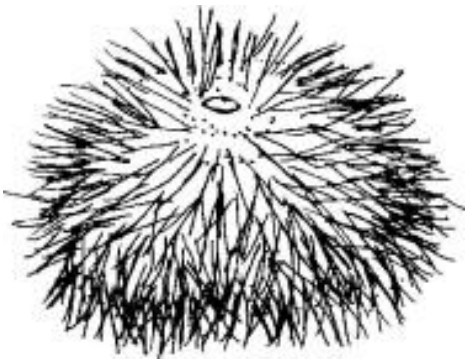
PACIFIC REGION

INTEGRATED FISHERIES MANAGEMENT PLAN

GREEN SEA URCHIN

SEPTEMBER 1, 2024 TO AUGUST 31, 2025



Green Sea Urchin: Strongylocentrotus droebachiensis

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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 2024/25 Pacific Region Green Sea Urchin Integrated Fisheries Management Plan (IFMP) encompasses the period of September 1, 2024 to August 31, 2025.

The 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: Green Sea Urchin (dfo-mpo.gc.ca)

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

http://www.isdm-gdsi.gc.ca/csas-sccs/applications/Publications/index-eng.asp

1.2. History

The Green Sea Urchin is one of three sea urchin species that have been fished in B.C. waters. Green Sea Urchins are important to many coastal First Nations, who harvest them for food, social and ceremonial purposes. Recreational harvest is believed to be minimal. Red and Green Sea Urchins are currently fished commercially under authority of a limited category "Z" licence, category "ZC" or "FZC" for reds and category "ZA" or "FZA" 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 declined through the early 2000 to a low of 13 tonnes in the 2006/07 season because of increased competition in the markets, primarily from Russia. However, since then, there has been a slow steady increase in landings to the present. 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 to accessible south coast areas.

The Green Sea Urchin fishery is managed by a minimum size limit of 55 mm test diameter, 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 steadily increased until 2003/2004 where it has leveled off and remained fairly constant. The CPUE is currently higher than in 1987 when the fishery first began.

Beginning in 1995, a program of individual quotas (IQs) 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 IQs were again applied to south coast areas. However, north coast areas were opened only under an exploratory protocol. The North Coast is currently not opened for harvest and has not been opened since 2003, see Appendix 1.

1.3. Type of Fishery and Participants

1.3.1. First Nations

Each year Fisheries and Oceans Canada (DFO) provides opportunities to First Nations for Food, Social and Ceremonial (FSC) purposes (or domestic purposes for First Nations with modern treaties). First Nations harvest for food, social and ceremonial (FSC) purposes may occur coast-wide where authorized by a communal licence or, under treaty, a harvest document. Green Sea Urchins are important to First Nations, who harvest them for food, social and ceremonial purposes. The number of First Nations harvesters for Green Sea Urchins is unknown.

1.3.2. Recreational

A recreational fishery may occur coast wide. A British Columbia Tidal Waters Sport Fishing Licence is required for the recreational harvest of any species of fish, including shellfish. Licences may be purchased online via the National Recreational Licensing System: http://www.pac.dfo-mpo.gc.ca/fm-gp/rec/licence-permis/application-eng.html.

Alternatively licences may be purchased over the counter at Independent Access Providers (IAPs) in many areas (note that the IAP may charge an additional service fee).

The Tidal Waters licence includes access to numerous species, including Green Sea Urchin. The number of recreational harvesters fishing for Green Sea Urchins is minimal, based on information from the Sport Fishing Advisory Board (SFAB) and data from the IREC program. The majority of the Urchin stock is in subtidal depths and inaccessible without the use of SCUBA diving gear. A small portion of the Sea Urchin stock may be accessible in some areas at extremely low tides.

1.3.3. Commercial

Green Sea Urchins are harvested commercially by divers. There are 49 commercial licences. Of these, one is designated communal commercial (FZA) licence for First Nations participation in the commercial fishery. It is common practice within the industry for vessels to stack multiple licence eligibilities in order to make fishing more economical. A typical crew on a Sea Urchin vessel consists of a vessel master and one or two crew members. One crew member will act as a dive tender while the others dive to harvest.

1.3.4. Aquaculture

Currently there is little interest in Green Sea Urchin aquaculture. See Appendix 5 for more information.

1.4. Location of Fishery

1.4.1. First Nations

First Nations' communal licences and harvest documents identify the location where First Nations may fish for food, social and ceremonial (FSC) harvest. Harvest areas are generally located within First Nation traditional territories. See Appendix 3 for more information.

1.4.2. Recreational

Recreational harvest may occur coast-wide, where appropriately licensed. More information can be found in Appendix 4.

1.4.3. Commercial

With the exception of permanent closures for various purposes (Appendix 6, Section 6), the current commercial fishery occurs only on East Coast of 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, subject to discussion. An independent stock assessment survey of the area may be required. Fish harvesters will be required to fund any stock assessment surveys.

1.5. Fishery Characteristics

1.5.1. First Nations

Fisheries & Oceans Canada (DFO) remains committed to respecting First Nations' Aboriginal right to fish for food, social and ceremonial (FSC) purposes, or domestic purposes under Treaty which has priority – after conservation – over other uses of the resource.

