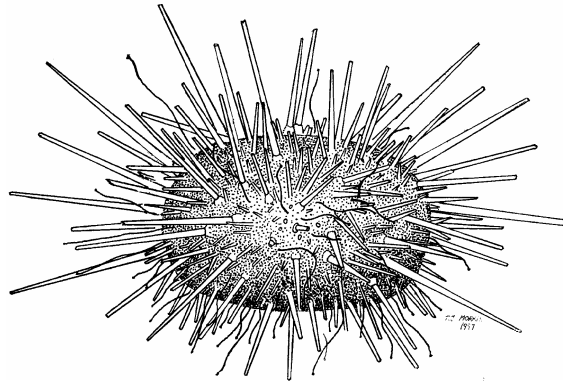


PACIFIC REGION

**INTEGRATED FISHERIES
MANAGEMENT PLAN**

GREEN SEA URCHIN

**SEPTEMBER 1, 2011 TO
AUGUST 31, 2012**



Green Sea Urchin: *Strongylocentrotus droebachiensis*



Fisheries and Oceans
Canada

Pêches et Océans
Canada

Canada

This Integrated Fisheries Management Plan is intended for general purposes only. Where there is a discrepancy between the Plan and the Fisheries Act and Regulations, the Act and Regulations are the final authority. A description of Areas and Subareas referenced in this Plan can be found in the Pacific Fishery Management Area Regulations.

FOREWORD

The purpose of this Integrated Fisheries Management Plan (IFMP) is to identify the main objectives and requirements for the Green Sea Urchin fishery in the Pacific Region, as well as the management measures that will be used to achieve these objectives. This document also serves to communicate the basic information on the fishery and its management to Fisheries and Oceans Canada (DFO) staff, legislated co-management boards and other stakeholders. This IFMP provides a common understanding of the basic “rules” for the sustainable management of the fisheries resource.

This IFMP is not a legally binding instrument which can form the basis of a legal challenge. The IFMP can be modified at any time and does not fetter the Minister's discretionary powers set out in the *Fisheries Act*. The Minister can, for reasons of conservation or for any other valid reasons, modify any provision of the IFMP in accordance with the powers granted pursuant to the *Fisheries Act*.

Where DFO is responsible for implementing obligations under land claims agreements, the IFMP will be implemented in a manner consistent with these obligations. In the event that an IFMP is inconsistent with obligations under land claims agreements, the provisions of the land claims agreements will prevail to the extent of the inconsistency.

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1. OVERVIEW

1.1. Introduction

The 2011/12 Pacific Region Green Sea Urchin Integrated Fisheries Management Plan (IFMP) encompasses the period of September 1, 2011 to August 31, 2012.

The 2011/12 Green Sea Urchin Commercial Harvest Plan is attached as Appendix 6 to this IFMP. Commercial fish harvesters are advised to review the attachments for harvest information.

Additional information on Green Sea Urchins may be accessed through the Department's shellfish webpage at:

www.pac.dfo-mpo.gc.ca/ops/fm/shellfish/default_e.htm

Research Documents and Stock Status Reports for Green Sea Urchins are available at the Centre for Scientific Advice, Pacific (CSAP) webpage:

www.pac.dfo-mpo.gc.ca/science/psarc-eng.htm

1.2. History

A detailed history of the commercial Green Sea Urchin fisheries, showing areas open, quotas, landings, number of participants, number of licences and vessels, values and reasons for management decisions, is contained in annual Post-Season Reviews that are available from the Resource Manager (see contacts Appendix 10).

The Green Sea Urchin is one of three sea urchin species that have been fished in B.C. waters. Red and Green Sea Urchins are currently fished commercially under authority of a limited category "Z" licence, category "ZC" for reds and category "ZA" for greens. Purple Sea Urchins were fished under scientific permit from 1990 to 1992.

The Green Sea Urchin dive fishery began in 1987 and experienced steady increases in effort up to 1992. Landings peaked in 1992, when 49 vessels reported 1,042 tonnes for a landed value of \$4.4 million. Since 1992, landings have decreased as a result of a more conservative approach to establishing quotas. Quotas since have remained relatively constant, however commercial catch has declined in recent years because of increased competition in the markets, primarily from Russia. Unlike Red Sea Urchins, where roe is extracted at British Columbia processing plants, Green Sea Urchins are shipped whole and live to Japan. The product quality, demand, and perishability have restricted the fishery primarily to accessible south coast areas.

The Green Sea Urchin fishery is managed by a minimum size limit of 55 mm, precautionary quotas, and time and area openings. The minimum size limit is precautionary and is intended to allow Green Sea Urchins several years of spawning before becoming available for the commercial fishery.

Licences were limited in 1991 due to concerns over increasing fishing effort. Currently there are 49 licences eligible for this fishery. Despite licence limitation, effort remained

high and catch per unit effort (CPUE) continued to show a decline in most south coast areas until about 1993. This decline in CPUE necessitated a more conservative approach to establishing quotas and resulted in an annual TAC. Since 1993 the CPUE has increased and is currently higher than in 1987 when the fishery first began.

Beginning in 1995, a program of individual quotas (IQ's) was implemented in the Green Sea Urchin fishery. Under the program, an industry funded catch validation and monitoring program was put in place to ensure monitoring of quotas and recovery of accurate catch data. During the first year of the program, south coast quotas were allocated equally among the licence holders, while the north coast remained as a competitive fishery. During the second year of the program, equal IQ's were again applied to south coast areas. However, north coast areas were opened only under an exploratory protocol. The IQ program will be continued with equal IQ's again in the south coast areas with a known catch history and an exploratory fishing protocol for other areas.

1.3. Type of Fishery and Participants

1.3.1. First Nations

Aboriginal harvest for food, social and ceremonial (FSC) purposes may occur coastwide where authorized by a communal licence. Green Sea Urchins are important to First Nations, who harvest them for food, social and ceremonial purposes. The number of Aboriginal harvesters for Green Sea Urchins is unknown.

1.3.2. Recreational

A recreational fishery may occur coastwide. A British Columbia Tidal Waters Sport Fishing Licence is required for the recreational harvest of any species of fish including shellfish. Tidal Waters Sport Fishing Licences can be purchased at many tackle stores and marinas or online by using the DFO website:

<http://www.pac.dfo-mpo.gc.ca/fm-gp/rec/licence-permis/index-eng.htm>

The Tidal Waters licence includes access to numerous species, so the number of recreational harvesters fishing for Green Sea Urchins is unknown.

The fishing effort by recreational harvesters is thought to be minimal.

1.3.3. Commercial

Green Sea Urchins are harvested commercially by divers. There are 49 commercial licences. Due to market conditions, over the last four seasons only 19-29 licences have been fished on 7-12 vessels.

1.3.4. Aquaculture

In December 2010 the regulatory authority for issuing aquaculture licences changed from Provincial jurisdiction to the federal Department of Fisheries and Oceans.

The authority for tenuring lands for the purpose of aquaculture remains a Provincial responsibility.

See the Provincial Government website at:

<http://www.agf.gov.bc.ca/fisheries/>

and Appendix 5 for more information.

1.4. Location of Fishery

1.4.1. First Nations and Recreational

Aboriginal and recreational harvest can occur coastwide, where appropriately licensed.

1.4.2. Commercial

With the exception of permanent closures for various purposes (Appendix 6, Section 6), the current commercial fishery occurs only on East Coast Vancouver Island in units called Quota Management Areas (Appendix 6, section 3). These management areas are a defined portion of Pacific fisheries waters. Areas and Subareas, as described in the *Pacific Fishery Management Area Regulations*, are referenced in describing each management area. (Appendices 6 and 8).

Other areas of the coast may be considered for openings if an independent stock assessment survey of the area demonstrates that a sustainable harvest quota can be established. Fish harvesters will be required to fund any stock assessment surveys.

1.4.3. Aquaculture

See Appendix 5 for more information.

1.5. Fishery Characteristics

1.5.1. First Nations

First Nations harvest for food, social and ceremonial purposes are open year round and are limited to the gear specified in the communal licence.

1.5.2. Recreational

The recreational fishery is open year round, and is limited to hand picking. There are daily and possession limits (see Section 6.2).

1.5.3. Commercial

The commercial licence year is from September 1 to August 31. The fishery may open and close during that timeframe based on market demand and completion of area quotas. Generally, landings occur between October and February when roe quality is at its best. Harvest is by hand picking while diving.

The fishery operates under a Total Allowable Catch (TAC) with individual vessel quotas (IVQ).

Green Sea Urchin IVQs are set at 1/49 of the annual coast-wide quota.

1.6. Governance

The *Fisheries Act* and the regulations made thereunder.

- Areas and Subareas, as described in the *Pacific Fishery Management Area Regulations*, are referenced in describing Green Sea Urchin Management Areas.
- *Fishery (General) Regulations* (eg. Conditions of Licence) and the *Pacific Fishery Regulations, 1993* (eg. open times).
- The *British Columbia Sport Fishing Regulations (1996)* and the *Aboriginal Communal Fishing Licences Regulations*.
- The *Oceans Act*.
- The *Species at Risk Act*.

These documents are available on the Internet at:

http://www.pac.dfo-mpo.gc.ca/ops/fm/toppages/actreg_e.htm

In addition, the new national Sustainable Fisheries Framework (SFF) contains policies for adopting an ecosystem based approach to fisheries management including:

- *Managing Impacts of Fishing on Benthic Habitat, Communities and Species*;
 - *Policy on New Fisheries for Forage Species*.
- Along with existing economic and shared stewardship policies, these will help the department meet objectives for long-term sustainability, economic prosperity, and improved governance. See the Internet at:

<http://www.dfo-mpo.gc.ca/fm-gp/peches-fisheries/fish-ren-peche/sff-cpd/overview-cadre-eng.htm>

Scientific advice for this fishery is peer-reviewed through a committee called the Centre for Scientific Advice, Pacific (CSAP).

The Green Sea Urchin Sectoral Committee is the primary body guiding management decision-making processes for this fishery. See Appendix 12.

1.7. Approval Process

The Regional Director General for the Pacific Region approves this plan.

2. STOCK ASSESSMENT, SCIENCE AND TRADITIONAL KNOWLEDGE

2.1.1. Biological Synopsis

Green Sea Urchins occur in cool temperate waters in both the Pacific and Atlantic Oceans. They are circumpolar in the Pacific, occurring from northern Washington State through the Aleutian Islands and west to Hokkaido (Japan) and Korea. Green Urchins occur inter-tidally and to depths of > 140 m, generally on rocky, gravel or shell substrates, and in areas of high currents. Sexes are separate, with sizes at maturity of about 25 mm in southern B.C. (Waddell and Perry 2007). In B.C., the spawning period generally occurs during February and March. Larvae are pelagic for 9-10 weeks depending on temperature. In Alaska, it takes about 4 years (Munk

1992) for a Green Sea Urchin to reach a test diameter of 55mm (the minimum legal size in B.C.).

2.1.2. Ecosystem Interactions

Kelp forests are one of the most productive and complex marine habitats for many species of fish and invertebrates. Although Green Sea Urchins have a diverse diet, kelp is one of their preferred foods. Once Green Sea Urchin populations reach a certain threshold, they tend to aggregate and form high density fronts along the edge of the kelp forest and graze through it, potentially destroying the kelp forest. If this occurs, the area becomes urchin-dominated barren grounds, with a high density of crustose, coralline algae (Harrold and Pearse 1987). This leads to a simplification of the habitat and food webs, and consequent lowering of the productivity and species diversity in nearshore waters (Hagen 1983). The abundance of green urchins alone is not enough to explain the grazing intensity of urchin populations (Harrold and Pearse 1987), and the switch to an active feeding mode depends on many factors, including the availability of drift algae in the area.

2.1.3. Aboriginal Traditional Knowledge/Traditional Ecological Knowledge

Aboriginal Traditional Knowledge regarding Green Sea Urchins is not generally available.

Traditional Ecological Knowledge in the form of observations and comments collected from commercial divers over many years contributes to the decisions on scientific survey locations and is considered in management decisions.

2.1.4. Stock Assessment

The Science Branch of Fisheries and Oceans Canada and the WCGUA continue to conduct joint stock assessment surveys at selected study sites (since 1995) to obtain fishery-independent information on Green Sea Urchins. Fisheries and Oceans Canada developed the survey protocol, conducts the lab and data analyses, and prepares a technical report of the survey results. Together, the Department and the WCGUA select the survey site, and co-ordinate vessel and diver participation in the surveys. The main objectives of the surveys are to assess variability in Green Sea Urchin populations, calculate biomass estimates and monitor impacts of commercial harvesting. Fishery-independent surveys also provide information about the sublegal portion of the population and thus insight regarding recruitment into the fishery. See Waddell and Perry (2007) for survey methodology details.

Stock assessments of Green Sea Urchins are generally performed every three years, involve analyzing data collected from both fishery-dependent and fishery-independent (surveys) sources and running the information through a Bayesian Biomass Dynamics Model (Waddell *et al.* 2010; DFO 2010). The model uses median commercial catch per unit of effort (CPUE) for each fishing season for each of the two main harvest locations: Northern Vancouver Island (NEVI; PFMA's 12 and 13) and Southern Vancouver Island (SEVI; PFMA's 18 and 19). The CPUE's are calculated using commercial landing and effort data obtained from the

harvesters' Validation and Harvest Logbooks. The model also uses Green Sea Urchin biomass estimates from index sites, calculated from fishery-independent surveys. The Bayesian model provides the estimated Maximum Sustainable Yield (MSY), and a probability distribution of reaching the MSY by fishing a proportion of the MSY.

MSY values have traditionally been considered as targets which management actions should try to achieve. However, many of the assumptions of surplus production models may not be true in a fishery such as for Green Sea Urchins. The currently preferred precautionary approach (e.g. DFO 2006) is to define the MSY to be a limit reference point (LRP) which management actions should ensure is not exceeded. The target reference point (TRP), to which management actions should aim, should be set sufficiently far from the LRP so that there is a low probability that the TRP is equal to or larger than the true LRP (MSY).

A table is produced for each of the two main harvest areas (NEVI and SEVI), with MSY LRPs for each region, and a range of TRPs (equivalent to various percent reductions from the MSY values), and the probability of reaching MSY (i.e. the risk). For each TRP, the allocations of quota to each of the PFMAs are also provided based on the proportion that area contributed to aggregate landings from past fishing seasons. The managers decide the risk level from the table, and set the quota limit for the fishery. Quotas assigned during previous years have had a very low probability (low risk) that they were equal to or greater than the true MSY. Refer to Waddell *et al.* (2010) or DFO (2010) for the most recent assessment results.

Scientific research and stock assessment surveys are of vital importance to this fishery as it moves from a precautionary management regime towards a biologically-based fishery.

2.1.5. Stock Scenarios

There is no indication of concern for Green Sea Urchin stocks at this time. A recent stock assessment (DFO 2006; Waddell *et al.* 2010) of the fishery in December 2009 indicated that the CPUE's (catch per unit of effort) for both the Northern and Southern Vancouver Island regions were at their highest levels since the start of the fishery. Poor market price in Japan due to competition from other countries is the main limiting factor to achieving the TAC in British Columbia. During the period of this IFMP, the market condition for BC product is still uncertain.

The Green Sea Urchin fishery is managed conservatively and stocks generally appear healthy. A precautionary approach to management which ensures the Department is meeting its conservation goals will continue for the future. This in turn, will ensure sustainable harvests in all areas. The long-term goal of the Department is to improve the assessment and management frameworks through a better understanding of the resource. This will be accomplished through a collaborative process involving First Nations organizations, the commercial industry, other stakeholders and the Department.

Sea otter populations are expanding in B.C. and as sea otters are a major predator on Green Sea Urchins, they are expected to have impacts on the populations in some areas of the coast. Currently the fishery for green urchins is concentrated along the inside waters of Vancouver Island while the main sea otter populations exist along the outer exposed areas of Vancouver Island and the Central Coast.

2.1.6. Precautionary Approach

The Department has recently begun implementation of the Sustainable Fisheries Framework (SFF), which is a toolbox of existing and new policies for DFO and other interests to sustainably manage Canadian fisheries in order to conserve fish stocks and support prosperous fisheries.

Fisheries worldwide are under increasing pressure creating challenges for policy makers, resource managers and industry leaders to make informed decisions regarding the conservation, recovery and wise management of these resources. DFO held consultations throughout Canada in 2007 and 2008 to develop strategies to ease ecosystem pressures and enhance the capacity of the resource to sustain growing industry needs. New conservation policies have been developed to implement the ecosystem and precautionary approaches to fisheries management. These new policies, incorporated into development of new Integrated Fisheries Management Plan (IFMP) templates, will join existing policies in a framework to promote sustainable fisheries.

The new *fishery decision-making framework incorporating the precautionary approach* policy (<http://www.dfo-mpo.gc.ca/fm-gp/peches-fisheries/fish-ren-peche/sff-cpd/precaution-eng.htm>) applies to key harvested fish stocks managed by DFO, including commercial, recreational or subsistence fisheries.

The framework requires that a harvest strategy be incorporated into respective fisheries management plans to keep the removal rate moderate when the stock status is healthy, to promote rebuilding when stock status is low, and to ensure a low risk of serious or irreversible harm to the stock. It also requires a rebuilding plan when a stock reaches low levels.

In general, the *precautionary approach* in fisheries management is about being cautious when scientific knowledge is uncertain, and not using the absence of adequate scientific information as a reason to postpone or fail to take action to avoid serious harm to fish stocks or their ecosystem. This approach is widely accepted as an essential part of a sustainable fisheries management.

Applying the precautionary approach to fisheries management decisions entails establishing a harvest strategy that:

- identifies three stock status zones – healthy, cautious, and critical – according to upper stock reference points and limit reference points;
- sets the removal rate at which fish may be harvested within each stock status zone; and
- adjusts the removal rate according to fish stock status variations (i.e., spawning stock biomass or another index/metric relevant to population productivity), based on pre-agreed decision rules.

The Department plans to review the existing assessment framework for the Green Sea Urchin fishery against the new policy.

2.1.7. Research

A comprehensive understanding of the biology of Green Sea Urchins and the impacts of commercial harvest on Green Sea Urchin populations is required in order to ensure conservation and sustainable harvests in this fishery. The goal of the Research Subcommittee of the Green Sea Urchin Sectoral Committee is to undertake biological investigations. These include experimental growth and behavioural studies in the lab, developing reliable ageing techniques and conducting transect-quadrat surveys in various locations of the BC coast. From these fishery-independent surveys information is gathered on variations in population size distributions (for the whole size range, including sublegal-sized Green Sea Urchins), population densities, biomass estimates, preferred habitats (depth, substrate, and vegetation), length (or test diameter)-weight relationships and gonad (roe) weight and quality.

