land Commission Act**.....http://bbs.qp.gov.bc.ca/bcstats/96010_01.htm

This Act provides the legislative framework for the preservation of land resources useful to the farming industry and consistent with the needs of the community. In establishing the Agricultural Land Commission, agricultural land within the ALR is preserved and provided some protections.

17. Aquaculture Licenses—general terms and conditions..... <http://www.bcfisheries.gov.bc.ca/com/aqua/shellfish.html>

These terms and conditions outline the operating and reporting requirements for aquaculture license holders. The holder of an aquaculture license must comply with their approved development plan and ensure that the site is operated in accordance with established Branch (Ministry) and industry standards.

18. Assessment Act..... http://www.qp.gov.bc.ca/bcstats/96020_01.htm

Provides for a Crown Corporation with authority to assess aquaculture tenures. Equipment, and real assets for taxation purposes.

19. Environment and Land Use Act.....http://bbs.qp.gov.bc.ca/bcstats/96117_01.htm

This Act establishes the Environment and Land Use Committee with objectives of increasing environmental awareness, monitoring land use and resource development decisions, holding public inquiries, establishing protected areas, and making recommendations to cabinet about environmental issues.

20. Environment Management Act.....http://bbs.qp.gov.bc.ca/bcstats/96118_01.htm

This Act provides the authority for the ministry of Environment to manage, protect, and enhance the environment. Some responsibilities include: developing environmental policies and standards, preparing environmental plans for water resource management, fisheries and aquatic life management requiring and regulating environmental assessments, and enforcing the act.

21. Farm Practices Protection (Right to Farm) Act.....http://bbs.qp.gov.bc.ca/bcstats/96131_01.htm

This Act applies to farmers operating in the Agricultural Land Reserve, other areas farming is permitted, and in areas for which an aquaculture license has been issued. The Act protects farmers against nuisance actions, court injunctions, or specific municipal bylaws relating to the operation of their farm provided that they are operating under "normal farm practices". A Farm Practices Board is established to receive complaints from persons aggrieved by odour, noise, dust, or other disturbances resulting from farm operations and encourage settlement of the complaints. Some sections of the Act may not apply in areas covered under the Islands Trust Act.

22. Fisheries Act <http://canada.justice.gc.ca/en/laws/F-14/index.html>

Sections of this Act pertaining to aquaculture include:

- a. Aquaculture Regulations—establishes the terms, conditions, license fees, reporting requirements, etc., for aquaculture licenses.
- b. Fish Inspection Regulations—prescribes the licensing, inspection, labeling, and standards required for the processing of fish in registered plants in BC.
- c. Fisheries Regulations—prescribes the regulation of wild oyster harvesting and oyster culture, establishes restrictions on moving oysters (related to Denman Island Disease and Oyster Drills), establishes shellfish reserves (Pendrell Sound and Pipestem Inlet), dictates uses of oyster culture equipment including spat collectors, etc.
- d. Shellfish Regulations—this regulation outlines the annual farmed shellfish reporting requirements.

23. Health Act http://www.qp.gov.bc.ca/bcstats/96179_01.htm

This Act provides the regulatory framework which permits the health of British Columbians to be monitored and safeguarded with provisions aimed at preventing disease, removing health hazards, and permitting appropriate actions when problems occur. Regulations include sanitation standards for private dwellings and public places, sewage handling and discharge, and water and food safety. Refuse, unpurified sewage, and other substances may not be discharged into the environment without permits. Inspectors have the authority to order that hazards be eliminated.

24. Island Trust Act http://bbs.qp.gov.bc.ca/bcstats/96239_01.htm

This Act provides for the zoning of land for activities (including aquaculture facilities) up to one kilometer offshore of major and minor islands contained within the Trust area (most southern Gulf Islands).

25. Land Act http://bbs.qp.gov.bc.ca/bcstats/96245_01.htm

This Act provides for the disposition, management, and administration of Crown land in the province, as well as the surveying of Crown Land. Authority is established to determine whether a disposition of Crown Land is in the public interest, to designate particular uses or prohibitions, to issue licenses of occupation or leases, and to establish fees, rents, and conditions of use of Crown Lands.

26. Land Title Act http://bbs.qp.gov.bc.ca/bcstats/96250_00.htm

Gives authority to approving officers to assess impacts of new subdivisions on farmland (including shellfish tenures) when they consider applications. Before subdivision approval is granted, adequate buffering or separation of the subdivision may be required to ensure there is no unreasonable interference with existing farm operations on adjoining or reasonably adjacent properties.

27. Motor Vehicle Act http://bbs.qp.gov.bc.ca/bcstats/96319_01.htm

This Act provides the legislative framework to enable municipal governments, regional districts, and improvement districts (each up to one kilometer offshore) to operate. It includes regulations describing boundaries, elections, assessment, and collection of taxes and administration. Specific regulations pertaining to farming include: community planning, zoning, nuisance regulations, water use, and protected farm areas.

28. Municipal Act http://bbs.qp.gov.bc.ca/bcstats/96323_00.htm

Provides zoning of land for activities (including aquaculture, processing, marketing facilities) within municipal boundaries, or within management areas of Regional Districts up to one kilometer offshore.

29. Offense Act http://bbs.qp.gov.bc.ca/stat_reg/statutes/sup33800.htm

Prescribes penalties, both monetary and penal, for infractions of BC Statutes.

30. Social Services Tax Act http://bbs.qp.gov.bc.ca/bcstats/96431_01.htm

Regulations pertaining to bona fide aquaculturists which provide for exemptions from provincial sales tax for specified aquaculture, farm, and safety equipment.

31. Transportation of Dangerous Goods Act http://bbs.qp.gov.bc.ca/stat_reg/statutes/sup45800.htm

This Act establishes requirements for the safe transport and marking of goods deemed to be dangerous including flammable and combustible fluids and the vehicles which are used to transport them.

32. Trespass Act http://bbs.qp.gov.bc.ca/stat_reg/statutes/sup46200.htm

This Act outlines the rights and responsibilities of property owners, including leaseholders, and provides a definition of trespass and outlines trespasser's obligations. Not all aspects of trespass are codified. Common Law also applies.

33. Waste Management Act http://bbs.qp.gov.bc.ca/stat_reg/statutes/sup48200.htm

This Act establishes the Ministry of Environment's responsibilities for waste management in BC. Authority exists to prohibit waste discharge without permit, authorize storage, disposal, treatment, or discharge of waste, and regulate or delegate authority to other bodies. Regulations pertaining to aquaculture include sewage control areas, petroleum storage, chemical waste control, and spill reporting.

34. Wildlife Act http://bbs.qp.gov.bc.ca/stat_reg/statutes/sup48800.htm

This Act provides for the regulation of hunting and angling and the management of BC's fish and wildlife resources. This act authorizes the administration of land for the purposes of wildlife management and protection, protection of critical wildlife areas, protection of endangered species, and enforcement.

35. Workers Compensation Act http://www.qp.gov.bc.ca/bcstats/96492_00.htm

This Act provides for the establishment of the Workers Compensation Board of BC, which has regulatory responsibility for health and safety for virtually all employers and workers in BC. Health and safety regulations include:

- a. WCB Health and Safety Regulations
- b. WCB Occupational First Aid Regulations
- c. Workplace Hazardous Materials Information System (WHMS) regulations
- d. Occupational Environment Regulations