First Nations' fishing for food, social and ceremonial (FSC) purposes are the first priority after conservation and is open coast-wide throughout the year. First Nations' fishing effort for FSC domestic purposes has not been limited by catch quantity, except in those Nations where the Council or fisheries program has established their own catch limits for band members, or where allocated under treaty. While Green Sea urchins were not allocated under the Tla'amin, Maa-nulth, Tsawwassen or Nisga'a treaties, harvesting for domestic (FSC) purposes is permitted.

Commitment to Reconciliation:

DFO is committed to the recognition and implementation of Indigenous and treaty rights related to fisheries, oceans, aquatic habitat, and marine waterways in a manner consistent with section 35 of the *Constitution Act, 1982*, the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), the United Nations Declaration on the Rights of Indigenous Peoples Act (UNDA), the UNDA Action Plan 2023-2028, and the federal Principles Respecting the Government of Canada's Relationship with Indigenous Peoples. DFO-CCG Reconciliation Strategy provides a guidance document to better understand why and how reconciliation informs the work of the Department.

For further details on the United Nations Declaration on the Rights of Indigenous Peoples see https://www.justice.gc.ca/eng/declaration/index.html

For further details on the United Nations Declaration on the Rights of Indigenous Peoples Act see https://laws-lois.justice.gc.ca/eng/acts/u-2.2/

For further details on the UNDA Action Plan 2023-2028 see: https://justice.gc.ca/eng/declaration/ap-pa/index.htmlv

For further details on the Principles Respecting the Government of Canada's Relationship with Indigenous peoples see https://www.justice.gc.ca/eng/csj-sjc/principles-principes.html

DFO's Reconciliation Strategy can be found at https://www.dfo-mpo.gc.ca/fisheries-peches/aboriginal-autochtones/reconciliation-eng.html

For further details on reconciliation in British Columbia and Yukon, refer to https://www.pac.dfo-mpo.gc.ca/abor-autoc/reconciliation-pacific-pacifique-eng.html

Information on Indigenous fisheries and reconciliation is available at: http://www.pac.dfo-mpo.gc.ca/abor-autoc/index-eng.html

Information on the Government of Canada's work to advance reconciliation can be found here: https://www.rcaanc-cirnac.gc.ca/eng/1400782178444/1529183710887

Fish and marine resources are central to the culture, society, and well-being of First Nations and provide a critical connection to language, traditional knowledge, economies and health of communities.

FSC Fisheries:

Fisheries & Oceans Canada (DFO) remains committed to respecting First Nations' Aboriginal right to fish for food, social and ceremonial (FSC) purposes, or domestic purposes under Treaty which has priority – after conservation – over other uses of the resource.

Section 35(1) of the *Constitution Act* recognizes and affirms the existing Aboriginal and Treaty rights of the Aboriginal peoples in Canada. However, it does not specify the nature or content of the rights. In 1990, the Supreme Court of Canada issued a landmark ruling in the Sparrow decision, which found that the Musqueam First Nation has an Aboriginal right to fish for food, social and ceremonial (FSC) purposes. The Supreme Court found that where an Aboriginal group has a right to fish for FSC purposes, it takes priority after conservation over other uses of the resource. The Supreme Court has also indicated the duty to consult with Aboriginal peoples when their fishing rights might be affected.

The Aboriginal Fisheries Strategy (AFS) was implemented in 1992 to address several objectives related to First Nations and their access to the resource. These included:

- Improving relations with First Nations
- Providing a framework for the management of the First Nations fishery in a manner that was consistent with the Supreme Court of Canada's 1990 Sparrow decision
- Greater involvement of First Nations in the management of fisheries
- Increased participation in commercial fisheries (Allocation Transfer Program (ATP))

AFS continues to be one of the principal mechanisms – in addition to Treaties and reconciliation agreements - to support the development of relationships with First Nations, including the consultation, planning and implementation of fisheries, and the development of capacity to undertake fisheries management, stock assessment, enhancement and habitat protection programs.

Five Nations Right-Based Sale Fishery

Five Nuu-chah-nulth First Nations located on the west coast of Vancouver Island - Ahousaht, Ehattesaht, Hesquiaht, Mowachaht/Muchalaht, and Tla-o-qui-aht (the Five Nations) – have aboriginal rights to fish for any species, with the exception of Geoduck, within their court-defined Fishing Territories and to sell that fish.

Since 2019, DFO has released an annual Five Nations Multi-Species Fishery Management Plan (FMP). The FMP provides for a right-based multi-species sale fishery that DFO considers to accommodate the Five Nations' Aboriginal commercial fishing rights. The FMP outlines the Five Nations' fishing opportunities for salmon, groundfish, crab, prawn, Sea Cucumber and Gooseneck Barnacle and the fishery management regime.

The 2023/24 FMP is the fifth Multi-Species FMP developed by DFO since the 2018 BC Supreme Court Order and integrates changes following the 2021 BC Court of Appeal decision. DFO may make further changes in-season and amend the FMP as needed. The 2023/24 FMP has been extended to March 31, 2025 while the Government of Canada and the Five Nations complete negotiations for an Incremental Reconciliation Agreement for Fishery Resources.

DFO and the Five Nations will continue to work together to identify opportunities to harvest additional species and expand the multi-species sale fishery in future years. These opportunities will be developed, where possible, based on other access that DFO provides the Five Nations outside the FMP.