Fisheries and Oceans Canada and the Research Subcommittee continue to work toward a better understanding of the age of Green Sea Urchins in BC. Green Sea Urchin ageing in BC is on-going in terms of data collection, verification, and analysis. At the Pacific Biological Station, a method to accurately determine the age of Green Sea Urchins is being developed and studies are currently being conducted to refine ageing techniques.

3. SOCIAL, CULTURAL AND ECONOMIC IMPORTANCE

3.1. Socio-Economic Profile

Green Sea Urchins are harvested from both the West and East Coast of Canada. Green Sea Urchins on the West Coast of Canada are harvested by divers and sold whole and live, mainly to Japan. The product quality and perishability has restricted the fishery primarily to accessible South Coast Areas. The Japanese are the largest consumers of Green Sea Urchin but more recently sales have increased to the public and to local restaurants.

The Canadian industry has multiple competitors with the largest being the Illegal, Unregulated, Unreported (IUU) fishery in Russia. Russian urchins are fished close to Japan and are delivered to market fresher and are sold cheaper than the higher priced BC product.

- Canadian coastwide landings of Green Sea Urchin peaked in the 1992/1993 season at approximately 978 Tonnes. Since then annual landings have dropped consistently, initially due to setting of Total Allowable Catches (TAC's) but more recently due to poor market conditions.
- Landed value peaked during the 1994/1995 season at \$7,251/t. Since then the price has dropped consistently to a low of \$3,146/t for the 2007/2008 season. Again this is believed to be due to large amounts of product coming from other markets.

- The coastwide Green Sea Urchin quota has remained relatively constant for the last ten years ranging between 179 and 202 tonnes.
- Competing markets, mainly from Russia, are identified as the largest threat to the sustainability of this fishery.
- There are limited recreational and First Nations fisheries for Green Sea Urchin.

3.2. Viability and Market Trends

The best roe comes from sea urchins harvested between October and March, after which quality decreases as the sea urchins begin to spawn. The fishery generally operates from September to March with the highest market demand being between December and February.

3.3. Processing and Exporting

Green Sea Urchins are harvested for their reproductive organs (gonad) or “roe”. Green Sea Urchins are shipped whole and live mainly to overseas markets in Japan. The domestic market for Green Sea Urchins is small but increasing.

4. MANAGEMENT ISSUES

The following sections highlight the on-going or longer-term management issues that are being addressed in this fishery. Specific management objectives designed to mitigate these issues are detailed in Section 5. There are few immediate or annual management issues that need addressing; however, when short-term issues arise, they will be detailed in this section.

4.1. First Nations

The level of First Nations’ harvest of Green Sea Urchin for food, social and ceremonial purposes is unknown at this time. Catch monitoring programs are being developed in collaboration with some Aboriginal organizations.

4.2. Recreational

The level of recreational harvest of Green Sea Urchins is unknown at this time, although it is generally accepted to be minimal. Catch monitoring programs for all sport caught fish are being developed in collaboration with recreational fishery organizations and information on Green Sea Urchins will be included in the future.

4.3. Commercial

- A.) Basic biological information regarding Green Sea Urchins is limited (i.e. age, growth, recruitment and migration) and is needed to support management objectives for this species.
- B.) A better understanding of the influence of varying exploitation rates on the resilience of local populations is needed.
- C.) Increased monitoring of the commercially harvested populations through surveys and fishery dependent monitoring is required to provide appropriate focus for assessment papers.

- D.) Evaluation of the impacts of commercial Green Sea Urchin fisheries on the ability of First Nations to harvest for food, social and ceremonial purposes is required.
- E.) A long-term strategy for collection of basic biological information, assessment techniques and management regimes is required.
- F.) The IQ program does not fully address the distribution of fishing effort, quality-oriented harvest, continuous market supply and maintaining competitive access to the Japanese market.
- G.) The impacts of sea otters on Green Sea Urchin populations need to be evaluated for future consideration in the management of this fishery.

4.4. Depleted Species Concerns

The Green Sea Urchin fishery is a selective fishery and there are no concerns or potential impacts on depleted species.

4.5. Oceans and Habitat Considerations

In 1997, the Government of Canada enacted the *Oceans Act*. This legislation provides a foundation for an integrated and balanced national oceans policy framework supported by regional management and implementation strategies. In 2002, *Canada's Oceans Strategy* was released to provide the policy framework and strategic approach for modern oceans management in estuarine, coastal, and marine ecosystems. As set out in the *Oceans Act*, the strategy is based on the three principles of sustainable development, integrated management, and the precautionary approach.

PNCIMA: As part of *Canada's Oceans Strategy*, DFO is initiating an integrated management planning process for the Pacific North Coast Integrated Management Area (PNCIMA). The PNCIMA is bounded by the BC-Alaska border, the base of the shelf slope and the mainland, stretching south as far as Campbell River and the Brooks Peninsula. The PNCIMA initiative marks a shift toward a broader ecosystem approach to ocean management. This is consistent with the Government of Canada's overall direction and with Fisheries and Oceans Canada's *Wild Salmon Policy*. The PNCIMA initiative will bring the area's stakeholders together to develop an integrated management plan for the region that achieves conservation, sustainable resource use, and economic development goals for oceans and coastal areas. The PNCIMA initiative will also function as an umbrella for various ocean management processes, complementing and linking existing processes and tools, including IFMPs.

Marine Protected Areas (MPAs): DFO is also responsible for designating Marine Protected Areas (MPAs) under Canada's *Oceans Act*. Under this authority, DFO has designated two MPAs in the Pacific Region. The Endeavour Hydrothermal Vents, designated in 2003, lie in waters 2,250m deep 250 km southeast of Vancouver Island. The Bowie Seamount, designated in 2008, is 180 km west of Queen Charlotte Islands (Haida Gwaii) rising from a depth of over 3,000 m to within 25 m of the sea surface. Work is ongoing to consider MPA designations for other areas along the Pacific Coast, including the Race Rocks area off Rocky Point south of Victoria (currently designated as a Provincial Ecological Reserve) and the Hecate Strait / Queen Charlotte Sound Glass Sponge Reefs.

National Marine Conservation Areas (NMCAs): The Canada *National Marine Conservation Areas Act* provides for the establishment of National Marine Conservation Areas (NMCAs). The Gwaii Haanas NMCA Reserve was established on June 17, 2010. Measures respecting the management of the Gwaii Haanas NMCA will be articulated in future IFMPs.

DFO is also working with other federal and provincial agencies to coordinate efforts towards establishing a national system of Marine Protected Areas to fulfill Canada's commitments to the UN Convention on Biological Diversity.

More information on integrated management planning and Pacific MPAs under Canada's *Oceans Act* can be found at:

www.pac.dfo-mpo.gc.ca/oceans/default_e.htm

Coldwater Coral and Sponge Conservation Strategy: DFO has worked with other federal and provincial agencies, First Nations, and stakeholders to develop a coldwater coral and sponge conservation strategy for the Pacific Coast. The Strategy outlines the Department's approach to the management of corals and sponges along Canada's Pacific coast. Fishing activities will be evaluated against the Department's national policy for *Managing the Impacts of Fishing on Sensitive Benthic Areas*.

4.6. Gear Impacts

Green Sea Urchins are harvested by hand picking while diving. Suction devices are not permitted. It is believed that there are no habitat impacts from the gear used in this fishery.

5. OBJECTIVES

Sections 5.1 to 5.3 and 5.5 outline the "longer term" objectives for this and other invertebrate fisheries in BC. Section 5.4 describes the species-specific and "shorter term" objectives for Green Sea Urchins.

5.1. National

DFO aims to:

- Meet conservation objectives and ensure healthy and productive fisheries and ecosystems;
- Manage fisheries to provide opportunities for economic prosperity;
- Provide stability, transparency, and predictability in fisheries management and improved governance.

5.2. Pacific Region

In 1994, the Biological Objective Working Group of the Pacific Scientific Advice Review Committee (PSARC) identified three biological objectives for management of Pacific Region fish and invertebrate stocks (Rice et al, 1995):

- Ensure that subpopulations over as broad a geographical and ecological range as possible do not become biologically threatened (in the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) sense of “threatened”).
- Operationally, the above objective requires at least that management allow enough spawners to survive, after accounting for all sources of mortality (including all fisheries and natural mortality), to ensure production of enough progeny that they will, themselves, be able to replace themselves when mature.
- Fisheries may have collateral effects on other species, mediated by the ecological relationships of the target species. Fisheries should be managed in ways that do not violate the above objectives for ecologically related species, as well as target species.

The objectives remain relevant today, particularly in light of development of the national objectives around sustainable fisheries.

5.3. Invertebrate Resource Management

Management goals and objectives have been defined for invertebrate fisheries in annual management plans produced by the Department since 1990. The management goals and objectives, as written by Invertebrate Fisheries Management and revised in 1997, are:

- To ensure conservation and protection of invertebrate stocks and their habitat through the application of scientific management principles applied in a risk averse and precautionary manner based on the best scientific advice available.
- To meet the federal Crown’s obligations regarding Aboriginal fisheries for food, social and ceremonial purposes.
- To develop sustainable fisheries through partnership and co-management arrangements with client groups and stakeholders to share in decision making, responsibilities, costs, and benefits.
- To develop fishing plans and co-operative research programs which will contribute to improving the knowledge base and understanding of the resource.
- To consider the goals of stakeholders with respect to social, cultural and economic value of the fishery.
- To consider health and safety in the development and implementation of management plans, fishery openings and closures.
- To consider opportunity for the development of the aquaculture industry.
- To provide opportunities for a recreational fishery.

5.4. Green Sea Urchin

5.4.1. Stock Conservation

A more comprehensive understanding of the biology of Green Sea Urchins and the impacts of commercial harvest on Green Sea Urchin populations is required in order to ensure conservation and sustainable harvests in this fishery. The goal of the Research Subcommittee of the Green Sea Urchin Sectoral Committee is to undertake biological investigations. These include biomass estimates through transect surveys

in various locations of the BC coast, and experimental harvest and study areas where populations are manipulated to examine urchin growth, migration, and recruitment.

A method to accurately determine the age of Green Sea Urchins has yet to be fully developed. Fisheries and Oceans Canada and the Research Subcommittee will continue to work toward a better understanding of the age of Green Sea Urchins in BC. Green Sea Urchin aging in BC is on going in terms of data collection, verification, and analysis. The Pacific Biological Station is currently conducting studies to refine ageing techniques.

Given that we know little about the age of Green Sea Urchins, the Research Subcommittee may consider prioritizing the assessment of spatial and seasonal juvenile growth, survival and recruitment. This information could assist managers in determining the appropriate level of fishing pressure by time and area. Appropriate techniques for the assessment of juvenile recruitment are imperative for fisheries such as sea urchins, where recruitment is inconsistent throughout the fishing areas. An area devoid of juvenile Green Sea Urchins could indicate that the area is vulnerable to over-fishing.

5.4.2. Sustainability

There are no concerns for the sustainability of the Green Sea Urchin fishery at this time. The fishery is managed conservatively and current markets are limiting the harvests. The fishery only occurs in limited areas on the South Coast of BC.

5.4.3. Ecosystem

The Green Sea Urchin fishery is selective and the harvest rates are conservative. It is believed that harvesting practises have little impact on the surrounding ecosystem.

5.4.4. Social, Cultural and Economic Considerations

5.4.4.1. First Nations

The Department will continue to provide opportunities for First Nations to harvest fish for food, social and ceremonial purposes, in a manner consistent with the decision of the Supreme Court of Canada in the *Sparrow Decision*, and other court decisions. For more information, see the Internet at: www.pac.dfo-mpo.gc.ca/tapd/default_e.htm or Appendix 3.

5.4.4.2. Recreational

The Department will continue to provide opportunities for a recreational fishery for Green Sea Urchins. For more information, see Appendix 4

5.4.4.3. Commercial

The Department will continue to work collaboratively with Industry, First Nations organizations and other stakeholders to ensure conservation and sustainability of the Green Sea Urchin resource and fishery. Management of the Green Sea Urchin resource will progress from a precautionary regime to one based on better biological information, through assessment and

application of data collected from harvest logs, population surveys and research areas.

5.4.4.4. Aquaculture and Enhancement

Recognizing both the potential for aquaculture to benefit Canadians and the need to ensure the sustainable use of aquatic resources, Cabinet endorsed the Federal Aquaculture Development Strategy (FADS) in 1995. Building on FADS and more recent opportunities and challenges associated with aquaculture development, Fisheries and Oceans Canada recently released the “Aquaculture Policy Framework”. The policy framework recognizes aquaculture as a legitimate use of land, water and aquatic resources and the importance of providing aquaculturists with predictable, equitable and timely access to the aquatic resource base, including access to biological materials such as broodstock and seedstock.

In May 2004 Fisheries and Oceans Canada released the “National Policy on Access to Wild Aquatic Resources As it Applies to Aquaculture” to facilitate access to wild fish and aquatic plant resources for aquaculture purposes to support sustainable development of the industry. The policy is available from the following website:

www.dfo-mpo.gc.ca/aquaculture/aquaculture-eng.htm

Requests to access the wild Green Sea Urchin resource must be addressed to Fisheries and Oceans Canada and supported by a project proposal. For more information on aquaculture or access to brood or seed stock, please contact the Aquaculture Management Division (see Appendix 10).

6. ACCESS AND ALLOCATION

The Minister can, for reasons of conservation or for any other valid reasons, modify access, allocations and sharing arrangements as outlined in this IFMP in accordance with the powers granted pursuant to the *Fisheries Act*.

6.1. First Nations

Under the commercial IQ program, two percent of the coast-wide TAC for Green Sea Urchins is reserved during planning for First Nations fisheries for food, social and ceremonial (FSC) purposes. Additional allocations of Green Sea Urchins will be provided to First Nations who demonstrate that their food, social, and ceremonial needs are not being met. To date there are no limits on the Aboriginal harvest of Green Sea Urchins for FSC purposes. Fisheries and Oceans Canada is confident that with the precautionary approach to this fishery, the reserved allocation of TAC and the provision of additional allocations where necessary, First Nations in all areas will have sufficient opportunities to harvest Green Sea Urchins for food, social and ceremonial purposes.

6.2. Recreational

The daily limit for urchins (aggregate of all species) is 12 with a possession limit of 24.

6.3. Commercial

The commercial Green Sea Urchin total allowable catch (TAC) for 2011/12 is 447,174 lbs. (202.8 tonnes). The commercial TAC provides for an Individual Vessel Quota (IVQ) of 9,126 lbs.

6.4. Aquaculture and Enhancement

The first priority in managing fish stocks is conservation followed by First Nations obligations. Beyond that, the needs of aquaculturists will be given equitable consideration to those of other users in the commercial and recreational sectors.

DFO will aim to facilitate access for relatively low numbers of wild juvenile or adult fish for limited time periods (e.g., for broodstock development), where populations would face insignificant to low risk from the additional harvest pressure.

7. MANAGEMENT MEASURES FOR THE DURATION OF THE PLAN

See the Management Measures (Harvest Plans), Appendix 3 to 6 for detail on the following:

- Total Allowable Catch (TAC);
- Fishing Seasons/Areas;
- Control and Monitoring of Removals
- Licensing

8. SHARED STEWARDSHIP ARRANGEMENTS

8.1. Commercial

A Joint Project Agreement (JPA) between the Department and the WCGUA ensures delivery of in-season catch monitoring and biological sampling programs. The WCGUA helps fund research programs through fees paid to the association by members. Industry funding provides for a catch validation program, stock assessment surveys and biological research surveys.

Several coastal First Nations contribute time and expertise through collaborative research surveys with the WCGUA and the Department by providing biologists, vessels and divers.

8.2. Fisheries and Oceans Canada

Two Stock Assessment and one Resource Management personnel are directly involved in this fishery. Contributions to the IFMP are provided by the Fisheries Management Directorate, the Science Branch, the Shellfish Data Unit, the Conservation and Protection Directorate, the Pacific Fishery Licence Unit, the Treaty and Aboriginal Policy Directorate, the Recreational Fisheries Division, the Oceans Directorate and numerous administrative personnel. Generally, all personnel are multi-tasked, i.e. fishery managers work on all dive

fisheries. Therefore, costs incurred by the Department to manage this fishery are difficult to assess.

9. COMPLIANCE PLAN

9.1. Overview

The enforcement policy and activities of the Department are the responsibility of the Conservation and Protection program (C&P). Fishery officers and marine enforcement officers working throughout the Pacific Region carry out enforcement activities for the C&P program. First Nations fishery guardians may assist DFO Fishery Officers in a number of locations where joint enforcement protocols are in place. Observers designated by the Department, complement enforcement staff by performing a monitoring and verification function.

Enforcement of the Green Sea Urchin fishery will remain a low priority to Fisheries and Oceans Canada. C&P staff will pursue opportunities to monitor and enforce issues and problems related to this fishery in conjunction with the monitoring and enforcement activities dedicated to the identified priority fisheries in the Pacific Region. This industry is mostly self-enforcing and, because of the present management principles, conservation is not an issue.

In general, compliance with the regulations and Conditions of Licence in the Green Sea Urchin commercial fishery is good, largely due to dockside validation, mandatory harvest and validation logs. Enforcement actions have resulted in charges in past years and misreporting may lead the Department to make management changes in the fishery to reduce problems.

Fishery managers and shellfish assessment biologists have prepared impact statements with respect to non-compliance of regulations and Conditions of Licence for use in court cases. These have been useful in allowing the courts to clearly understand the implications of the offence and for determining the resultant penalties.

9.2. Main Program Activities

9.2.1. In-season

Boarding's are conducted by at-sea fishery officers operating program vessels, marine enforcement officers operating Canadian Coast Guard (CCG) vessels and charter patrolmen on a variety of contracted vessels.

Commercial fishing vessels are boarded and checks are conducted for licensing of the vessel and participants, approved containers and tagging of harvested product and harvest log completion.

Packer vessels are checked for licensing compliance and to ensure adherence to the Conditions of Licence (requirements for containers, tags, and harvest log data).