A PDF version of the 2023/24 FMP is available here: https://waves-vagues.dfo-mpo.gc.ca/library-bibliotheque/41096605.pdf. The extended 2023/24 FMP is now available on the Federal Science Library at: https://waves-vagues.dfo-mpo.gc.ca/library-bibliotheque/41236828.pdf

Treaties and Reconciliation Agreements

Treaties and Self Government Agreements

There are four modern treaties in British Columbia, which all have fisheries chapters: Nisga'a Final Agreement, Tsawwassen First Nation Final Agreement (TFA), Maa-nulth First Nations Final Agreement (MNA), and Tla'amin (Sliammon) Nation Final Agreement. Through these treaties, Nations work with DFO to manage treaty fisheries on an annual basis. There are also historic treaties in British Columbia (Douglas Treaties and Treaty 8). For a detailed list of treaties in BC and Yukon, please see the internet at https://www.pac.dfo-mpo.gc.ca/abor-autoc/treaty-traites-eng.html.

Eleven of the Fourteen Yukon First Nations have Final and Self-Government Agreements derived from the Umbrella Final Agreement (Champagne and Aishihik First Nations, First Nation of Na-cho Nyäk Dun, Teslin Tlingit Council, Vuntut Gwitchin First Nation, Little Salmon/Carmacks First Nation, Selkirk First Nation, Tr'ondëk Hwëch'in, Ta'an Kwäch'än Council, Kluane First Nation, Kwanlin Dün First Nation, Carcross/Tagish First Nation). There are also two Transboundary treaties: the Gwich'in and Inuvialuit of the Northwest Territories have land claim agreements that identify their land and rights in Yukon. Many of these treaties have fisheries provisions.

Fisheries chapters in modern treaties articulate a treaty fishing right for domestic purposes that is protected under Section 35 of the *Constitution Act*, 1982. In addition, some modern treaties contain provisions that enable those Treaty First Nations to make laws relating to certain internal aspects of their fisheries. Negotiated through a side agreement, some modern treaty First Nations have commercial access through a Harvest Agreement outside of the constitutionally protected treaty.

Reconciliation Agreements

In addition to negotiating treaties, the Government of Canada and Indigenous peoples can also negotiate Recognition of Indigenous Rights and Self-Determination (RIRSD) agreements, to explore new ways of working together to advance the recognition of Indigenous rights and self-determination. These agreements are led by Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC). DFO can also negotiate Fisheries Resources Reconciliation Agreements directly with First Nations to enhance First Nations and DFO collaborative governance and management on fisheries, marine and aquatic matters.

Reconciliation agreements work within the legislative framework of the *Fisheries Act*. The Act provides the Minister of Fisheries, Oceans and the Canadian Coast Guard with the legislative authority for the proper management and control of the fisheries, the conservation and protection of fish, and regulation of the fishery.

Since 2019, the Government of Canada entered into several framework agreements with First Nations that lay the foundation for incremental development and implementation of new arrangements for collaborative governance on fisheries and marine matters. A 'framework agreement' sets out the subject matter for negotiation and describes how negotiations will proceed towards a final agreement. A final reconciliation agreement includes substantive commitments the Parties have agreed to implementing and governs the relationship between the Parties for its term of the agreement.

See the BC Treaty Commission at https://www.bctreaty.ca/index.php and CIRNAC for more information on current treaty tables at https://www.rcaanc-cirnac.gc.ca/eng/1100100028574/1529354437231 and for current RIRSD tables at https://www.rcaanc-cirnac.gc.ca/eng/1511969222951/1529103469169.

Framework Agreements:

- *GayGahlda "Changing Tide" Framework Agreement* between Haida and Canada
- *Reconciliation Framework Agreement for Fisheries Resources* between A-Tlegay Member Nations (We Wai Kai Nation, Wei Wai Kum First Nation, Kwiakah First Nation, Tlowitsis Nation, and K'ómoks First Nation) and Canada

Reconciliation Agreements:

- *Haíłcístut Incremental House Post Agreement* between Heiltsuk and Canada
- *Coastal First Nations Fisheries Resource Reconciliation Agreement* between Canada and Metlakatla, Gitxaala, Gitga'at, Kitasoo/Xai-Xais, Nuxalk, Heiltsuk, Wuikinuxv, and Haida Nations
- *Gwet'sen Nilt'I Pathway Agreement* between Tŝilhqot'in, Canada and BC
- *Burrard Inlet Environmental Science and Stewardship Agreement* between Tsleil-Waututh Nation and Canada
- *Fraser Salmon Collaborative Management Agreement* between the Fraser Salmon Management Council, consisting of 76 First Nations, and Canada

- *Incremental Reconciliation Agreement for Fishery Resources* between Canada and the Five Nu-cha-nulth Nations (Ahousaht, Ehattesaht, Hesquiaht, Mowchat/Muchalaht, Tla-o-qui-aht Nations)

As DFO and First Nations develop and implement new fisheries and collaborative governance arrangements, DFO works with these Nations to engage neighbouring First Nations and stakeholders (e.g., commercial and recreational sectors).

Indigenous Community Based Fisheries

As outlined in the DFO-Coast Guard Reconciliation Strategy (https://www.dfo-mpo.gc.ca/fisheries-peches/aboriginal-autochtones/reconciliation-eng.html), the Department is committed to reconciliation with First Nations through strengthened Indigenous-Crown relationships, recognizing self-determination and reducing socio-economic gaps. In support of these objectives, DFO and several First Nations have finalized, or are negotiating, reconciliation agreements that include provisions for Community-Based Fisheries.

Community-Based Fisheries (CBFs), including Community Based Economic Fisheries (CBEFs), are collaboratively-managed (by DFO and First Nations) sale fisheries that are designed to enable enhanced community participation by supporting First Nations to fish existing commercial fishing access according to a set of negotiated flexibilities. CBFs will have a defined area and will be characterized by fishery management flexibilities that are consistent with community objectives of enhanced participation and self-determination in fisheries, and will be designed and implemented to ensure conservation, sustainable use and orderly fishery management.

As provided for in the Fisheries Resources Reconciliation Agreement with the Coastal First Nations, several member First Nations are working with DFO to pilot CBF fisheries in 2024. Additional information is available here: Coastal First Nations and the DFO internet: Fisheries Resources Reconciliation Agreement (FRRA)

1.5.2. Recreational

The recreational fishery is open year-round (except for areas closed to fishing) and is an open entry fishery with a daily bag limit, two-day possession limit and gear limits. The recreational catch is limited to 12 per day (all urchin species combined). There is no size limit for recreational harvesters and the type of gear permitted is limited to hand picking only.

1.5.3. Commercial

The commercial licence year is from September 1 to August 31 of the following year. The fishery may open and close during that timeframe based on market demand and completion of area quotas. The majority of 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 Quotas (IQ). All commercial landings are tracked using a Dockside Monitoring Program (DMP). Other management measures include limited entry licensing, a minimum size limit and area quotas.

1.6. Governance

The Green Sea Urchin fishery is governed by the *Fisheries Act* (R.S., 1985, c. F-14) and regulations made thereunder, including the *Fishery (General) Regulations* (e.g. conditions of licence), the *Pacific Fishery Regulations* (e.g. open times), the *British Columbia Sport Fishing*

Regulations, the *Aboriginal Communal Fishing Licences Regulations*, *Marine Mammal Regulations* and the *Pacific Aquaculture Regulations*. Areas and Subareas are described in the *Pacific Fishery Management Area Regulations*.

Marine Protected Areas (MPAs) may be established under the *Oceans Act* (1996, c. 31). National Marine Conservation Areas may be established under the *Canada National Marine Conservation Areas Act* (2002, c. 18). Marine National Wildlife Areas may be established under the *Canada Wildlife Act* (1985, c. W-9).

Species listed as extirpated, endangered, threatened or special concern are governed by the *Species At Risk Act* (2002, c. 29) (SARA) which has implications for the management of fisheries that impact listed species. In addition to prohibitions under the *Fisheries Act*, it is illegal under the SARA to kill, harm, harass, capture, take, possess, collect, buy, sell or trade any listed endangered or threatened animal or any part or derivative of an individual.

These documents are available on the internet at: https://www.dfo-mpo.gc.ca/acts-lois/index-eng.htm

More information on the SARA is available at: https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry.html

Scientific advice for this fishery is peer-reviewed primarily through a committee called the Canadian Science Advisory Secretariat (CSAS). Information about the CSAS and publications are available at: http://www.dfo-mpo.gc.ca/csas-sccs/index-eng.htm

1.7. Consultation

A consultative process exists for the Green Sea Urchin fishery and is a major part of the planning for the fishery. The primary consultative process is the Urchin Sectoral Committee. This committee invites representation from Fisheries and Oceans Canada, commercial vessel owners, processors, First Nations, BC Ministry of Land Water and Resource Stewardship and recreational fish harvesters. Members of the Pacific Urchin Harvesters' Association (PUHA) represent commercial fish harvesters on this committee.

The Sectoral Committee typically meets in the spring prior to the new Integrated Fisheries Management Plan (IFMP) 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.

Bilateral meetings with First Nations including through Treaty processes and Reconciliation Agreements are also part of the consultation process.

The draft IFMP incorporates any new science advice and all practical advice on quota options, and is made available to all interested parties: PUHA, 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.

1.8. Approval Process

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

2. STOCK ASSESSMENT AND SCIENCE

2.1. Biological Synopsis

Green Sea Urchins are a benthic invertebrate with a wide geographic distribution, occurring in cool temperate circumpolar waters of the Atlantic and Pacific oceans. In the Pacific, they occur from northern Washington State, through the Aleutian Islands, Alaska, and west to the Korean Peninsula, Kamchatka, Russia and Hokkaido, Japan. Green Sea Urchins occur intertidally and subtidally to depths of over 140 metres. Preferred habitat is rocky, gravel or shell substrates. Kelp and marine algae are their principal food, and Green Sea Urchins are an important food source for sea stars (especially the sunflower sea star *Pycnopodia helianthoides*), crabs, large fish (including wolf eels *Anarrhichthys ocellatus*), and sea otters (*Enhydra lutris).*

Green Sea Urchins have separate sexes and are broadcast spawners. Spawning is seasonal and varies by region, occurring from February to March in BC. The larval period can last from 7 to 22 weeks. In southern BC, Green Sea Urchins reach sexual maturity at a test diameter of about 25 mm (DFO, 2021) and the minimum legal size is 55 mm, which in Alaska correspond to 2-3 year olds and 4 year olds, respectively (Munk 1992). Growth is highly variable and is dependent on food supply and environmental conditions.