9.2.2. Dockside Monitoring

Commercial vessels and packer vessels are checked at dockside to ensure compliance with Conditions of Licence and verification of all catch.

9.2.3. Vehicle Inspection

Transport trucks are inspected during fishing seasons in concert with other enforcement agencies; they can be inspected at plants, loading and offload sites and other control points.

9.2.4. Fishery Patrol Vessels

All at-sea patrols will be conducted using CCG patrol vessels staffed with marine enforcement officers and/or fishery officers and program vessels (primarily seven metre rigid hull inflatable boats) with fishery officers on board. Patrols will be conducted in both open and closed areas as priorities allow.

9.2.5. Air Surveillance

Patrol coverage using charter aircraft is utilized by Fisheries and Oceans Canada to identify concentrations and distribution of fishing effort. In large geographical areas this allows for a better utilization of C&P resources.

Flight reports, photographs and other data collected from over flights are readily available to Departmental managers and fishery officers through an intranet-based flight information system. Digital images of vessels will be collected and added to a web-based licence system, providing fishery officers ready access to recent vessel photographs to assist in field identification.

9.3. Enforcement Issues and Strategies

In the following table: PFR: Pacific Fisheries Regulations, 1993, F(G)R: Fisheries (General) Regulations, S: Section.

Issue	Section	Strategy
Licensing Verification <ul style="list-style-type: none"> • Vessel licensed. • Experimental licence. • No Fisher Registration Card (FRC). • Fail to produce FRC. 	PFR S.22 F(G)R S.52 F(G)R S.68(1) PFR S.25 F(G)R S.11	At-sea and dockside inspections will occur when opportunities exist. These inspections may include checks of all licensing documents on board the vessel to ensure compliance with the regulations.

Issue	Section	Strategy
Fishing during closed time/area.	PFR S.63	Patrols utilizing patrol vessels will be pursued when opportunities exist. Possibilities may exist to use the regional enforcement charter aircraft in co-ordination with other patrols scheduled for priority fisheries.
Size Limit	PFR S 70(1)	At sea and dockside inspections will be pursued when opportunities exist.
Fail to provide proper landing and hail information, lack of notification for change of area, cancellation of trip, or incorrect reporting of area fished.	F(G)R S.22(7)	At sea and dockside inspections will occur when opportunities exist. Investigations will occur on an opportunistic basis after C&P have been notified by fisheries management that a violation has occurred. The investigation will be pursued when larger priorities permit. Possibilities may exist to use the regional enforcement charter aircraft in co-ordination with other patrols scheduled for priority fisheries, to track vessels in the fishery.
Fail to maintain a Validation & Harvest Logbook.	F(G)R S.22(7)	At sea and dockside inspections will occur when opportunities exist. Investigations may also occur on an opportunistic basis after C&P have been notified by fisheries management that a violation has occurred. The investigation will be pursued when larger priorities permit.
Marking and tagging of pick bags, and any other type of enclosures containing harvested Green Sea Urchins.	F(G)R S.22(7)	At sea and dockside inspections will occur when opportunities exist.
Landings validated at time of offloading.	F(G)R S.22(7)	Dockside inspections and monitoring will be pursued when opportunities exist.
Fail to carry on-board observer when requested by Fisheries and Oceans Canada.	F(G)R S.22(7)	At sea and dockside inspections will occur when opportunities exist.

10. PERFORMANCE REVIEW

10.1. Management Plan Evaluation Criteria

10.1.1. Pacific Region Objectives

- Were adequate steps taken to insure that Green Sea Urchin stocks are not biologically threatened?
- Were there enough spawners to provide replacement progeny?
- Were stocks managed so as to have no collateral ecological effects?

10.1.2. Invertebrate Resource Management Objectives

- Were goals for conservation and protection of Green Sea Urchin stocks and their habitat met?
- Did the Department meet the food, social, and ceremonial needs of First Nations with respect to Green Sea Urchins?
- Were co-management goals achieved?
- Were goals around health and safety achieved?
- What opportunities for aquaculture development were provided?
- What opportunities for a recreational fishery were provided?

10.1.3. Green Sea Urchin Objectives

- Were there advances in the understanding of oceans and aquatic resources relative to Green Sea Urchins? How many research and survey activities were conducted?
- Did the commercial Dockside Monitoring Program function appropriately, and what advances in catch monitoring for other sectors were made?

10.1.4. Current Green Sea Urchin Issues

- Have any advances been made in determining appropriate scale of management?

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12. GLOSSARY

Area	Defined in Section 2 of the <i>Pacific Fishery Management Area Regulations</i> . A map of Pacific Fishery Management Areas is available on the Department's Internet site at: www.pac.dfo-mpo.gc.ca/ops/fm/Areas/areamap_e.htm
aquaculture	The process of spawning animals and rearing the progeny to marketable size, involving some level of intervention (e.g. feeder, predator protection) by the aquaculturist.
catch verification program	A program designed to monitor, record, and verify catches, also called the Validation Program.
Communal Licence	Issued to First Nations organizations pursuant to the <i>Aboriginal Communal Fishing Licences Regulations</i> , to carry on fishing and related activities.
communal commercial licence	Issued to First Nations organizations pursuant to the <i>Aboriginal Communal Fishing Licences Regulations</i> for participation in the general commercial fishery. Licences issued are equivalent to the capacity of licences that have been retired under the Treaty and Aboriginal Policy Directorate Licence Retirement/Allocation Transfer Program.
enhancement	Adding to (enhancing) the biomass of a species in the wild by spawning and growing juvenile animals, subsequently releasing them to their natural habitat for further growth. Usually requires little or no further intervention after release.

IQ	Individual quota. In the Green Sea Urchin fishery, equivalent to 1/49th of the commercial total allowable catch (TAC).
invertebrate	An animal without a backbone.
landed or off-loaded	The transfer of Green Sea Urchins from a vessel in water to land.
Observer	An individual who has been designated as an observer by the Regional Director General for Pacific Region pursuant to Section 39 of the <i>Fishery (General) Regulations</i> .
WCGUA	West Coast Green Urchin Association
PSARC	Pacific Scientific Advice Review Committee.
Quota Area	A defined portion of Pacific fisheries waters. Areas and Subareas, as described in the <i>Pacific Fishery Management Area Regulations</i> , are referenced in describing Quota Areas. Each Quota Area has a name, e.g. 13A, and is assigned a maximum allowable catch in pounds (lb.).
service bureau	An agency contracted by fish harvesters or their harvesters association to coordinate notification, catch validation, fishery monitoring, biological sampling, and data submission requirements. The service bureau may train and recommend candidates for certification by Fisheries and Oceans Canada as observers.
stakeholder	All people and groups with an interest in the fisheries resource.
stock assessment	Results of analyses of fisheries and research data used to evaluate the effects of fishing on a stock or population and to predict the reaction of populations to alternative management choices.
Subarea	As in Section 2 of the <i>Pacific Fishery Management Area Regulations</i>
TAC	Total allowable catch. The amount of catch that may be taken from a stock, determined by analytical procedures to achieve management objectives.
Tranship	The transfer of Green Sea Urchins from a vessel to another vessel.
Validated	Green Sea Urchins that have been weighed by an observer and the weight entered into the Green Sea Urchin Validation and Harvest Logbook, or an approved alternative log.

APPENDIX 1: ANNUAL (POST-SEASON) REVIEW RESULTS

Overall, the in-season management of the fishery was successful. No major issues were documented and in general, compliance with the catch validation program was good. Similar to the last few years, commercial catches were low due to market competition and the economic viability of the fishery was poor.

A formal review of the fishing season will be found in the document “Green Sea Urchin Post-Season Review”, available from any of the fishery managers listed in Appendix 10.

Annual (Post-Season) Review Summary of the 2010/11 Season

- The TAC was not achieved. Approximately 50% of the overall quota was achieved, the same harvest level as last season. The last two years are the highest landings in the last 6 years. The only quota area in which the quota was achieved was Area 19.
- Some new markets are being explored, Hong Kong and local dock sales.
- No concerns were voiced from First Nations about access to Green Sea Urchins for food, social and ceremonial purposes. No actions were taken.

APPENDIX 2: STOCK ASSESSMENT RESULTS

Stock assessments of Green Sea Urchins, generally performed every three years, involve analyzing data collected from both fishery-dependent and fishery-independent (surveys) sources and running the information through a Bayesian Biomass Dynamics Model (Waddell *et al.* 2010; DFO 2010). The model uses median commercial catch per unit of effort (CPUE) for each fishing season for each of the two main Green Sea Urchin harvest locations: Northern Vancouver Island (NEVI; PFMA's 12 and 13) and Southern Vancouver Island (SEVI; PFMA's 18 and 19). The CPUE's are calculated using commercial landing and effort data obtained from the harvesters' Validation and Harvest Logbooks. The model also uses Green Sea Urchin biomass estimates from index sites, calculated from each of the fishery-independent surveys. All of this information is run through the Bayesian model to give the estimated Maximum Sustainable Yield (MSY), and a probability distribution of reaching the MSY by fishing a proportion of the MSY.

The latest stock assessment advisory report is available at:

http://www.dfo-mpo.gc.ca/csas-sccs/publications/sar-as/2009/2009_080-eng.htm

APPENDIX 3: GREEN SEA URCHIN FIRST NATIONS MANAGEMENT MEASURES

1. OPEN TIMES AND AREAS

Aboriginal harvests for food, social and ceremonial purposes are open year round if authorized by a communal licence.

2. CLOSURES

2.1. Shellfish Tenure Closures

Green Sea Urchin harvesting is prohibited on shellfish tenures except with explicit permission of the tenure holder. All tenures must be marked.

3. CONTROL AND MONITORING OF ABORIGINAL FISHING ACTIVITIES

Aboriginal harvests for food, social and ceremonial purposes are the first priority after conservation. This fishery is regulated through the issuance of communal licences to First Nations organizations. These licences are issued under the authority of the *Aboriginal Communal Fishing Licence Regulations*. Further arrangements for Aboriginal fishing may be identified in agreements between the Department and individual First Nations organizations.

Communal licences and Fisheries Agreements may contain provisions for the designation of individuals by the First Nations organization to access the allocation provided under the communal licence, as well as provisions for monitoring and reporting by the group of the Aboriginal fishery in co-operation with the Department.

Aboriginal access to fish for food, social and ceremonial purposes is managed through a communal licence which can permit the harvest of Green Sea Urchins.

For additional information on communal licences, see the Internet at:

<http://www.pac.dfo-mpo.gc.ca/abor-autoc/licences-permis-eng.htm>

APPENDIX 4: GREEN SEA URCHIN RECREATIONAL MANAGEMENT MEASURES

1. INTRODUCTION

Recreational fisheries in Canada are guided by the following five principles which are outlined in “An Operational Policy Framework” (Fisheries and Oceans Canada, 2001).

1. Recreational fishing is a socially and economically valuable and legitimate use of fishery resources.
2. Fisheries and Oceans Canada is responsible for providing sustainable recreational harvesting opportunities as part of integrated management plans consistent with its policies.
3. Recreational harvesters have responsibility for shared stewardship for resource conservation and enhancement.
4. Mechanisms for federal/provincial cooperation in areas of shared jurisdiction will be established and strengthened.
5. Fisheries and Oceans Canada has a leadership role to coordinate policies/programs with the federal government that relate to recreational fishing.

British Columbia’s recreational vision document is available online at:

www.pac.dfo-mpo.gc.ca/fm-gp/rec/docs/rec-vision-eng.pdf

Canada’s Policy for Recreational Fisheries is available online at:

www.dfo-mpo.gc.ca/fm-gp/policies-politiques/op-pc-eng.htm

2. LICENSING

A British Columbia Tidal Waters Sport Fishing Licence is required for the recreational harvest of all species of fish including shellfish. You can purchase Tidal Waters Sport Fishing Licences at many tackle stores and marinas or online by using the Fisheries and Oceans Canada website:

www.pac.dfo-mpo.gc.ca/recfish/Licensing/default_e.htm

3. OPEN TIMES AND AREAS

Recreational harvest of Green Sea Urchin can occur in those areas and at those times where there are no closures (see Section 4).

4. CLOSURES

4.1. Shellfish Tenure Closures

Harvesting is prohibited on all shellfish tenures except with explicit permission of the tenure holder. All tenures must be marked.

5. CONTROL AND MONITORING OF RECREATIONAL FISHING ACTIVITIES

The recreational harvest of shellfish is regulated via the *British Columbia Sport Fishing Regulations, 1996* made under the *Fisheries Act*. The regulations are summarized in the British Columbia Tidal Waters Sport Fishing Guide which lists closed times, daily and possession limits and some closed areas. A copy of the Sport Fishing Guide is available online at:

www.pac.dfo-mpo.gc.ca/recfish/default_e.htm.

5.1. Gear

Green Sea Urchin may be harvested by handpicking.

5.2. Daily Limits

The daily limit for all urchin species combined is twelve (12) per day.

5.3. Possession Limits

The possession limit for all urchin species combined is twenty- four (24).

APPENDIX 5: GREEN SEA URCHIN AQUACULTURE MANAGEMENT MEASURES

1. INTRODUCTION

In 2009, the British Columbia Supreme Court (BCSC) ruled that the activity of aquaculture is a fishery which falls under exclusive federal jurisdiction pursuant to sub-section 91(12) of the Constitution Act, 1867 – Sea Coast and Inland Fisheries and, in effect, struck down substantial portions of the provincial regulatory regime governing aquaculture. In response to the BCSC decision, the Minister of Fisheries and Oceans has confirmed the commitment of the Government of Canada to establish a federal regulatory regime governing aquaculture pursuant to the *Fisheries Act* in the geographic area of British Columbia.

On December 19, 2010 DFO assumed the role of lead federal department for sustainable management of fisheries and aquaculture. Under the *Fisheries Act* the *Pacific Aquaculture Regulations* and the *Fishery General Regulations* will govern finfish, shellfish and freshwater aquaculture operations in BC. Cultivation of fish within the province will require a federal aquaculture licence issued under the *Pacific Aquaculture Regulations*, and, where applicable, a federal *Navigable Waters Protection Act* permit and a provincial Crown Lands tenure. Other government agency approvals may also be necessary.

To view the Pacific Aquaculture Regulations, beginning on page 2327:

<http://canadagazette.gc.ca/rp-pr/p2/2010/2010-12-08/pdf/g2-14425.pdf>

In November 2010 the Canadian Council of Fisheries and Aquaculture Ministers endorsed the National Aquaculture Strategic Action Plan Initiative (NASAPI) to enhance and advance economically, environmentally and socially sustainable aquaculture in Canada. NASAPI identifies three key areas for action: Governance; social license and reporting; and productivity and competitiveness. Specific action plans for each of the key areas have been developed through consultations with all levels of government, First Nations, Industry, Stakeholders and other interested parties. The five year action plan specific to shellfish aquaculture in British Columbia is outlined in the NASAPI West Coast Shellfish Sector 2011-2015, which was released in December 2010.

For more information on NASAPI:

<http://www.dfo-mpo.gc.ca/aquaculture/lib-bib/nasapi-inpasa/index-eng.htm>

In May 2004 Fisheries and Oceans Canada released the “National Policy on Access to Wild Aquatic Resources As it Applies to Aquaculture” to facilitate access to wild fish and aquatic plant resources for aquaculture purposes to support sustainable development of the industry. The policy is available from the following website:

<http://www.dfo-mpo.gc.ca/aquaculture/aquaculture-eng.htm>

As part of the new aquaculture regulatory framework in British Columbia, DFO is developing Integrated Management of Aquaculture Plans (IMAPs). IMAPS will be modelled after Integrated Fisheries Management Plans, which are used to govern wild harvest fisheries. Consultations with First Nations, interested parties, and stakeholders will be important to the IMAP development process, allowing for the integration of advice, as well as environmental and social interests, into the management objectives for each aquaculture sector.

For further information refer to the following web link:
<http://www.dfo-mpo.gc.ca/aquaculture/aquaculture-eng.htm>

2. LICENSING

2.1. Aquaculture Land Tenures

Aquaculture tenures continue to be issued by the Province of British Columbia. See the Ministry of Agriculture and Lands (MAL) Internet site at: www.agf.gov.bc.ca/fisheries/

2.2. Broodstock Collection

The collection of broodstock for aquaculture purposes is facilitated through a collection licence from DFO Fisheries Management and a Transplant Permit from the Introductions and Transfers Committee. National policy permits up to 1% of the total allowable catch, in addition to the commercial TAC, to be allocated for aquaculture purposes such as brood stock collection.

Contact the Aquaculture Management Division at (604) 666-6831 or a resource manager listed in Appendix 10.

2.2 Aquaculture Licensing

In December 2010 the jurisdiction for aquaculture licensing changed from the BC Ministry of Agriculture and Lands (MAL) to the federal Department of Fisheries and Oceans (DFO).

Contact the Aquaculture Management Division at (604) 666-3354 for further licence applications details. <http://www.pac.dfo-mpo.gc.ca/aquaculture/index-eng.htm>

3. CLOSURES

3.1. Shellfish Tenure Closures

Harvesting is prohibited on all shellfish tenures except with explicit permission of the tenure holder. All tenures must be marked.

APPENDIX 6: 2011/12 GREEN SEA URCHIN COMMERCIAL HARVEST PLAN

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1. MANAGEMENT CHANGES AND HIGHLIGHTS

There are a number of updates to most sections of the Commercial Harvest Plan; fish harvesters are advised to carefully review all information.

- **Fishing Season:** This Commercial Harvest Plan will be in effect from September 1, 2011 to August 31, 2012. The commercial fishery is anticipated to open in September and run until March of the following year. See Section 3.
- **Commercial Total Allowable Catch (TAC) (unchanged):** An annual commercial TAC has been set at 202.8 tonnes (447,174 lbs). See Section 3.
- **Individual Quota (unchanged):** The annual individual quotas (IQ) will equal 1/49th of the coast-wide commercial TAC or 4.139 tonnes (9,126 lbs) per licence. See Section 3.
- **Biological Samples (unchanged):** For the 2011/12 fishing season the requirement for biological sampling of 25 urchins from each off-load during the season will continue to be suspended. This biological sampling program will be re-evaluated in consultation with the WCGUA prior to the next season to determine if it should be re-instated.
- **Seasonal Research Closures:** Specific areas of the coast may be closed temporarily to allow for research surveys. Area descriptions Section 6. Notification of closure will be through Fishery Notices.