2.2. Ecosystem Interactions

Kelp forests are some 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 Sea 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.

Sea Otters have been expanding throughout portions of BC. Sea Otters are known predators of Red and Green Sea urchins and other invertebrates. The commercial Green Sea Urchin fishery occurs in areas mostly void of sea otters. Expansions into some of these areas is being observed and decreases to these stocks is possible. However, the true impact is largely unknown at this time.

2.3. Stock Assessment

The Science Branch of Fisheries and Oceans Canada and the Pacific Urchin Harvesters Association (PUHA) 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 report of the survey results. Then together, the Department and the PUHA, 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 density 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) and DFO (2014) for survey methodology details.

Stock assessments of Green Sea Urchins are generally performed every three years and 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, DFO 2014, DFO 2016, DFO 2018). The model uses median commercial catch per unit of effort (CPUE) for each fishing season for each of the two main harvest areas: Northern Vancouver Island and Southern Vancouver Island. 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 density estimates from index sites, calculated from fishery-independent surveys. The Bayesian model provides the estimated Maximum Sustainable Yield (MSY) posterior distributions, and a probability of reaching the MSY by fishing a proportion of the MSY.

A table of harvest options is produced for each of the two main harvest areas. The harvest options include the median MSY estimates, a range of reductions from the median MSY estimates, and the probability that the reductions may be greater than or equal to the true MSY (i.e. the risk). For each harvest option, 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 low probability (low risk) that they were equal to or greater than the true MSY. Refer to DFO (2024) 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.

2.4. Stock Scenarios

The Green Sea Urchin fishery is managed conservatively and stocks are 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.

There is no indication of a conservation concern for Green Sea Urchin stocks at this time. A recent stock assessment (DFO 2021) indicated that the CPUEs (catch per unit of effort) for both the Northern and Southern Vancouver Island regions have dropped marginally since the last assessment, but remain higher than in the early years of the fishery. Recent fishery-independent survey data indicate that densities are high for all size categories (DFO 2021).

The sea urchin fishery is a gonad (roe) fishery. Population levels in most areas are higher than can be supported by the available food (kelp) and, as a result, many of the urchins have poor or no gonad development. Since only those individuals with the highest quality gonads are targeted by the fishery, there is a natural reserve of animals that remain after commercial harvest that consists of urchins smaller than the minimum size limit and urchins with poor quality gonads. Urchins that are located in cracks and crevices and at deeper than safe diving depths, are inaccessible to harvesters, and represent additional reserves.

Sea otter populations are expanding in BC 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.

In some areas of the BC coast there is an overabundance of Urchins which may negatively impact ecosystem function.

2.5. Precautionary Approach

The Sustainable Fisheries Framework (SFF) is a toolbox of policies to ensure that Canadian fisheries support conservation and sustainable use of resources.

These policies include:

- A Fishery Decision-Making Framework Incorporating the Precautionary Approach
  - Guidelines for Implementing the Fish Stocks Provisions in the *Fisheries Act*
  - Guidelines for writing rebuilding plans per the Fish Stocks Provisions and A Fishery-Decision-making Framework Incorporating the Precautionary Approach
- Ecological Risk Assessment Framework (ERAF) for Coldwater Corals and Sponge Dominated Communities
- Fishery Monitoring Policy
  - Introduction to the procedural steps for implementing the Fishery Monitoring Policy
- Policy for Managing the Impacts of Fishing on Sensitive Benthic Areas
- Policy on Managing Bycatch
- Policy on New Fisheries for Forage Species

For more information on the Sustainable Fisheries Framework and its policies, visit:

Sustainability Survey for Fisheries - Open Government Portal (canada.ca)

Sustainability Surveys for Fisheries: DFO annually tracks the performance of key fish stocks that it manages through the Sustainability Survey for Fisheries. Results of previous Sustainability Surveys are available at: http://www.dfo-mpo.gc.ca/reports-rapports/regs/sff-cpd/survey-sondage/index-en.html

***Sustainable Fisheries Framework work plans*:** Each year, DFO develops a work plan and reports on priorities and targets regarding the sustainable management of Canada's marine resources. These work plans are available at: https://www.dfo-mpo.gc.ca/about-notre-sujet/publications/work-plan-travail/index-eng.html

Precautionary Approach Framework

The Sustainable Fisheries Framework policy suite includes a decision-making framework incorporating a precautionary approach to commercial, recreational, and food, social, and ceremonial fishing: http://www.dfo-mpo.gc.ca/reports-rapports/regs/sff-cpd/precaution-eng.htm

The precautionary approach in fisheries management requires caution when scientific knowledge is uncertain. The absence of adequate scientific information should not result in postponed action or failure to take action to avoid the risk of serious harm to the resource.

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

- identify three stock status zones – Healthy, Cautious, and Critical – delineated by an upper stock reference point and a limit reference point;
- set the removal rate at which fish may be harvested within each stock status zone; and
- adjust the removal rate according to fish stock status (i.e. spawning stock biomass or another index/metric relevant to population productivity), based on pre-agreed decision rules.

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 in the Healthy Zone, to promote rebuilding when stock status is low, and to ensure a low risk of serious or irreversible harm to the stock.