2. MANAGEMENT MEASURES FOR THE COMMERCIAL FISHERY

2.1. Minimum Size Limit

A minimum size limit of 55 mm test diameter is in effect coast-wide in the Green Sea Urchin fishery. This size limit is precautionary and is intended to allow Green Sea Urchins several years of spawning before becoming available for the commercial fishery.

2.2. Limited Entry Licensing

A limited entry licensing scheme was implemented in January 1991 to address concerns regarding uncontrolled effort observed in the fishery at that time. Green Sea Urchins are commercially harvested under the authority of a commercial licence (“ZA”).

Currently there are no licences designated as Communal commercial licences “FZA”. These licenses would be monitored with the commercial fishery and would have the same management constraints and Conditions of Licence as other commercial licences. For more information on the Licence Retirement/Allocation Transfer Program contact a Resource Manager listed in Appendix 10.

Currently there are 49 ZA licences eligible for this fishery.

2.3. Individual Quota Program

IQs were implemented as a pilot for the Red and Green Sea Urchin and Sea Cucumber fisheries in November 1995. The IQ program includes an equal allocation of the coast-wide TAC among licences and a third party service bureau was hired to monitor catch.

Under the IQ program for the Green Sea Urchin fishery, two percent of the coast-wide TAC is reserved, for planning purposes, for First Nations fisheries for food, social and ceremonial (FSC) purposes. Additional allocations of Green Sea Urchins will be provided to First Nations who demonstrate that their food, social and ceremonial needs are not being met.

The commercial TAC is calculated after subtracting the First Nations allocation.

2.4. Quota Area Quotas

The coast-wide commercial TAC is developed from Quota Area quotas. Quota Areas are comprised of Areas, Subareas and/or portions of Subareas. The commercial quota for each Quota Area is calculated from the density estimates and a range of quotas is provided by Science Branch. Where surveys and density estimates are not complete for an area, Quota Area commercial quotas are extrapolated from survey information from adjacent or nearby areas. Refer to Section 3 for Quota Area commercial quotas.

3. OPEN TIMES AND QUOTA AREAS

The commercial fishery generally opens in the fall depending on market demand and generally closes in the spring of the following year. Markets generally guide production; the majority of the harvesting effort has historically occurred in December and January however more recently effort has been higher earlier in the season to get the most benefits from market conditions. Commercial harvest schedules are determined in consultation with the West Coast Green Urchin Association (WCGUA).

The Department would like to remind all fish harvesters of the importance of providing accurate harvest information. If problems of misreported landing or harvest locations to the Department and/or dockside validators exist, the openings for this fishery may be adjusted in-season to limited rotational openings. These limited openings will restrict the fleet to fish small areas as a group in order to concentrate the fleet for monitoring purposes. At-sea observers may also be required if obtaining accurate harvest information remains problematic.

Harvesters are encouraged to fish throughout the quota areas to prevent localized overharvesting. Localized overharvesting may result in quota decreases or quota areas may need to be split and portions may be closed.

3.1. South Coast (Areas 12 to 13 and 18 to 19)

The South Coast commercial TAC is 202.8 tonnes (447,174 lbs) apportioned between the Quota Areas shown below. All weights referred to in the tables below are the weights that are determined during validation at the first point of landing (in pounds).

Quota Area	Statistical Areas	Commercial Quota (lbs)
12	12 (except research closures)	252,974
13A	13-1 to 13-22	51,000

Quota Area	Statistical Areas	Commercial Quota (lbs)
13B	13-27 to 13-35	57,000
13C	13-23 to 13-26 & 13-36 to 13-43	30,000
18	Area 18; plus subarea 19-6 and that portion of subarea 19-5 north of a line running due east from Cormorant Point	29,750
19	Area 19 except subarea 19-6 and that portion of subarea 19-5 north of a line running east from Cormorant Point NOTE: Harvesters are encouraged to spread out their effort over the entire Quota Area.	26,450
Coastwide Total		447,174

Any Quota Area overruns may be deducted from the next year's quota for the Quota Area.

3.2. Other Areas

Areas of the coast not listed in the Quota Areas above may be considered for openings if an independent stock assessment survey of the area demonstrates that a sustainable harvest quota can be established. Fish harvesters will be required to fund any stock assessment surveys. Proposals for new areas may be sent to the Department for review.

4. LICENSING

4.1. Licence Category

A commercial Green Sea Urchin (ZA) licence or communal commercial Green Sea Urchin licence (FZA) eligibility is required to commercially harvest Green Sea Urchins by dive.

4.2. Licence Fees

The annual licence fee for a category "ZA" licence is \$430. There is no fee for the category "FZA" communal commercial licence.

4.3. Licence Application and Issuance

Applications must be completed and submitted to a Pacific Fishery Licence Unit (PFLU) by August 31 of each fishery year with the required licence fee in order to maintain the licence eligibility.

The licence eligibility holder must sign the application form. If the licence eligibility holder is a company or First Nation group, only an authorized signing authority may sign the application. The Pacific Fishery Licence Unit must have on record a copy of either a Confirmation of Signing Authority or an Amendment to Confirmation of Signing Authorities form listing the signing authorities for the company or First Nation group.

Prior to annual licence issue, licence eligibilities holder(s) must:

- a.) ensure any Ministerial conditions placed on the licence eligibility have been met,
- b.) ensure any conditions of the previous year's licence such as submission and approval of any logbook or fish slip have been met, and
- c.) designate a registered commercial fishing vessel that is eligible for a vessel based licence (salmon, schedule II, geoduck, crab by trap, sablefish, halibut, shrimp by trap, shrimp by trawl, or groundfish by trawl).

All diving and fishing operations for Green Sea Urchins must take place from the licensed vessel. All product harvested must be brought aboard the licensed vessel. Vessels used to hold or transport Green Sea Urchins must conform to Canadian Food Inspection Agency inspection regulations and hold appropriate licences.

A vessel may only be designated for a maximum of five active licences (i.e. those with quota remaining) at a time.

“ZA” and “FZA” licence eligibilities have a maximum vessel length (MVL). The MVL restriction has been temporarily waived while the IQ program is in effect. Fisheries and Oceans Canada reserves the right to reinstate vessel length restrictions if necessary.

Designated vessels must have a vessel survey on record with the Pacific Fishery Licence Unit, dated subsequent to May 1989.

4.4. Individual Quotas

The holder of the licence eligibility to commercial harvest of Green Sea Urchins is provided the opportunity to harvest up to 4.14 tonnes (9,126 lbs.) of Green Sea Urchins.

4.5. Licence Documents

Green Sea Urchin licence documents are valid from September 1 to August 31 of the following year.

Replacements for lost or destroyed licence documents may be obtained by completing a Declaration Concerning Licence Documents form. Please contact a Pacific Fishery Licence Unit for further details.

4.6. Vessel Re-designations

Re-designation of “ZA” or “FZA” licenses is allowed as long as any licence condition, such as the completion of logbooks, has been met and accepted by the Shellfish Data Unit.

A completed Application for Category “Z” Vessel Re-designation form must be completed by the licence eligibility holder and submitted to a Pacific Fishery Licence Unit. Valid current year licence documents and validation tabs must be returned.

4.7. Licence Eligibility Nominations

Green Sea Urchin licence eligibilities may be nominated from one person to another. Nomination for Category Z licence eligibility forms must be completed by the licence holder and submitted to the Pacific Fishery Licence Unit.

The following requirements must be met:

- a.) Any Condition of Licence such as the completion of harvest logbooks with confirmation of receipt issued by the Shellfish Data Unit.
- b.) Valid current year licence documents and validation tabs must be returned.

4.8. Vessels

All diving and fishing operations for Green Sea Urchins must take place from the “ZA” or “FZA” licensed vessel. All product harvested under a “ZA” or “FZA” licence must be harvested from and retrieved by the vessel designated on the licence. Vessels used to hold or transport Green Sea Urchins must conform to Canadian Food Inspection Agency inspection regulations for holding or transporting fish, and have appropriate licences.

4.9. Licence to Transport Green Sea Urchins

Any registered vessel with a vessel-based licence (categories “A”, “C”, “F”, “G”, “K”, “L”, “N”, “R”, “S”, “T” and “W”), a category “D” (packing), or a herring seine licence (“HS”), may transport Green Sea Urchins under Conditions of Licence which are included with all vessel-based licences. For further information contact the Pacific Fishery Licence Unit.

Note: When product is transferred from one vessel or vehicle to another that vessel or vehicle requires a provincial buying station licence. This licence is required for all types of vehicles and vessels including aircraft. The licence may also be required for personal vehicles in some instances, when the vehicle is carrying catch for more than one vessel, even if the licence holder owns both vessels. Fish harvesters should contact the Ministry of Agriculture and Lands (MAL), in Courtenay (250 897-7542) for more information.

4.10. Processing

Effective June 1998, any processing beyond that permitted in Section 14 Fish Inspection Regulations (FIR) must be done in a registered fish processing facility and in full compliance with a Quality Management Program (QMP).

5. CONTROL AND MONITORING OF COMMERCIAL FISHING ACTIVITIES

To accompany the IQ program, an industry-funded monitoring and validation program was developed collaboratively between the WCGUA and Fisheries and Oceans Canada.

A Joint Project Agreement (JPA) between the Department and the WCGUA to provide for in-season catch validation is consistent with the Department’s approach to co-management in the Region. This agreement provides for catch validation at designated landing ports, in-season collection and compilation of harvest log data, and a year-end summary report of the fishery.

Fish harvesters are required to report harvest time and location information to a service provider prior to fishing, following fishing, and prior to landing Green Sea Urchins. In order to track daily harvests and ensure that area quotas are not exceeded, all catch must be weighed and validated at the first point of landing by a Fisheries and Oceans Canada certified observer.

The service provider contracted by the WCGUA to provide notification, validation, biological sampling and data services for the 2011/12 Green Sea Urchin fishery is:

D&D Pacific Fisheries Ltd.
Box 1445, Gibsons, B.C. V0N 1V0
Phone: (604) 886-4819
Fax: (604) 886-8288
Hail-in Line: (800) 775-5055

The following sections compliment those in the Conditions of Licence (issued with each commercial licence), that outline the requirements for fishery control and monitoring. See example in Appendix 7

5.1. Quantities Permitted

Annual IQ for the period of this management plan has been set at 4.14 tonnes (9,126 lbs). IQ and commercial area quotas are subject to change during the period of this IFMP based on new stock assessment information obtained by the Department or required management actions.

Harvest of Green Sea Urchins over the IQ after the permitted quota overage adjustments may be subject to prosecution and seizure of the overage.

5.2. Gear

Hand picking by divers. Suction devices are not permitted.

5.3. Fishing Multiple Quota Areas

All Green Sea Urchins caught in a Quota Area must be landed or transhipped prior to the commencement of fishing in a new Quota Area.

5.4. Containers used to Hold or Transport Green Sea Urchins

There are several requirements for:

- a.) The type, size, and marking of containers used to hold or transport sea urchins.
- b.) The condition of containers for food inspection purposes.

5.4.1. Marking of “Pick Bags”

“Pick Bags,” or any other type of enclosures containing Green Sea Urchins left unattended in the water must be tagged with bag tags displaying the vessel registration number (VRN#), and name of the vessel used to harvest the product. All floats attached to pick bags or other types of enclosures must be labelled with the VRN# of the vessel harvesting the product.

5.4.2. Tagging of Green Sea Urchin Containers

All Green Sea Urchins delivered to packers, or to designated landing ports, shall be in containers which are tagged. The tags must clearly display the fishing vessel’s name and VRN#.

5.4.3. Condition of Green Sea Urchin Containers

Any containers used in the transport of “fish” (including urchins) for export, must meet the requirements of Schedule V of the *Fish Inspection Regulations*. This states

that the contact surfaces of fish storage areas in vehicles and of containers used for transporting fish shall be smooth, free from cracks and crevices and made of non-corrodible metal. There is also a requirement for containers to be covered. Acceptable materials include plastic, aluminum, and fibreglass, however, an exemption has been granted for the use of well-painted wooden totes to transport fish to processing plants (contact Hanna Boehmer at 604-666-3578 for further information).

5.5. Landing Locations

All Green Sea Urchins must be landed at one of the designated landing ports listed in the Conditions of Licence. Specific landing ports have been established as part of the IQ validation program. Fisheries and Oceans Canada certified observers are available at these ports to oversee offloading and validation of Green Sea Urchin catch.

5.6. Validation

All Green Sea Urchins harvested or removed from the sea bed floor must be validated at the point and time they are landed.

The vessel master must be in possession of a Fisheries and Oceans Canada approved catch Validation & Harvest Logbook assigned to the Green Sea Urchin licence. The Validation & Harvest Logbook must be on board the licensed vessel while fishing for Green Sea Urchins, or while Green Sea Urchins are on board. Validation & Harvest Logbooks that meet the Department's approval are available from the service provider or from the WCGUA.

5.6.1. Validation & Harvest Logbook Entries

At the first point of off-loading, all Green Sea Urchins will be weighed with a government-certified scale and the weight entered on the Validation & Harvest Logbook. The vessel master is responsible for completing sections A and C of the Validation & Harvest Logbook. The vessel master shall also ensure that chart entries are completed showing all locations fished for that validation. All harvest information must be fully entered and complete before validation takes place including referencing the Fisher Identification Number (FIN) on the log. The Validation & Harvest Logbook will remain with the licensed vessel, with one copy accompanying the product to its destination and one copy handed over to the observer at the time of validation, along with the harvest charts. The observer shall compare harvest charts to Validation & Harvest Logbooks to ensure that harvest information is consistent between both. The original white copy of the Validation & Harvest Logbook handed to the observer, along with the harvest charts, must be received by the Fisheries and Oceans Canada Shellfish Data Unit within 28 days following the end of the month in which harvesting took place.

5.6.2. Examination of Logbooks

The Validation & Harvest Logbook must be produced by the vessel master on request by a fishery officer, fishery guardian, or an observer.

5.6.3. Quota Confirmation

Prior to fishing, the vessel master must confirm the remaining vessel quota from the Validation & Harvest Logbook. Harvest of product in excess of the individual licence quota is subject to prosecution.

5.6.4. Lost Product

In situations of lost product the following protocol will be implemented:

- a.) The weight of product lost from the deck of the catcher vessel and/or packer vessel during transport will be applied to both the catcher vessel's IQ and the applicable area quota.
- b.) The weight of product spoiled or wasted because of weather-related delays will also be applied to both the catcher vessel's IQ and the applicable area quota.
- c.) The service bureau will use the estimated packer or ground weight and appropriate water loss calculation for the harvest site to determine an estimated dock weight.

5.6.5. Conditions and Procedures for Quota Overage Transfer

5.6.5.1. Quota Area Quota Overages

Any Quota Area overruns may be deducted from the next year's quota for the Quota Area.

5.6.5.2. IQ Overages

Small quantities of Green Sea Urchins, which exceed the licence's annual quota (up to 90.7 kg or 200 lbs), can be transferred to another Green Sea Urchin licence provided certain conditions are fulfilled. If all of these conditions are not met, observers will not transfer the overage to another licence. In the following explanation, the Green Sea Urchin licence which has exceeded its quota is called Licence "A" and the licence to which quota is transferred is called Licence "B".

Harvest of Green Sea Urchins over the IQ after the permitted quota overages adjustments may be subject to prosecution and seizure of the overage.

- a.) Transfer of Quota to a Second Licence on the Same Vessel - If two or more licences are assigned to the same vessel then a quota overage from one licence may be transferred to the Green Sea Urchin licence which has quota remaining. Overage of the last Green Sea Urchin licence quota on the same vessel may be transferred to another vessel's Green Sea Urchin licence in accordance with procedure described below.
- b.) Maximum Allowable Transfer of Quotas Between Licences on Different Vessels - In the event of a quota overage on Green Sea Urchin Licence "A", a maximum of 90.7 kg (200 lbs) of Green Sea Urchins may be transferred to another vessel's Green Sea Urchin licence (Licence "B"). Only one transfer of quota overage is allowed. The quota overage cannot be divided between a number of licences.
- c.) Remaining Quota on Second Licence - The amount transferred cannot exceed the remaining quota of Green Sea Urchin Licence "B".
- d.) Green Sea Urchin Licence Area - Both vessels involved in the transfer must be licensed to fish in the same licence area and have active licences for that licence year (the provision for landing at the same port has been removed).

- e.) Documentation - The Green Sea Urchin Validation & Harvest Logbook for each of the licences involved in the transfer must be present at the time of the validation. Both vessel masters must make their intention to transfer or receive quota overage clear to the observer prior to unloading. In the event of a packer landing, a note signed by both vessel masters should accompany the product to advise the observer that there is a mutual agreement to transfer.

5.7. Oral Reports

The Conditions of Licence detail fishing notification requirements that must be followed by each licensed vessel in order for the service provider and the Department to track fishing effort and landing on a daily basis to ensure that harvest area quotas are not exceeded. This becomes imperative when a harvest area quota is near completion and remaining quota is divided amongst hailed vessels. When vessels do not hail into a harvest area, there is a risk of exceeding the area quota. In order to maintain a sustainable fishery, it is extremely important that effort and landings in a particular harvest area be reported and recorded accurately.

Please review the conditions of licence for further details on hailing requirements.

5.8. Harvest Logs and Chart Data

It is a Condition of Licence and the responsibility of the licence holder to ensure that harvest and chart information is received by Fisheries and Oceans Canada Shellfish Data Unit and meets the conditions outlined below. Fish harvesters who have validation services completed by D&D Pacific Fisheries Ltd. will receive these services as part of that contract. For fish harvesters who wish to have validation completed by an observer other than the service provider under contract to the WCGUA, it will remain the licence holder's responsibility to ensure the requirements are fully completed.

5.8.1. Harvest Data

The vessel master is responsible for the provision and maintenance of an accurate record, a "log", of daily harvest operations. This log must be completed and a copy submitted in both hard (paper) copy and electronic form in an approved format as defined by Fisheries and Oceans Canada, Shellfish Data Unit.

The vessel master is responsible for the provision of a daily harvest chart record for each location fished by each diver. This harvest chart must have marked directly on it the VRN#, the licence tab number, and the validation ID numbers. The harvest site must be clearly marked on the chart with dive or record numbers pertaining to each harvest catch record and with dates that fishing activity occurred at each site. The vessel master is also responsible for the electronic capture of harvest location data into the Shellfish Data Unit Geographic Information System (GIS).