A key component of the *Precautionary Approach Framework* requires that when a stock has declined to the Critical Zone, a rebuilding plan must be in place with the aim of having a high probability of the stock growing out of the Critical Zone within a reasonable timeframe: http://www.dfo-mpo.gc.ca/reports-rapports/regs/sff-cpd/precautionary-precaution-eng.htm

Harvest Control Rules (HCR) compliant with the Precautionary Approach (PA) have been developed for the Green Sea Urchin Fishery. A most recent stock assessment paper, reviewing all available data to date, was completed in the spring of 2024 (DFO 2024). The paper assesses stock status against provisional reference points that are compliant with the DFO Precautionary Approach. An empirical approach was used for establishing biological reference points based on the lowest observed historical estimates of population density for legal-sized urchins at index sites (DFO 2018). From time series data at index sites, the minimum observed mean density of legal-sized urchins (>55 mm test diameter) that the stocks recovered from without intervention by Fisheries Managers was 0.9 urchins/m2. Based on results of the index site surveys, the assessments recommend adopting an USR = 0.9 legal-sized urchins/m2 and a LRP = 0.45 legal-sized urchins/m2. Mean legal-size density in from the most recent index site surveys was 4.2 urchins/m2 in Northeast Vancouver Island, PFMA 12 (previous assessment 3.8 urchins/m2) and 5.7 urchins/m2 in Southeast Vancouver Island, PFMA 19 (previous assessment 4.3 urchins/m2), indicating Green Sea Urchin stocks are in the Healthy Zone in both regions.

Fisheries Act: Fish Stock Provisions

Amendments to the *Fisheries Act* (Bill C-68) were passed into legislation in 2019 and include new authorities to amend the *Fishery (General) Regulations* and requirements to maintain major fish stocks at sustainable levels, and to develop and implement rebuilding plans for stocks that have declined to their critical zone. Amendments are available at: https://www.parl.ca/LegisInfo/en/bill/42-1/C-68

The associated regulatory amendment to prescribe major fish stocks and describe requirements for rebuilding plans was registered and came into force on April 3, 2022, and published in Canada Gazette, Part II. Available at: https://www.gazette.gc.ca/rp-pr/p2/2022/2022-04-13/html/sor-dors73-eng.html

Ecological Risk Assessment Framework & Cold-Water Coral and Sponge Conservation Strategy

The *Ecological Risk Assessment Framework for Coldwater Corals and Sponge Dominated Communities* (or ERAF) outlines a process for identifying the level of ecological risk of fishing activity and its impacts on sensitive benthic areas in the marine environment. Available at: https://www.dfo-mpo.gc.ca/reports-rapports/regs/sff-cpd/risk-ecolo-risque-eng.htm.

DFO's *Pacific Region Cold-water Coral and Sponge Conservation Strategy* aims to promote the conservation, health and integrity of Canada's Pacific Ocean cold-water coral and sponge species. For more information, visit: https://www.dfo-mpo.gc.ca/oceans/ceccsr-cerceef/conservation-eng.html

Fishery Monitoring and Catch Reporting

DFO released the national *Fishery Monitoring Policy* in 2019, which will replace the regional *Strategic Framework for Fisheries Monitoring and Catch Reporting* in the Pacific Fisheries (2012). The national policy seeks to provide dependable, timely and accessible fishery information through application of a common set of steps used to establish fishery monitoring requirements across fisheries. Available at: https://www.dfo-mpo.gc.ca/reports-rapports/regs/sff-cpd/fishery-monitoring-surveillance-des-peches-eng.htm

The 2012 Pacific *Strategic Framework for Fisheries Monitoring and Catch Reporting* is available at: https://www.pac.dfo-mpo.gc.ca/fm-gp/docs/framework-monitoring-cadre-surveillance-eng.html

To ensure consistent national application, further guidance is provided through in the *Introduction to the Procedural Steps of Implementing the Fishery Monitoring Policy*, available at: https://www.dfo-mpo.gc.ca/reports-rapports/regs/sff-cpd/fmp-implementation-psp-mise-en-oeuvre-eng.htm

Policy for Managing the Impacts of Fishing on Sensitive Benthic Areas

To avoid serious or irreversible harm to sensitive benthic habitat, species and communities and to otherwise address impacts to benthic habitat, communities and species, this policy outlines a five (5) step process. Available at: http://www.dfo-mpo.gc.ca/reports-rapports/regs/sff-cpd/benthi-eng.htm

2.6. Research

An understanding of the biology of Green Sea Urchins and the impacts of commercial harvest on Green Sea Urchin populations is required to ensure conservation and sustainable harvests while optimizing potential production in this fishery. Studies have included 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, preferred habitats (depth, substrate, and vegetation), length (or test diameter)-weight relationships and gonad (roe) weight and quality. DFO Science has recently developed a multispecies benthic invertebrate survey protocol that is intended to gain efficiencies by combining single species survey protocols for the commercial dive fisheries. This will allow more spatial and temporal coverage than is possible

under the current single species approach, and may enable the monitoring of stock abundance over time.

3. INDIGENOUS KNOWLEDGE

The term Indigenous knowledge may not be universally used, and other terms such as Indigenous Knowledge Systems, Traditional Knowledge, Traditional Ecological Knowledge, or Aboriginal Traditional Knowledge, which all convey similar concepts, may be used instead.