Validation & Harvest Logbooks meeting Fisheries and Oceans Canada requirements are available from third party service providers. The service provider will, for a fee, provide the Validation & Harvest Logbook coding and keypunch service, including the electronic capture of harvest chart information into GIS, thus complying with the requirements for submission of a hard (paper) copy and electronic copy including fishing location information, for harvest data.

The original white page copy of the log, the accompanying chart record, and the electronic copies must be forwarded within 28 days following the end of the month in which fishing occurred. Fish harvesters who have validation services completed by D&D Pacific Fisheries Ltd. will receive this service as part of that contract. The information must be sent to:

Fisheries and Oceans Canada
Shellfish Data Unit
Pacific Biological Station
Hammond Bay Road
Nanaimo, B.C., V9T 6N7
Phone: (250) 756-7022 or (250) 756-7306

For alternatives to harvest data provision through service providers, contact the Shellfish Data Unit at the above address to obtain the requirements and acceptable data formats for supplying harvest log, chart, and electronic data in a format which meets the Conditions of Licence. Electronic data capture of harvest location information must be performed at the Shellfish Data Unit by a bonded third party service provider. The hard copy of the harvest logs and chart records, as well as the completed electronic copy must be forwarded within 28 days following the end of the month in which fishing occurred. This information must be sent to the above address.

Catch information must be recorded in the harvest log by midnight of the day of fishing. The logbook must be kept aboard the licensed vessel. Logbooks must be produced for examination on demand of a fishery officer, guardian, or a fishery observer designated under the *Fisheries Act*.

5.8.2. Submission and Release of Harvest Log Data

The licence holder of record reported with the Pacific Fishery Licence Unit is responsible to ensure that the vessel master has completed and submitted a copy of the harvest data. Fisheries and Oceans Canada can only release harvest data to the reported licence holder and only upon written request.

5.8.3. Nil Report for Harvest Log – Licence Issued but Not Fished

In the event that a licence is issued but not fished, the licence holder is responsible for submitting a nil report for the season. The nil report must be submitted prior to the issuing of approval for licence renewal. One page from the harvest logbook identifying the vessel, licence tab number and the year with “nil” entered in the body of the log and signed by the licence holder constitutes a nil report.

FISHERIES AND OCEANS CANADA WOULD LIKE TO REMIND FISH HARVESTERS THAT HARVEST LOGS MUST BE COMPLETED ACCURATELY DURING FISHING OPERATIONS AND SUBMITTED TO FISHERIES AND OCEANS CANADA IN ACCORDANCE WITH THE TIMING SET OUT IN CONDITIONS OF LICENCE. FAILURE TO COMPLETE OR SUBMIT LOGS IN A TIMELY MANNER IS A VIOLATION OF THE CONDITION OF LICENCE.

5.8.4. Confidentiality of Harvest Data

Harvest data, including fishing location data supplied through lat./long. coordinates, loran or chart records, collected under the Validation & Harvest Logbooks for Shellfish Fisheries programs, are collected for use by Fisheries and Oceans Canada in the proper assessment, management and control of the fisheries. Upon receipt by Fisheries and Oceans Canada of harvest data and/or fishing location information supplied by the fish harvester in accordance with Conditions of Licence, Section 20(1)(b) of the *Access to Information Act* prevents the Department from disclosing to a third party, records containing financial, commercial, scientific or technical information that is confidential information. Further, Section 20(1)(c) of the *Act* prevents the Department from giving out information, the disclosure of which could reasonably be expected to result in material financial loss or could reasonably be expected to prejudice the competitive position of the fisher.

5.9. Fish Slip Requirements

It is a condition of this licence that an accurate written report shall be furnished on a fish slip of all fish and shellfish caught under the authority of this licence. A report must be made even if the fish and shellfish landed are used for bait, personal consumption, or otherwise disposed. The written report shall be posted not later than seven days after the offloading and sent to:

Fisheries and Oceans Canada
Catch Statistics Unit
200-401 Burrard Street
Vancouver, B.C. V6C 3S4

Fish slip books may be purchased at the above address, or at most Fisheries and Oceans Canada offices. Phone (604) 666-2716.

5.10. Export of Green Sea Urchins

Licence conditions regarding Validation & Harvest Logbooks and fish slips must be complied with for all sea urchins.

It is important to note that Green Sea Urchins being processed for export out of the province must be processed at a federally registered facility. Each country receiving Green Sea Urchins may have different import requirements. The Canadian Food Inspection Agency posts export requirements on the following website: www.inspection.gc.ca/english/fssa/fispoi/export/coupaye.shtml. However, as these requirements can vary, exporters of sea urchins are encouraged to verify foreign country import requirements through their customers prior to export.

6. CLOSURES

It is the fisher's responsibility to ensure that an area is open to harvesting.

6.1. Notification of Area Closures

Additional closures may be announced in-season by Fishery Notice. Prior to fishing in an area, fish harvesters are advised to consult the local Fisheries and Oceans Canada office or to contact a fishery manager listed in Appendix 10.

6.2. Research Closures

Some areas have been designated as research or study areas and as such are closed to commercial fishing. Fishing is permitted in these areas only under a scientific licence. Studies undertaken in these areas are a co-operative effort between Fisheries and Oceans Canada, WCGUA, and local First Nations and include investigations into the effects of various harvest strategies on resident stocks. For further information on the research areas please contact the Stock Assessment Division (see Appendix 10).

6.2.1. Year Round Research Closures

6.2.1.1. Area 12: Stubbs Island/Plumber Islands: Portion of Subareas 12-5 and 12-18. All waters within 0.25 nautical miles of Stubbs Island. Those waters of the Plumber Islands commencing at the most westerly point on Ksuiladas Island thence in a straight line to Stubbs Island thence due east for 1.4 nautical miles, thence in a straight line to the most northerly point on Ksuiladas Island, thence following the western shore of said island to the point of commencement.

6.2.1.2. Area 13: Kelsey Bay: The waters of Subarea 13-34 (Salmon Bay) and that portion of Subarea 13-33 lying southerly or inside of a line from the ferry landing at the Kelsey Bay Government Dock easterly to Petersen Islet Light.

6.2.1.3. Area 18: Java Islets Research Closure: Those waters of Subarea 18-5 within 0.25 nautical miles of Java Islets.

6.2.1.4. Area 26: Kyuquot Sound Marine Communities Study Area: A portion of 26-6 inside or northerly of a line from White Cliff Head to Racoon Point (Kyuquot Bay). A portion of 26-6 on the west side of Union Island commencing at position 50°0.4' N, 127°19.3' W (Entrance to Crowther Channel)

6.2.2. Seasonal Research Closures

Seasonal research closures will be determined in season. Larger areas around research closures may be closed prior to the survey to prevent pre-survey fishing effort to affect the survey results. These will be announced in-season by Fishery Notice.

6.2.2.1. Area 12: Stephenson Islets/Stubbs Island/Plumber Islands: Portion of Subareas 12-3, 12-4, 12-5 and 12-18 inside a line commencing on Malcolm Island at 50°37.13' N, 126°49.75' W to the most westerly point on Pearse Islands 50°35.04' N, 126°53.19' W along the shore to 50°34.51' N, 126°51.70' W then easterly to a point of Hanson Island at 50°33.88' N, 126°46.52' W along the shore to 50°35.37' N, 126°45.06' W to the point of commencement. (See Figure 4, Appendix 8)

6.2.2.2. Area 19: Chain Islets: That portion of Subarea 19-4 inside a line commencing at 48°25.62' N, 123°16.90' W south to 48°24.89' N, 123°16.63' W east

6.2.2.3. Area 19: Fulford Reef: That portion of Subarea 19-4 inside a line commencing at the North Cardinal Buoy located at 48°26.89' N, 123°14.38' W southwest to 48°26.74' N, 123°14.75' W southeast to 48°26.52' N, 123°14.13' W northeast to 48°26.62' N, 123°13.98' W northwest to the point of commencement the North Cardinal Buoy. (See Figure 7, Appendix 5)

6.3. Permanent Closures

The following areas will be closed September 1, 2011 to August 31, 2012.

6.3.1. Area 1

6.3.1.1. Subarea 1-6. (First Nations access for food, social and ceremonial purposes)

6.3.2. Area 2

6.3.2.1. Gwaii Haanas National Marine Conservation Area Reserve and Haida Heritage Site, **Burnaby Narrows**: Those waters of Subareas 2-13 and 2-16 inside a line commencing at 52°23.071' N and 131°20.427' W, east to a point at 52°23.079' N and 131°22.790' W, then following the southern shoreline of Kat Island east to a point at 52°23.104' N and 131°22.193' W, then east to a point at 52°23.303' N and 131°22.277' W, then following the western shoreline of Burnaby Island south to a point at 52°20.982' N and 131°20.427' W, then west to a point at 52°20.733' N and 131°21.063' W, then north following the eastern shoreline of Moresby Island back to the point of commencement. (National Marine Conservation Area).

6.3.2.2. Gwaii Haanas National Marine Conservation Area Reserve and Haida Heritage Site, **Louscoone Estuary**: Those waters of Subareas 2-33 and 2-34 north of a line drawn from 52°11.828' N and 131°15.662' W east to 52°12.269' N and 131°14.579' W. (National Marine Conservation Area).

6.3.2.3. Gwaii Haanas National Marine Conservation Area Reserve and Haida Heritage Site, **Flamingo Estuary**: Those waters of Subarea 2-37 north of a line drawn from 52°14.523' N and 131°22.24' W southeast to 52°14.245' N and 131°21.481' W. (National Marine Conservation Area).

6.3.2.4. Gwaii Haanas National Marine Conservation Area Reserve and Haida Heritage Site, **Gowgaia Estuary**: Those waters of Subarea 2-41 east of a line drawn from 52°24.947' N and 131°32.13' W southeast to 52°24.233' N and 131°32.021' W. (National Marine Conservation Area).

6.3.2.5. Gwaii Haanas National Marine Conservation Area Reserve and Haida Heritage Site, **Cape Saint James**: Those waters of Subareas 2-19, 102-3, 130-3 and 142-1 inside a line commencing at 51°56.509' N and 131°01.547' W, southwest to a point at 51°55.499' N and 131°02.468' W, then southeast to a point at 51°52.493' N

6.3.2.6. Gwaii Haanas National Marine Conservation Area Reserve and Haida Heritage Site, **SGang Gwaay**: Those waters of Subareas 2-31 and 142-1 inside a 3 km radius from the centre point on Anthony Island located at 52°05.655' N and 131°13.178' W. (National Marine Conservation Area).

6.3.3. Area 5

6.3.3.1. Kitkatla Inlet and adjacent waters: Subarea 5-3 and that portion of Subarea 5-10 excluding the area of Beaver Passage and Schooner Passage inside of a line commencing at a fishing boundary sign at the northwest point of Spicer Island to the northwest point of McCauley Island, then following the shoreline of McCauley Island to Baird Point, then to Sentinel Islet, then to Boys Point, then to a boundary sign on the east side of Spicer Island. (First Nations access for food, social and ceremonial purposes)

6.3.4. Area 12

6.3.4.1. Port Neville: Subarea 12-25. (Marine Reserve Area/Research Area)

6.3.5. Area 13

6.3.5.1. Area 13 Study Area: Discovery Passage: Portion of Subarea 13-3, Subareas 13-4 and 13-5, and a portion of Subarea 13-6. Those waters of Discovery Passage bounded on the north by a straight line drawn true west from North Bluff on Quadra Island, across Seymour Narrows to a fishing boundary sign on Vancouver Island, and south by a line from the light on the end of the south Government Dock breakwater at Campbell River to Cape Mudge lighthouse. (Marine Reserve and Research Closure)

6.3.6. Area 13, 14, 15

6.3.6.1. All waters within 1.0 nautical mile of Mitlenatch Island, located in the upper Strait of Georgia intersected by the Subareas 15-2, 13-1, 13-3 and 14-13. (Marine Reserve)

6.3.7. Area 14

6.3.7.1. Hornby Island: Those waters of Lambert Channel and the Strait of Georgia, Subarea 14-7, inside a line commencing at Shingle Spit on Hornby Island, thence 239° true for 0.5 nautical miles, thence 126° true for 3.5 nautical miles, thence

6.3.8. Area 15

6.3.8.1. All waters within 0.5 nautical miles of Vivian Island, located approximately 5.0 nautical miles west of Powell River in Subarea 15-2. (Marine Reserve)

6.3.8.2. All waters within 0.25 nautical miles of Rebecca Rock, located 2.5 nautical miles west of Powell River in Subarea 15-2. (Marine Reserve)

6.3.8.3. All waters within 0.25 nautical miles of Dinner Rock, located 2.5 nautical miles south of Lund in Subarea 15-2. (Marine Reserve)

6.3.8.4. All waters within 0.5 nautical miles of the unnamed reef off Emmonds Beach, located approximately 4.0 nautical miles south of Lund in Subarea 15-2. (Marine Reserve)

6.3.8.5. All waters within a 0.25 nautical mile radius of the southerly end of the Beach Gardens breakwater in Subarea 15-2. (Marine Reserve)

6.3.9. Area 16

6.3.9.1. Skookumchuck Narrows Provincial Park: Those waters of Skookumchuck Narrows and Sechelt Rapids in Subarea 16-9 bounded on the west by a line from a point on the foreshore at the westerly limit of Secret Bay on Sechelt Peninsula thence 50° true to a point on the foreshore on the mainland; and the east by a line from Raland Point on Sechelt Peninsula, thence 50° true to a point on the foreshore on the mainland. (Park)

6.3.10. Area 18

6.3.10.1. Subareas 18-7 (Sansum Narrows, Burgoyne Bay and Maple Bay) and 18-8 (Cowichan Bay): (Conservation)

6.3.11. Area 19

6.3.11.1. Ogden Point: Those waters of Subarea 19-3 inside a line from the navigation light at the western end of the Ogden Point Causeway thence to Brotchie Ledge Light, thence to Holland Point on Vancouver Island. (Marine Reserve)

6.3.11.2. 10 Mile Point: Those waters of Subareas 19-4 and 19-5 within 0.4 nautical miles of Cadboro Pt. navigation light. (Marine Reserve)

6.3.11.3. Race Rocks: Those waters of Subareas 19-3 and 20-5 within 0.5 nautical miles of Great Race Rocks. (Marine Reserve)

6.3.12. Area 20

6.3.12.1. Botanical Beach Provincial Park: That portion of Subarea 20-3 between the lowest low water on record and the highest high water on record from San Juan Point thence following the Vancouver Island shoreline easterly to the mouth of Tom Baird Creek. (Marine Reserve)

6.3.12.2. Pacific Rim National Park, Juan de Fuca: That portion of Subarea 20-1 between the lowest low water on record and the highest high water on record from Bonilla Light thence following the shoreline of Vancouver Island easterly to Owen Point. (Park)

6.3.12.3. Beecher Bay: Those waters of Subarea 20-5 north of a line running from Church Point to Beechy Head. (First Nations access for food, social and ceremonial purposes)

6.3.13. Area 23

6.3.13.1. Pacific Rim National Park: Those waters lying within Park Boundaries as shown, since 1989, on Canadian Hydrographic Service Chart 3671. (Park)

6.3.13.2. Bamfield Marine Station Research Area Closure: Those waters of Pacific Fishery Management Subareas 23-4, 23-6 and 23-7 bounded by a line commencing at the light at Whittlestone Point and running directly to the southern tip of Haines Island; from the northwestern tip of Haines Island to the southern tip of Seppings Island; from the northwestern tip of Seppings Island to Kirby Point on Diana Island; from Kirby Point directly to the northwest tip of Fry Island; from the northwestern tip of Fry Island to the nearest adjacent point on Tzartus Island; from Foucault Bluff on Tzartus Island to the northwest tip of Nanat Island; from the eastern tip of Nanat Island to the nearest adjacent point on Vancouver Island and thence along the coastline of Vancouver Island to the point of commencement. (Research Area)

6.3.14. Area 24

6.3.14.1. Barney Rocks: Those waters of Subarea 24-2 and 24-3 within 25 m of Barney Rocks. (First Nations access for food, social and ceremonial purposes)

6.3.14.2. Pacific Rim National Park, Grice Bay & McBey Islets: The waters of Tofino Inlet within Pacific Rim National Park including McBey Islets and Dinner Island in Tsapee Narrows, Browning Passage in Subarea 24-9 and Grice Bay west and south of Indian Island in Subarea 24-11. (Park)

6.3.15. Area 25

6.3.15.1. Friendly Cove and Santa Gertrudis Cove: That portion of Subareas 25-6 and 25-7 inside a line from a white triangular fishing boundary sign on Nootka Island near the northerly entrance to Santa Gertrudis Cove, thence true east 0.25 nautical miles, thence true south one nautical mile, thence westerly to Yuquot Point on Nootka Island, thence to the point of commencement. (First Nations access for food, social and ceremonial purposes)

6.3.16. Area 26

6.3.16.1. Checleset Bay Fishery Closure Area: Those portions of Areas 26 and 126 enclosed by a line drawn from a point on the Brooks Peninsula (at 127°49.58' W long., 50°05.18' N lat.), thence due south to the 50° parallel, thence due east to Alert Point on Lookout Island, thence northeasterly to a point on Vancouver Island near McLean Island (at 127°25.03' W long., 50°02.1' N lat.), thence northwesterly along the shore of Vancouver Island to Malksope Point (at 127°28.95' W long., 50°05.53' N lat.), thence due west to a point mid-channel on the southeast end of Gay Passage (at 127°30.1' W long., 50°05.53' N lat.), thence mid-channel through Gay Passage to a point mid-channel on the northwest end of Gay Passage (at 127°31.8' W long., 50°06.7' N lat.), thence northwesterly to the shore of Vancouver Island, just west of Theodore Point (at 127°32.8' W long., 50°07.7' N lat.), thence westerly along the Vancouver Island shore to an unnamed point on the east side of Nasparti Inlet (at 127°38.6' W long., 50°08.75' N lat.), thence westerly across Nasparti Inlet to an unnamed point on Vancouver Island (at 127°37.8' W long., 50°08.7' N lat.), thence along the Vancouver Island shore to the point of commencement

6.3.17. Area 28

6.3.17.1. Porteau Cove: That portion of Subarea 28-4, east of a line drawn from a white fishing boundary sign located on the south shore of Porteau Cove to a white fishing boundary sign located on the north shore of Porteau Cove. (Marine Reserve)

6.3.17.2. Whytecliff Park: That portion of Subarea 28-2 bounded by a line commencing from the most southerly point of Whytecliff Park; thence in a straight line to a point located 100 m east of the most southeasterly point of Whyte It.; thence following the southern shoreline of Whyte It. at a distance of 100 m to a point lying 100 m from the most southwesterly point of Whyte It.; thence in a straight line to a point lying 100 m west of White Cliff Point; thence following the shoreline at a distance of 100 m in a northerly direction to a point 100 m north of Lookout Point; thence following the shoreline at a distance of 100 m in an easterly direction to a point 100 m perpendicular to the most northerly point of Whytecliff Park; thence to the most northerly point of Whytecliff Park on the mainland. (Marine Reserve)

6.3.18. Portions of Subareas 101-1 and 142-2

6.3.18.1 Area bounded by a series of rhumb lines drawn from a point 53°03'07.6" N, 135°50'25.9" W, to a point 53°16'20.9" N, 134°59'55.4" W, then to a point 53°39'49.2" N, 135°17'04.9" W, then to a point 53°39'18.0" N, 135°53'46.5" W, then to a point 53°52'16.7" N, 136°30'23.1" W, then to a point 53°49'19.6" N, 136°47'33.1" W, then to a point 53°40'02.5" N, 136°57'03.5" W, then to a point 53°13'59.2" N, 136°10'00.0" W, then back to the point of commencement as laid out in the Bowie Seamount Marine Protected Area Regulations. (Marine Protected Area)

7. WORKSAFE BC

Jurisdiction over health and safety on commercial fishing vessels in Canada is the mandate of the provinces. In British Columbia, jurisdiction over health and safety issues on commercial fishing vessels is with WorkSafe BC. Health and safety issues on fishing vessels include the health and safety of the crew and design, construction and use of fishing equipment on the vessel. Matters of transportation and shipping fall to the federal government and are administered by Transport Canada, Marine Safety (TCMS). WorkSafe BC and TCMS have entered into a Memorandum of Understanding on fishing vessel safety that addresses, as much as possible, jurisdiction. The document also contemplates that each party will work co-operatively to ensure that vessels and their crew remain healthy and safe.