In 2019, the *Fisheries Act* was amended to include provisions for the where the Minister may or shall consider provided Indigenous knowledge in making decisions pertaining to fisheries, fish and fish habitat. Section 61 of the Act ensures this knowledge is protected and can only be provided with consent. There are also provisions under the *Species At Risk Act* (s.10.2, s.15.2, s.16, s.18.1) that support inclusion of Indigenous knowledge to inform the assessment and protection of species at risk. Likewise, the *Oceans Act* (s.42) allows the Minister to consider Indigenous knowledge in oceans related decisions.

The Government of Canada and the scientific community acknowledge the need incorporate Indigenous knowledge in meaningful and respectful ways. Work is underway at a National level to develop processes for how DFO receives Indigenous knowledge and applies it to inform decision making. Many outstanding questions remain on how to move forward in a way that respects, meaningfully incorporates, and protects the knowledge that may be shared with DFO, to mutual benefit. For example, how to engage knowledge holders, and how to ensure that the knowledge can be shared and considered in a mutually acceptable manner by both knowledge holders and the broader community of First Nations, stakeholders, managers, and policy makers involved in the fisheries. Given the diversity of knowledge and relationships, regional work will involve an iterative process in collaboration with First Nations, Indigenous groups and knowledge holders, to ensure appropriate inclusion and protection of the knowledge provided. The Department is committed to finding a way forward that respects the knowledge and the knowledge holders, and upholds the Principles respecting the Government of Canada's relationship with Indigenous peoples, which are available online at: https://www.justice.gc.ca/eng/csj-sjc/principles-principes.html.

More information on the updates to the *Fisheries Act*: https://www.dfo-mpo.gc.ca/campaign-campagne/fisheries-act-loi-sur-les-peches/reconciliation-eng.html

See Sections 2.5, 34.1, and 61.2 in the *Fisheries Act* (2019): https://laws-lois.justice.gc.ca/eng/acts/f-14/.

Section 61.2 protections for Indigenous knowledge have also been included in the *Access to Information Act*, Schedule 2: https://laws-lois.justice.gc.ca/eng/acts/a-1/page-15.html#h-1230

4. ECONOMIC PROFILE OF THE FISHERY

The intent of this section is to provide a socio-economic context for the Green Sea Urchin fishery in BC. An overview of the First Nations, recreational and commercial sectors of the fishery is provided.

4.1. First Nations

First Nations are interested in fisheries related economic opportunities. Currently one (1) of the 49 (2%) commercial Green Sea urchin licence eligibilities are held by First Nations for

participation in the commercial fishery. In the past, the Allocation Transfer Program (ATP) and the Pacific Integrated Commercial Fisheries Initiative (PICFI) had retired existing commercial licence eligibilities from fish harvesters on a voluntary basis and reissues them to eligible First Nation organizations and Indigenous community-owned Commercial Fishing Enterprises (CFEs) as communal commercial licences.

For more information on the Aboriginal Fisheries Strategy (AFS) ATP, contact the resource manager listed in Appendix 8 or see the Internet at:
https://www.dfo-mpo.gc.ca/fisheries-peches/aboriginal-autochtones/afs-srapa-eng.html

More information on the PICFI is available on the Internet at:
http://www.pac.dfo-mpo.gc.ca/fm-gp/picfi-ipcip/index-eng.html

4.2. Recreational

Recreational fishing may occur to provide food for personal use, as a leisure activity, or as a combination of the two. The recreational community includes local residents, multi-species charter operators and lodges, and visiting anglers and boaters. In the 2022/2023 recreational angling season, 302,000 adult fishers licensed to fish in BC's tidal waters recreational fishery. These activities provide a range of benefits to the participants as well as contribute directly and indirectly to economic activity.

Recreational interest in harvesting shellfish species is directed mainly at crab, clam, prawns and shrimp. The recreational harvest of Green Sea Urchins is minimal, supported by data from iREC reporting program and Sport Fishery Advisory Boards.

4.3. Commercial

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 where it is known as "uni". 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 local restaurants and the public in BC. The 2022 BC Wild Commercial Fisheries Production Statistics estimates that the wholesale value of both Red Sea Urchins and Green Sea Urchins was $17.4 million in 2021.[1] The bulk of this value (82%) was from the Red Sea Urchin fishery since the Green Sea Urchin fishery is much smaller, with a wholesale value of approximately $3.1 million. There were 17 active vessels in the Green Sea Urchin fishery in 2022, up by 13% from 2021.

The Green Sea Urchin fishery contributes $1.8m (GDP) to the provincial economy, with a total employment and income contribution of 18 and $1.3m, respectively.

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. Competing markets, mainly from Russia, are identified as the largest threat to the sustainability of this fishery.

[1] All values are in 2022 Dollars

Green Sea Urchin licence values have increased steadily since the late 2000s, peaking at an average of $100,000 in 2018 and 2019 (Nelson, various years). In 2020, the average licence value dropped to $80,000 and has remained consistent since then.

In 2022, 17 vessels held Green Sea Urchin licences. Only 3 vessels harvested green sea urchin only. The other vessels were also active in other dive fisheries including geoduck, red sea urchin and sea cucumber. Further, Green Sea Urchin accounts for a relatively small percentage of the revenues (16%) for the vessels actively fishing this species. 75% of their income came from geoduck and sea cucumber harvest. There was a 31% decline in the average landed value of active GSU vessels from 2021.