The Green Sea Urchin fishery, and other dive fisheries, is legislated by the requirements for occupational divers, found in Part 24 of the Occupational Health and Safety Regulation (OHSR) and as commercial fishing ventures, also found in Part 24 of the OHSR. Many of the general sections of the Regulation also apply, for example: Part 8 - Personal Protective Equipment, addresses issues related to safety head gear, safety footwear, and personal floatation devices. Part 17 addresses issues on rigging and Part 5 addresses issues of exposure to chemical and biological substances. The entire regulation can be acquired from the Provincial Crown Printers or by visiting the WorkSafe BC website at:

www.worksafebc.com

For further information, contact an Occupational Safety Officer (Mike Ross, Victoria, (250) 881-3419 or Shane Neifer, Terrace, (250) 615-6640) or the Focus Sector Manager for fishing (Bruce Clarke, Prince George, (250) 612-3708).

APPENDIX 7: EXAMPLE OF GREEN SEA URCHIN VALIDATION & HARVEST LOGBOOK

HAIL VERIFICATION #		GREEN SEA URCHIN VALIDATION & HARVEST LOGBOOK				VALIDATION ID #:			
SECTION 'A' - TO BE COMPLETED BY VESSEL MASTER									
VESSEL NAME			VESSEL REGISTRATION NUMBER (VRN)		VESSEL MASTER NAME		FISHERIES IDENTIFICATION NUMBER (FIN)		
ZA TAB #	DAYS FISHED	QUOTA AREA	STAT AREA	SUB AREA	BUYER NAME		CONTAINER IDENTIFICATION LABEL		
						FLAGGING TAPE COLOUR	TAG YES / NO		
PACKER VESSEL NAME			VESSEL REGISTRATION NUMBER (VRN)		GROSS PACKER WEIGHT (lb.)		NUMBER OF CONTAINERS		
						BAGS	CAGES TOTES OTHER		
SECTION 'B' - TO BE COMPLETED BY OBSERVER PLEASE PRINT - USE PEN									
OBSERVER NAME		No. of VALIDATED CONTAINERS		GROSS DOCK WEIGHT (lb.)	TARE WEIGHT (lb.)	PREVIOUS R.Q. (lb.)			
		BAGS	CAGES TOTES OTHER			NET DOCK WT. (lb.)			
OVERAGE lb.		TRANSFER: TO / FROM		OTHER VALIDATION ID #		NEW R.Q. (lb.)			
LANDING PORT		LANDING DATE		START TIME	OFFLOAD SEQ.	SITUATION REPORT #			
						No. of TRANSPORT CONTAINERS			
COMMENTS :						CONTAINER LABELS			
						CONTAINER COUNT			
						Y N Y N			
						HARVEST COMPLETE			
						BAG / TOTE TAGS			
						MATH CHECK			
						FISH HOLD CHECK			
						Y N Y N Y N Y N			
SECTION 'C' - TO BE COMPLETED BY VESSEL MASTER PLEASE PRINT - USE PEN									
HARVEST INFORMATION - COMPLETE A SEPARATE LINE FOR EACH DIVE - USE ANOTHER PAGE IF MORE SPACE IS REQUIRED									
DIVE No.	DIVE SITE	HARVEST DATE (Sep. 20/04)	HARVEST LOCATION (NAME OF NEAREST LANDMARK)		DIVER NAME (FIRST & LAST NAME)		DIVE TIME (minutes)	DEPTH (m)	No. of PCKBAGS
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
SPLIT LOAD		YES	NUMBER OF LOADS		VALIDATION NUMBER(S) OF OTHER LOADS		SPLIT LOAD COMMENT		
		NO			1. 2.				
WHITE COPY - Observer		YELLOW COPY - Buyer via trucking		PINK COPY - Vessel via packer		GOLD COPY - Remains in Logbook		Revision: Aug.2000	

Appendix 8: Maps of Green Sea Urchin Quota Areas

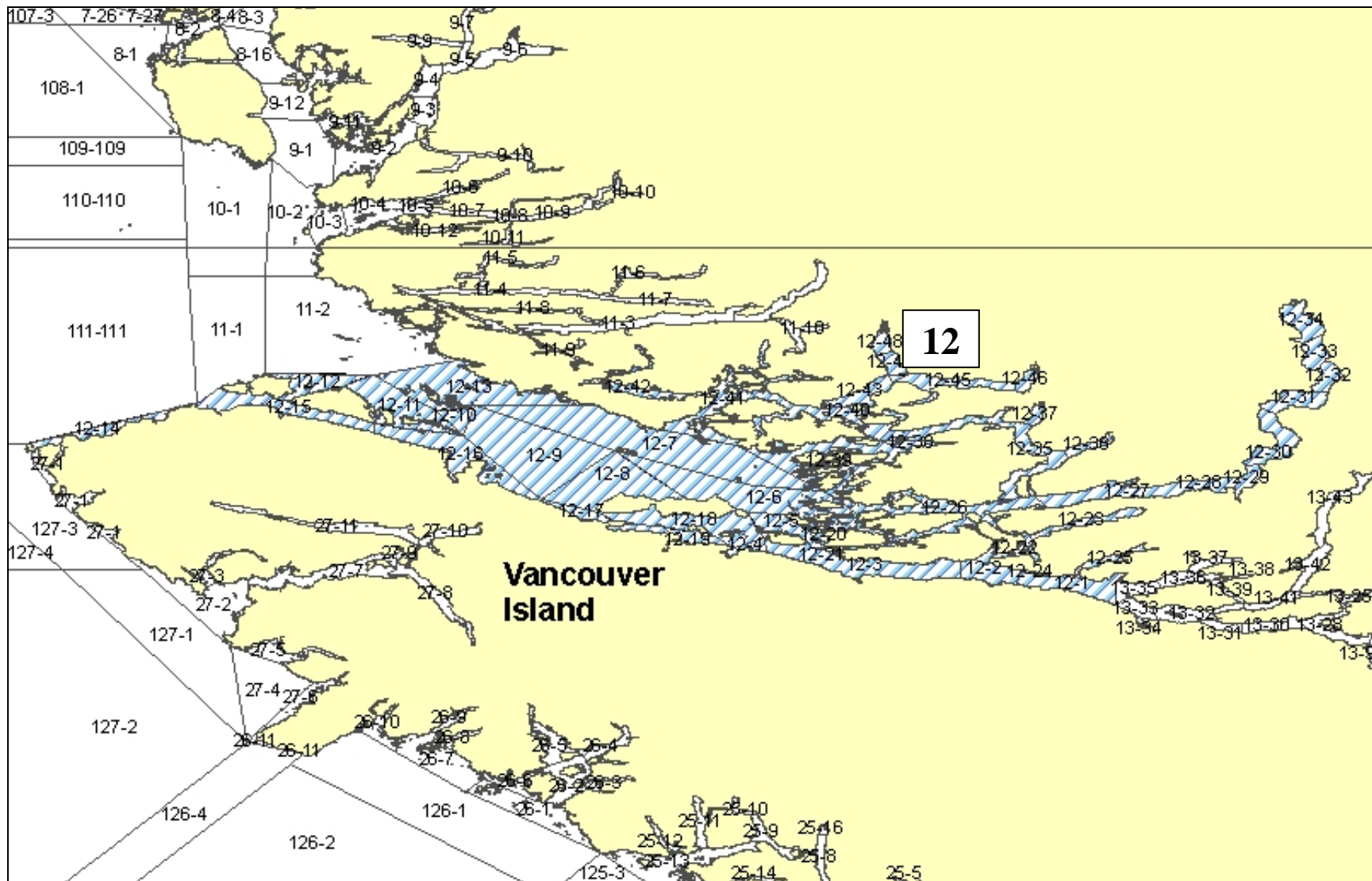


Figure 1: Green Sea Urchin Quota Area 12 (All PFMA 12).

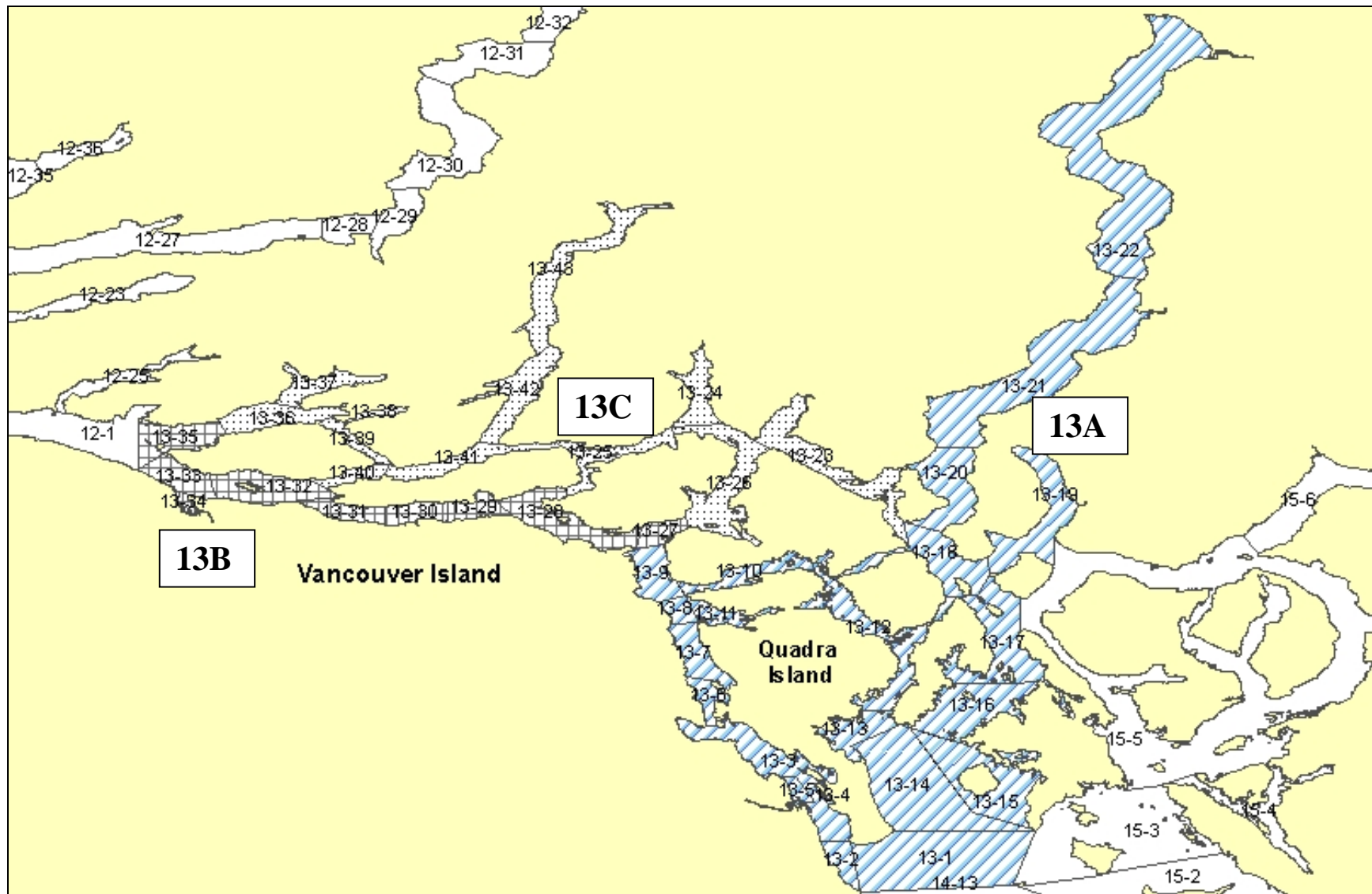


Figure 2: Green Sea Urchin Quota Areas 13A (13-1 to 13-22), 13B (13-27 to 13-35), & 13C (13-23 to 13-26 and 13-36 to 13-43).

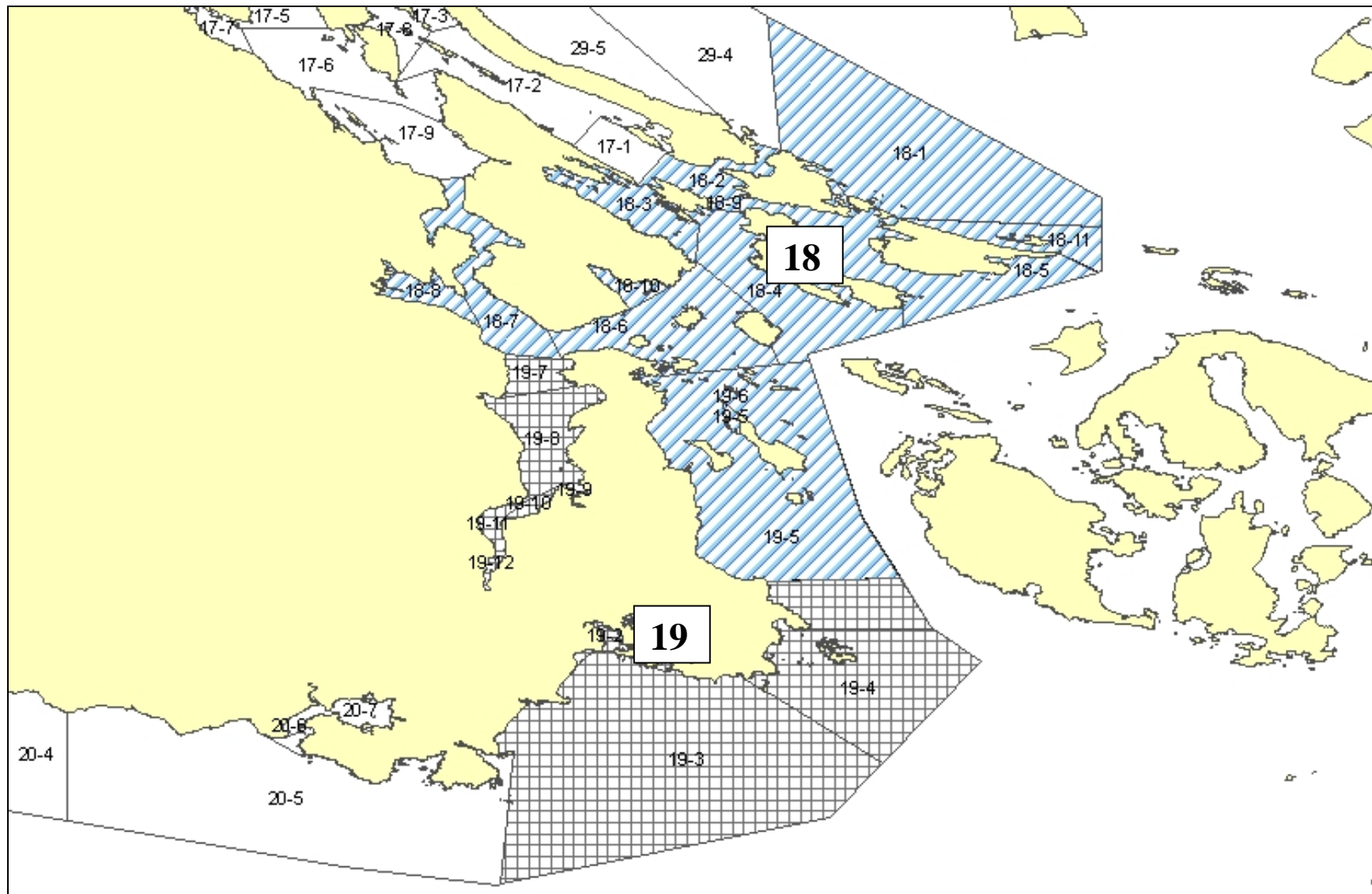


Figure 3: Green Sea Urchin Quota Areas 18 (PFMA 18, subarea 19-6 and that portion of subarea 19-5 north of a line running due east from Cormorant Point) and Quota Area 19 (PFMA 19 except 19-6 and that portion of subarea 19-5 south of a line running due east from Cormorant Point).

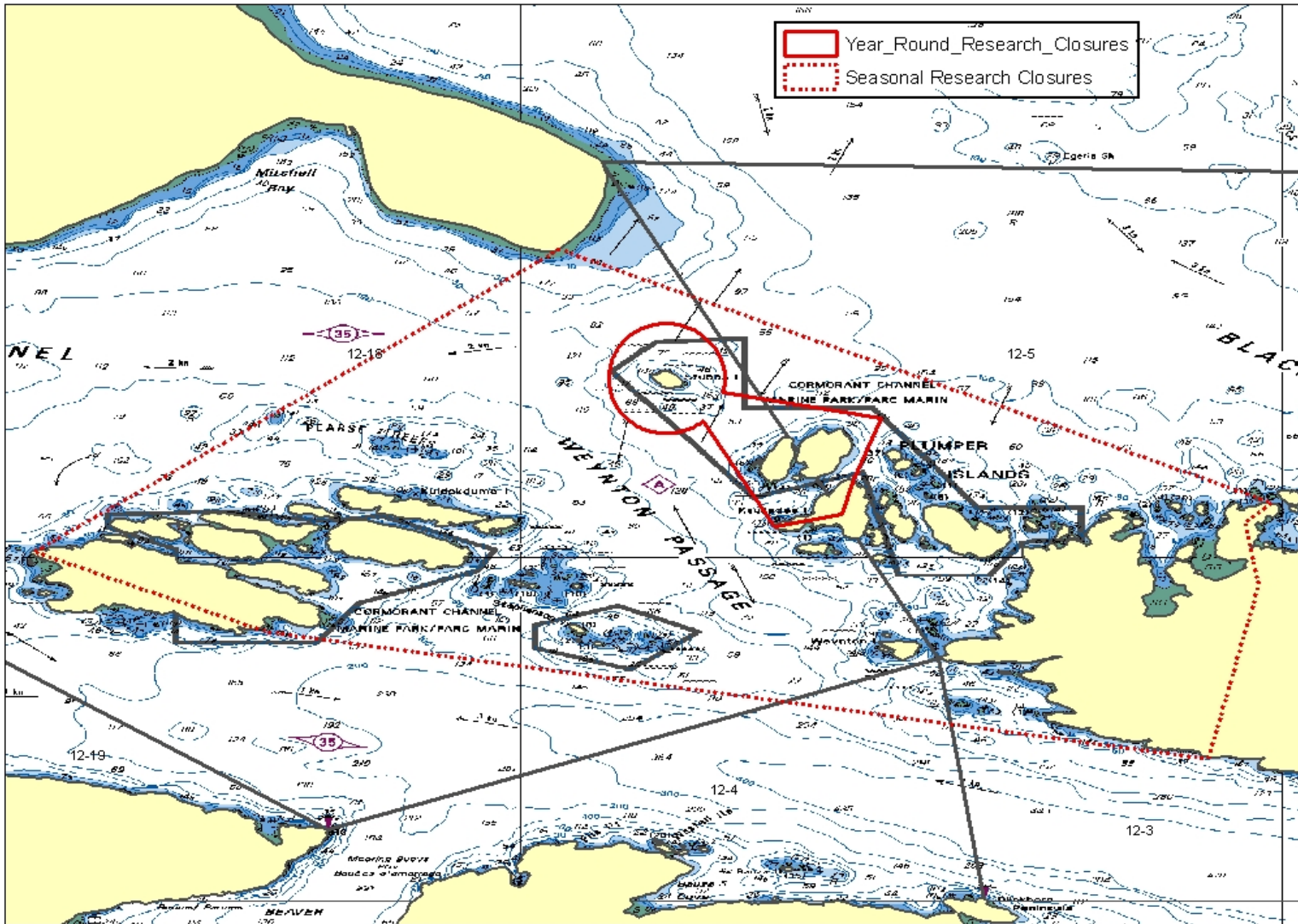


Figure 4: Area 12 Seasonal and Year Round Research Closures.

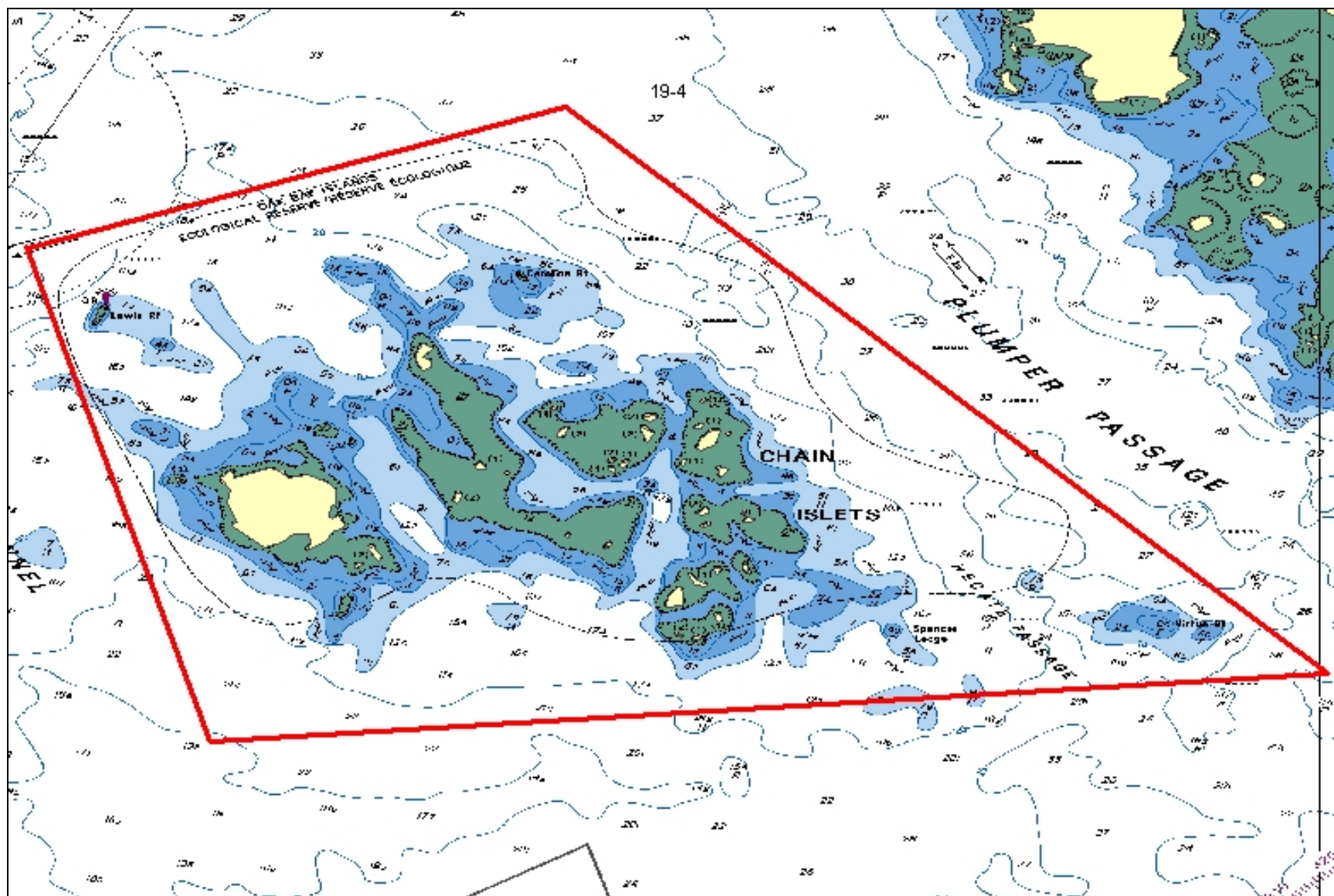


Figure 5: Area 19 Seasonal Research Closure Chain Islets.

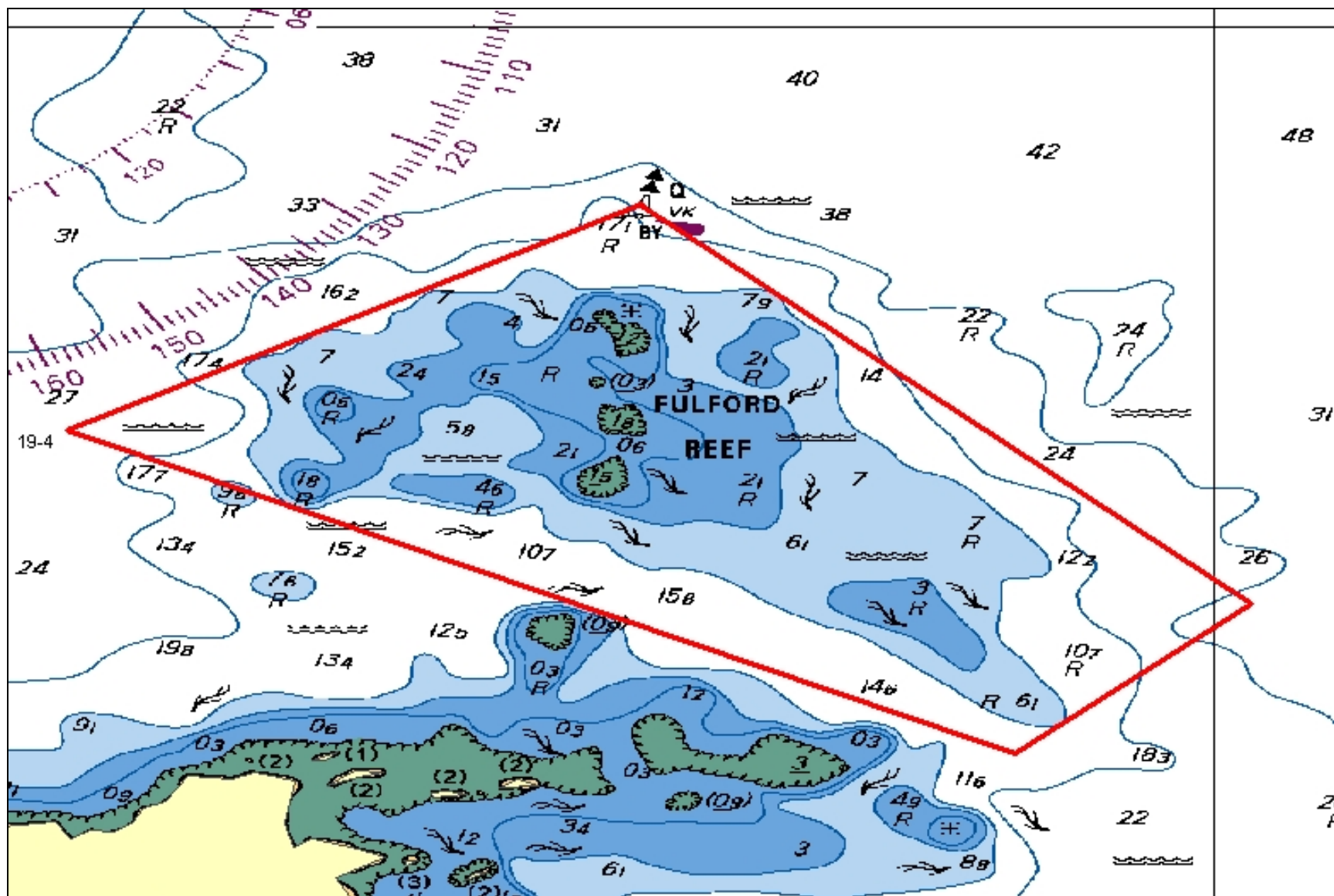


Figure 6: Area 19 Seasonal Research Closure Fulford Reef.

Appendix 9: Example of Green Sea Urchin Commercial Conditions of Licence

This example of conditions of licence is provided for your information only. These conditions of licence are generic and may not be the same as those provided when a licence is issued. The actual conditions of licence will be attached to the licence issued by a Pacific Fishery Licensing Unit.

CONDITIONS OF GREEN SEA URCHIN LICENCE

Licence Period: September 1 to August 31.

Authority

The Department of Fisheries and Oceans has authority to set licence conditions under subsection 22(1) of the *Fishery (General) Regulations* for the proper management and control of fisheries and the conservation and protection of fish.

Persons fishing under authority of this licence may only do so in accordance with the conditions stated below.

Also, it is the responsibility of individual fish harvesters to be informed of, and comply with, the *Fisheries Act* and the regulations made thereunder, in addition to these conditions.

For information on management of the Green Sea Urchin fishery obtain a copy of the current Integrated Fisheries Management Plan for Green Sea Urchin from a Pacific Fishery Licensing Unit Office.

The Management Plan is intended for general information purposes only. Where there is a discrepancy between the Plan and the *Fisheries Act* and regulations or these conditions, the *Fisheries Act* and regulations and these conditions prevail.

Definitions

"Area" and "Subarea" have the same meaning as in the *Pacific Fishery Management Area Regulations, 2007*.

"container" means a mesh pick bag, a mesh transport bag, a plastic tote, or a cage used for the gathering, handling or transportation of Green Sea Urchin.

"Department" means the Department of Fisheries and Oceans.

"discarded" means not placing the Green Sea Urchin in a container or removing a Green Sea Urchin from a container and not validating that Green Sea Urchin.

"harvested" means removing, by any means, Green Sea Urchin from the substrate of the ocean floor.

"landed" or "landing" means the transfer of Green Sea Urchin from a vessel in water to land.

"observer" means an individual who has been designated as an observer by the Regional Director General for Pacific Region pursuant to section 39 of the *Fishery (General) Regulations*.

"Quota Area" means those areas enumerated and described in the current Integrated Fisheries Management Plan for Green Sea Urchin.

"tranship" means the transfer of Green Sea Urchin from a vessel to another vessel.

"validated" means Green Sea Urchin that have been weighed by an observer and the weight entered into the Green Sea Urchin Validation & Harvest Log or an alternative log approved by the Department.

"vessel registration number" or "VRN" means the number assigned to a vessel by the Department at the time the vessel is registered as a fishing vessel.

1. Species of fish permitted to be taken:

Green Sea Urchin (*Strongylocentrotus droebachiensis*)

2. Licence Expiry Date:

This licence expires on August 31.

3. Quantities permitted to be taken:

The maximum quantity of Green Sea Urchin authorized to be taken under this licence is 4139.48 kg (9,126 lb.) of Green Sea Urchin harvested from within the area set out in this licence subject to all applicable regulations.

4. Waters in which fishing is permitted:

Area of fishing is as set out in this licence.

5. Fishing gear permitted to be used:

Hand picking by divers only. Suction devices are not permitted to be used.

6. Fishing multiple Quota Areas:

All Green Sea Urchin caught in a Quota Area shall be landed or transhipped prior to the commencement of fishing in a new Quota Area.

7. The type, size, and condition of containers to hold or transport Green Sea Urchin and the marking of such containers:

(1) All Green Sea Urchin delivered to designated landing ports or transhipped to another vessel licensed for the transportation of fish shall be placed in containers which are labelled. The label must be waterproof and contain the vessel name and vessel registration number.

(2) All "pick bags" or any other type of container containing harvested Green Sea Urchin left unattended in the water shall be labelled. The label must be waterproof and marked with the vessel name and the vessel registration number of the vessel used to harvest that product. Floats attached to containers left unattended in the water shall also be marked with the vessel registration number.

8. Transshipment:

Green Sea Urchin may be transhipped from the licensed vessel to another vessel licensed for the transportation of fish provided the vessel master complies with the following conditions:

- (1) all Green Sea Urchin are in containers and tagged as per section 7;
- (2) the number of containers are recorded in the log;
- (3) the "packer weight" (determined by subtracting the weight of the containers from the weight of the product) is recorded in the log; and
- (4) a copy of the log accompanies the transhipped Green Sea Urchin.

9. Locations permitted for the landing of Green Sea Urchin:

Green Sea Urchin must be landed at one of the following ports:

- (1) South Coast: Port Hardy, Port McNeill, Kelsey Bay, Telegraph Cove, Campbell River, Brown's Bay, Sidney, Sooke, or Victoria.

(2) North Coast: Prince Rupert or Port Edward.

This condition applies to both the licensed vessel and, if the vessel master chooses to tranship his catch to another vessel, to the vessel receiving the Green Sea Urchin.

10. Validation:

(See Explanatory Note after section 14)

(1) All Green Sea Urchin harvested or removed from the sea bed floor under the authority of this licence must be validated at the point and time the fish are landed.

(2) Prior to validation of Green Sea Urchin no person shall:

(a) smash the shells or slit the membranes of the Green Sea Urchin to drain the waters; or

(b) dump, throw overboard, or otherwise discard Green Sea Urchin which have been harvested and retained in accordance with the *Fisheries Act* and the regulations made thereunder.

(3) All weights must be determined using a scale approved by Industry Canada.

(4) The vessel master of the licensed vessel or, if the catch is transhipped to another vessel, the vessel master of that vessel shall provide the observer with a hard copy of the Green Sea Urchin Validation & Harvest Log upon completion of each validation.

(5) The vessel master of the licensed vessel or, if the catch is transhipped to another vessel, the vessel master of that vessel, shall provide to the observer at the point of landing, access to the vessel's fish holds, freezers and other fish storage areas at any time during the landing.

11. Oral Reports:

(1) The vessel master shall, under the circumstances set out in subsections 11(2) to 11(6), report the information set out therein by notifying in person an observer or by telephoning (800) 775-5505.

(2) At least 24 hours before a fishing trip:

(a) vessel name, vessel master's name, and vessel registration number;

(b) species to be fished;

(c) Subarea(s) to be fished;

- (d) anticipated time of arrival at the fishing location; and
- (e) anticipated time that fishing will begin.

(3) Upon failure to arrive at fishing location within 24 hours of time stated in subsection 11(2):

- (a) vessel name and vessel registration number; and
- (b) details of change in fishing plans.

(4) At least 24 hours prior to moving to a new Quota Area:

- (a) vessel name, vessel master's name, and vessel registration number;
- (b) species to be fished;
- (c) Subarea(s) to be fished;
- (d) anticipated time of arrival at the fishing location; and
- (e) anticipated time that fishing will begin.

(5) After a fishing trip:

vessel name, vessel master's name, and vessel registration number;
species fished;
Subarea(s) fished; and
time that fishing stopped.

(6) At least 24 hours prior to landing Green Sea Urchin:

- (a) vessel name, vessel master's name, and vessel registration number;
- (b) species to be landed;
- (c) name of the designated port and location therein where the catch shall be landed;
- (d) anticipated time of landing;
- (e) name of fish processor or buyer that is buying or transporting the catch; and
- (f) if applicable, the method of transporting the catch to a fish processor.

12. Harvest Logs and Chart Data:

(See Explanatory Note after Section 14)

(1) The vessel master must maintain a log of all harvest operations and provide this information in both hard (paper) copy and electronic copy to the Department. The content and format of this log (paper and electronic) must meet the requirements as defined by the Shellfish Data Unit for the current licence year.

(2) The harvest and fishing location information recorded in the log shall be complete and accurate.

(3) The information for each day's harvest operations shall be recorded in the log no later than midnight of that day.

(4) The log must be kept on board the licensed vessel.

(5) The log must be produced for examination on demand of a fishery officer, a fishery guardian, or an observer.

(6) The vessel master must provide a chart record of the locations fished to the Department.

(a) The chart must be marked with:

(i) the vessel registration number,

(ii) the licence tab number, and

(iii) the validation I.D. numbers.

The validation I.D. number is the unique page number assigned to each validation page of the Green Sea Urchin Validation & Harvest Log. If an alternative log is used, the validation I.D. number is the unique page number assigned by the Shellfish Data Unit when the licence holder contacts the Unit to obtain the information necessary to fulfil the log requirements.

(b) Each harvest site must be clearly marked on the chart with dive number, validation I.D. number and the dates that fishing activity occurred at each site. The dive numbers on the chart record must correspond to the dive numbers in the log.

(c) The information for each day's harvest operations shall be recorded on the chart record no later than midnight of that day.

(7) The vessel master must make provisions to have chart information referred to in subsection 12(6) electronically captured into Geographic Information System (GIS) software and forwarded to the Pacific Biological Station, Nanaimo.

(8) The completed log pages (original copy), electronic copy of the log, and the chart record of locations fished, must be forwarded within 28 days following the end of each month in which fishing occurred to:

Fisheries and Oceans Canada
Shellfish Data Unit
Pacific Biological Station
3190 Hammond Bay Road
Nanaimo BC V9T 6N7

Tel: (250) 756-7022 or (250) 756-7306

(9) In the event that a licence holder does not fish during the current fishing season, the licence holder is responsible for submitting a nil report. One page from the harvest logbook identifying the vessel, licence tab number and the year with 'nil' entered in the body of the log and signed by the licence holder constitutes a nil report.

13. Fish Slips:

An accurate written report shall be furnished on a fish slip of all fish caught and retained under the authority of this licence. A report must be made even if the fish are used for bait, personal consumption or disposed of otherwise. The report shall be mailed not later than seven days after the offloading and sent to:

Fisheries and Oceans Canada
Regional Data Unit
200-401 Burrard Street
Vancouver BC V6C 3S4

Fish slip books may be purchased through most Departmental offices.
Phone (604) 666-2716 for more information.

14. All Green Sea Urchin divers shall be in possession of a Workers' Compensation Board Seafood Harvesting Diving Certificate.

Explanatory Note - Harvest Log, Chart Data, and Validation: The Green Sea Urchin Validation & Harvest Log issued by the service provider contracted by the West Coast Green Urchin Association is approved for both form and content by the Shellfish Data Unit. This service provider will provide, for a fee, the logbook, and coding, keypunching, electronic chart data capture and validation services.

Fish harvesters who do not use the logbook and coding, keypunching, and electronic chart data capture services provided by this service provider must contact the Shellfish Data Unit at (250) 756-7306 or (250) 756-7022 in order to obtain the information necessary to fulfil these requirements.

APPENDIX 10: CONTACTS

Observe, Record and Report (Enforcement Line) (800) 465-4336
Fisheries Information and Shellfish Contamination Closure Update (24 Hours) (866) 431-3474
or (for Greater Vancouver) (604) 666-2828

Invertebrate Internet Page

www.pac.dfo-mpo.gc.ca/fm-gp/commercial/shellfish-mollusques/index-eng.htm

Fisheries Management

Regional Resource Manager - Invertebrates	Bryan Rusch	(604) 627-3021
Lead Green Sea Urchin Manager	Erin Wylie	(250) 756-7271
Regional Recreational Fisheries Co-ordinator	Devona Adams	(604) 666-3271

North Coast, Areas 1 through 10	General inquiries	(250) 627-3499
417 2nd Avenue West, Prince Rupert, B.C. V8J 1G8	Fax	(250) 627-3498
Resource Management Biologist	Pauline Ridings	(250) 627-3014
Resource Management - First Nations Fisheries	Karen Kimura-Miller	(250) 627-3437
Resource Manager - Recreational Fisheries	Mark Reagan	(250) 627-3409

South Coast, Areas 11 to 27	General Inquiries	(250) 756-7270
3225 Stephenson Point Rd, Nanaimo, B.C. V9T 1K3	Fax	(250) 756-7162
Resource Management Biologist	Erin Wylie	(250) 756-7271
Resource Manager - First Nations Fisheries	Kevin Conley	(250) 756-7196
Resource Manager - Recreational Fisheries	Brad Beath	(250) 756-7190

Lower Fraser Area, Areas 28 and 29	General Inquiries	(604) 666-8266
Unit 3, 100 Annacis Parkway, Delta, B.C. V3M 6A2	Fax	(604) 666-7112
Resource Management Biologist	Bridget Ennevor	(604) 666-6390
Resource Management - Recreational Fisheries	Debbie Sneddon	(604) 666-8426
Resource Management – First Nations Fisheries	Brian Matts	(604) 666-2096

Conservation and Protection

Enforcement Plan	Stephen Beckman	(250)363-3252
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Science Branch

Pacific Biological Station	Claudia Hand	(250) 756-7139
Hammond Bay Road	Janet Lohead	(250) 756-7354
Nanaimo, B.C. V9T 6N7		

Commercial Licensing

Pacific Fishery Licence Unit	(604) 666-0566
480-555 West Hastings Street	
Vancouver, BC V6B 5G3	

Pacific Fishery Licence Unit (250) 627-3413
417 2nd Avenue West
Prince Rupert, BC V8J 1G8

Pacific Fishery Licence Unit (250) 754-0400
60 Front Street
Nanaimo, BC V9R 5H7

Aquaculture

Shellfish Management Coordinator Kerry Marcus (250) 754-0210

BC Ministry of Environment

Oceans and Marine Fisheries Branch Dennis Chalmers (250) 387-9574

Canadian Food Inspection Agency

Fish Policy Officer Hanna Boehmer (604) 666-3598

WorkSafe BC

Occupational Safety Officer, Victoria Mike Ross (250) 881-3419
Occupational Safety Officer, Terrace Shane Neifer (250) 615-6640
Focus Sector Manager/Fishing, Prince George Bruce Clarke (250) 612-3708

West Coast Green Urchin Association (WCGUA)

President Michael Callow (250) 655-0626

Green Sea Urchin Service Bureau

D&D Pacific Fisheries (604) 886-4819

Appendix 11: Fishing Vessel Safety

Vessel owners and masters have a duty to ensure the safety of their crew and vessel. Adherence to safety regulations and good practices by owners, masters, and crew of fishing vessels will help save lives, prevent vessel damage, and protect the environment. All fishing vessels must be in a seaworthy condition and maintained as required by Transport Canada (TC), WorkSafeBC, and other applicable agencies. Vessels subject to inspection should ensure that the certificate of inspection is valid for the area of intended operation.

In the federal government, responsibility for shipping, navigation, and vessel safety regulations and inspections lies with Transport Canada (TC); emergency response with the Canadian Coast Guard (CCG) and DFO has responsibility for management of the fisheries resources. In B.C., WorkSafeBC also regulates health and safety issues in commercial fishing. This includes requirements to ensure the health and safety of the crew and safe operation of the vessel. DFO (Fisheries and Aquaculture Management (FAM) and CCG) and TC through an MOU have formalized cooperation to establish, maintain, and promote a safety culture within the fishing industry.

Before leaving on a voyage the owner, master or operator must ensure that the fishing vessel is capable of safely making the passage. Critical factors for a safe voyage include the seaworthiness of the vessel, vessel stability, having the required safety equipment in good working order, crew training, and knowledge of current and forecasted weather conditions. As safety requirements and guidelines may change, the vessel owner, crew, and other workers must be aware of the latest legislation, policies, and guidelines prior to each trip.

There are many useful tools available for ensuring a safe voyage. These include:

- Education and Training Programs
- Marine Emergency Duties
- Fish Safe Stability Education
- First Aid
- Radio Operators Course
- Fishing Masters Certificates
- Small Vessel Operators Certificate

Publications:

- Transport Canada Publication TP 10038 '*Small Fishing Vessel Safety Manual*'. The manual can be obtained at Transport Canada Offices from their website at:

www.tc.gc.ca

- Gearing Up for Safety – WorkSafeBC
- Safe At Sea DVD Series – Fish Safe
- Stability Handbook – Fish Safe and Measuring Stability –DVD

For further information see:

www.tc.gc.ca/eng/marine-menu.htm

1. IMPORTANT PRIORITIES FOR VESSEL SAFETY

There are three areas of fishing vessel safety that should be considered a priority. These are: vessel stability, emergency drills, and cold water immersion.

1.1. Fishing Vessel Stability

Vessel stability is paramount for safety. Care must be given to the stowage and securing of all cargo, skiffs, equipment, fuel containers and supplies, and also to correct ballasting. Fish harvesters must be familiar with their vessel's centre of gravity, the effect of liquid free surfaces on stability, loose water, or fish on deck, loading and unloading operations and the vessel's freeboard. Know the limitations of your vessel; if you are unsure contact a reputable naval architect, marine surveyor or the local Transport Canada Marine Safety Office.

Fishing vessel owners are required to develop detailed instructions addressing the limits of stability for each of their vessels. The instructions need to be based on a formal assessment of the vessel by a qualified naval architect and include detailed safe operation documentation kept on board the vessel. Examples of detailed documentation include engine room procedures, maintenance schedules to ensure watertight integrity, and instructions for regular practice of emergency drills.

1.2. Emergency Drill Requirements

The master must establish procedures and assign responsibilities to each crew member for emergencies such as crew member overboard, fire, flooding, abandoning ship, and calling for help.

The Crewing Regulation under the Canada Shipping Act (CSA) states that as of July 30th 2002 all seafarers, including fish harvesters, must have a Basic Safety Certificate (MED A1 or A3 depending upon vessel and operating waters) within 6 months of becoming a crewmember, regardless of time at sea. The MED A1 is a three day course, and must be taken by all crew regardless of duty station.

MED provides a basic understanding of the hazards associated with the marine environment; the prevention of shipboard incidents; raising and reacting to alarms; fire and abandonment situations; and the skills necessary for survival and rescue.

1.3. Cold Water Immersion

Drowning is the number one cause of death in B.C.'s fishing industry. Cold water is defined as water below 25 degrees Celsius, but the greatest effects occur below 15 degrees. BC waters are usually below 15 degrees. The effects of cold water on the body occur in four stages: cold shock, swimming failure, hypothermia, and post-rescue collapse. Know what to do to prevent you or your crew from falling into the water and what to do if that occurs. More information is available in the WorkSafe Bulletin *Cold Water Immersion* (available from the WorkSafeBC website).

1.4. Other Issues

1.4.1. Weather

Vessel owners and masters are reminded of the importance of paying close attention to current weather trends and forecasts during the voyage. Marine weather information and forecasts can be obtained on VHF channels 21B, Wx1, Wx2, Wx3, or Wx4. Weather information is also available from Environment Canada website at:

www.weatheroffice.gc.ca/marine/index_e.html

1.4.2. Emergency Radio Procedures

Vessel owners and masters should ensure that all crew are able to activate the Search and Rescue (SAR) system early rather than later by contacting the Canadian Coast Guard (CCG). It is strongly recommended that all fish harvesters carry a registered 406 MHz Emergency Position Indicating Radio Beacon (EPIRB). These beacons should be registered with the National Search and Rescue secretariat. When activated, an EPIRB transmits a distress call that is picked up or relayed by satellites and transmitted via land earth stations to the Joint Rescue Co-ordination Centre (JRCC), which will task and co-ordinate rescue resources.

Fish harvesters should monitor VHF channel 16 or MF 2182 Khz and make themselves and their crews familiar with other radio frequencies. All crew should know how to make a distress call and should obtain their restricted operator certificate from Industry Canada. However, whenever possible, masters should contact the nearest Canadian Coast Guard (CCG) Marine Communications and Traffic Services (MCTS) station (on VHF channel 16 or MF 2182 kHz) prior to a distress situation developing. Correct radio procedures are important for communications in an emergency. Incorrect or misunderstood communications may hinder a rescue response.

Since August 1, 2003 all commercial vessels greater than 20 metres in length are required to carry a Class D VHF Digital Selective Calling (DSC) radio. A registered DSC VHF radio has the capability to alert other DSC equipped vessels in your immediate area and MCTS that your vessel is in distress. Masters should be aware that they should register their DSC radios with Industry Canada to obtain a Marine Mobile Services Identity (MMSI) number or the automatic distress calling feature of the radio may not work. For further information see the Industry Canada site at:

www.ic.gc.ca/eic/site/ic1.nsf/eng/h_00014.html

A DSC radio that is connected to a GPS unit will also automatically include your vessel's current position in the distress message. More detailed information on MCTS and DSC can be obtained by contacting a local Coast Guard MCTS centre (located in Vancouver, Victoria, Prince Rupert, Comox, and Tofino) or from the Coast Guard website:

www.pacific.ccg-gcc.gc.ca

1.4.3. Collision Regulations

Fish harvesters must be knowledgeable of the *Collision Regulations* and the responsibilities between vessels where risk of collision exists. Navigation lights must be kept in good working order and must be displayed from sunset to sunrise and during all times of restricted visibility. To help reduce the potential for collision or close quarters situations which may

also result in the loss of fishing gear, fish harvesters are encouraged to monitor the appropriate local Vessel Traffic Services (VTS) VHF channel, when travelling or fishing near shipping lanes or other areas frequented by large commercial vessels. Vessels required to participate in VTS include:

- a) every ship twenty metres or more in length,
- b) every ship engaged in towing or pushing any vessel or object, other than fishing gear,
- c) where the combined length of the ship and any vessel or object towed or pushed by the ship is forty five metres or more in length; or
- d) where the length of the vessel or object being towed or pushed by the ship is twenty metres or more in length.

Exceptions include:

- a) a ship towing or pushing inside a log booming ground,
- b) a pleasure yacht *less than* 30 metres in length, and
- c) a fishing vessel that is *less than* 24 metres in length and not *more than* 150 tons gross.

More detailed information on VTS can be obtained by calling (604) 775-8862 or from Coast Guard website:

<http://www.ccg-gcc.gc.ca/e0003901>

1.4.4. Buddy System

Fish harvesters are encouraged to use the buddy system when transiting, and fishing as this allows for the ability to provide mutual aid. An important trip consideration is the use of a sail plan which includes the particulars of the vessel, crew, and voyage. The sail plan should be left with a responsible person on shore or filed with the local MCTS. After leaving port the fish harvester should contact the holder of the sail plan daily or as per another schedule. The sail plan should ensure notification to JRCC when communication is not maintained which might indicate your vessel is in distress. Be sure to cancel the sail plan upon completion of the voyage.

2. WORKSAFEBC

Commercial fishing is legislated by the requirements for diving, fishing and other marine operations found in Part 24 of the Occupational Health and Safety Regulation (OHSR). Many general hazard sections of the OHSR also apply. For example, Part 8: Personal Protective Clothing and Equipment addresses issues related to safety headgear, safety foot wear and personal floatation devices. Part 15 addresses issues on rigging, Part 5 addresses issues of exposure to chemical and biological substances, and Part 3 addresses training of young and new workers, first aid, and accident investigation issues. Part 3 of the Workers Compensation Act (WCA) defines the roles and responsibilities of owners, employers, supervisors, and workers.

The regulations do change and are updated from time to time, so check with WorkSafeBC for up-to-date versions. The OHSR and the WCA are available from the Provincial Crown Printers or by visiting the WorkSafeBC website:

www.worksafebc.com

For further information, contact an Occupational Safety Officer:

Shane Neifer	Terrace	(250) 615-6640
Pat Olsen	Richmond	(604) 244-6477
Mark Lunny	Courtney	(250) 334-8732

or the Focus Sector Manager for fishing:

Bruce Clarke	Prince George	(250) 612-3708
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For information on projects related to commercial fishing contact Ellen Hanson (604) 233-4008 or Toll Free 1-888 621-7233 ext. 4008 or by email: Ellen.Hanson@worksafebc.com.

3. FISH SAFE BC

Fish Safe is coordinated by Gina Johansen and directed by the Fish Safe Advisory Committee (membership is open to all interested in improving safety on board). The advisory committee meets quarterly to discuss safety issues and give direction to Fish Safe in the development of education and tools for fish harvesters.

Vessel masters and crew are encouraged to become more knowledgeable regarding vessel stability. Fish Safe BC developed the Fish Safe Stability Education Course, which is available to all fish harvesters who want to improve their understanding of stability and find practical application to their vessel's operation.

Fish Safe also works closely with WorkSafeBC to improve the fishing claims process. For further information:

Gina Johansen, Safety Coordinator	Phone: 604-261-9700
Fish Safe BC	Email: fishsafe@telus.net
2-11771 Horseshoe Way	Website: www.fishsafebc.com
Richmond, BC V7A 4V4	

APPENDIX 12: CONSULTATION

GREEN SEA URCHIN SECTORAL COMMITTEE AND RESEARCH SUBCOMMITTEE

A consultative process exists for the Green Sea Urchin fishery and is a major part of the planning for the fishery. The primary consultative body for Green Sea Urchins is the Green Sea Urchin Sectoral Committee. This committee invites representation from Fisheries and Oceans Canada, commercial vessel owners, processors, First Nations, BC Ministry of Agriculture and Lands and recreational fish harvesters. Members of the West Coast Green Urchin Association (WCGUA) represent commercial fish harvesters on this committee.

The Sectoral Committee meets annually in the spring to review and provide advice to the Department regarding management issues pertaining to the fishery and on the proposed IFMP. The Sectoral Committee and Research Subcommittee terms of reference and meeting calendar are available from the Resource Managers listed in Contacts.

The draft IFMP incorporates any new science advice and all practical advice on quota options, and is made available to all interested parties: WCGUA, First Nations, recreational organizations, DFO (Science Branch, Conservation and Protection, Commercial Licensing, the Oceans Directorate, the Aquaculture Division, Treaty and Aboriginal Policy Directorate, Policy Branch), and the Province (Ministry of Environment or MOE) for review and comment.

A multi-sector advisory committee (Green Sea Urchin Sectoral Committee) meeting is held. Discussion arising from this meeting may result in some final changes to the plan, which then progresses through an internal DFO approval process.