4.3.1. Viability and Market Trends

The best roe typically 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 November and February.

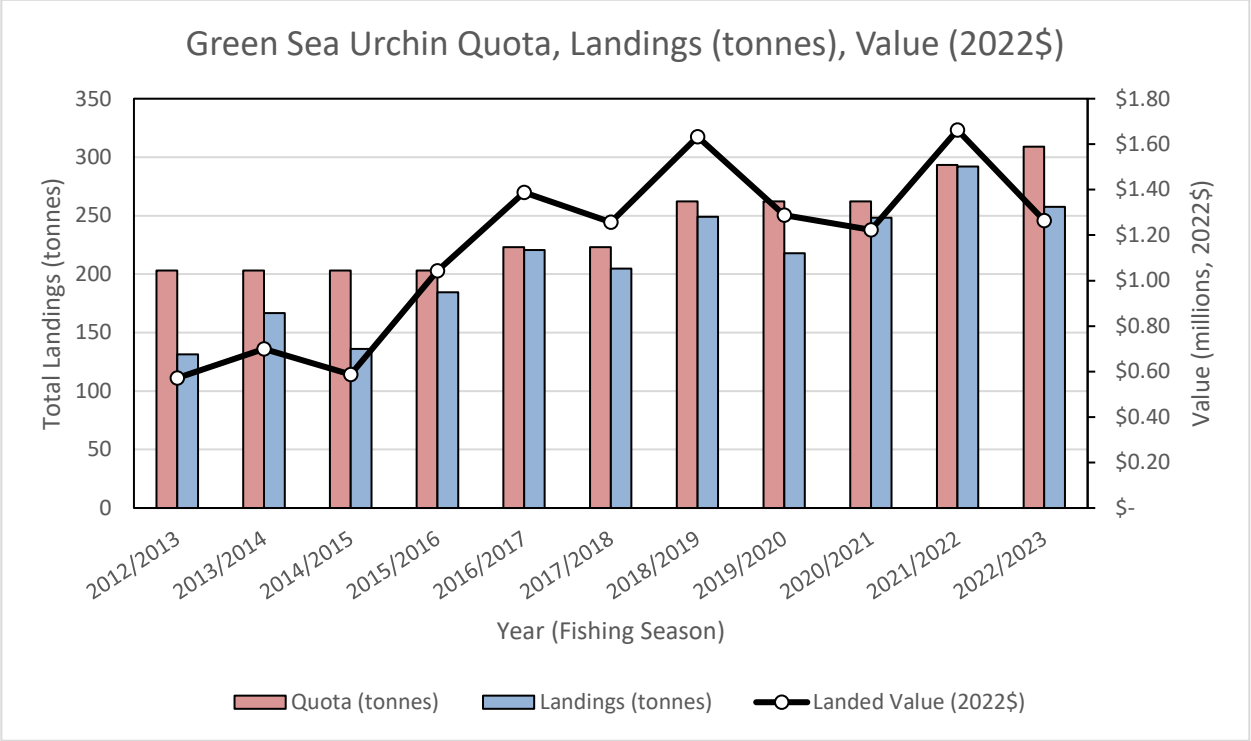
Pacific coastwide landings of Green Sea Urchin peaked in the 1992 season at approximately 954 tonnes. Since then, annual landings dropped consistently until the 2006/07 season. These drops were initially due to setting of Total Allowable Catch (TAC) but continued to drop due to poor market conditions.

Since 2006/07, landings have trended upwards. The highest landings on record since the 1994 season occurred in the 2021/22 at 292 tonnes (almost 100% of the quota).

Over the past decade, the coastwide TAC of Green Sea Urchin has slowly increased. In the 2016/17 season, it increased to 223 tonnes after remaining constant between the 2006/07 season and 2015/16 season at 203 tonnes. It continued to increase in subsequent years, from 223 tonnes in 2017/18 to 262 tonnes in 2018/19, followed by further incremental increases in 2021/22, 2022/23, and 2023/24 (320.1 tonnes).

The implicit price[2] was relatively constant until 2014, when it began to steadily increase. However, in 2020, the implicit price dropped to a 6-year low. It recovered slightly in 2021, but fell back to 2020 levels in 2022.

[2] Implicit price is calculated by dividing total landed value by the total landed weight



Source: DFO Logbooks – multiple years, Shellfish Stock Assessments, quota is from Appendices of previous IFMPs.

4.3.2. Processing and Exporting

Green Sea Urchins are harvested for their reproductive organs (gonad) or "roe". The annual value of Green Sea Urchins processed in BC in 2022 was $3.1 million, representing a decrease of 3.1% from 2021. In 2022, value-added revenues of $1.2 million were generated through local processing mainly in the lower mainland, with 9 processors in Vancouver and Richmond engaged in processing these species.

Green Sea Urchins are shipped live and whole. Sea urchins (both red and green) are mainly shipped to overseas markets in Japan (46%) and China (16%), and, to a lesser extent, Hong Kong (10%), USA (10%) and South Korea (9%). The domestic market for Green Sea Urchins is small but increasing with more sales to local restaurants and the public in BC.

5. MANAGEMENT ISSUES

The following sections highlight the on-going or longer-term management issues that may impact the management measures in place for this fishery. Specific management objectives designed to mitigate these issues are detailed in Section 6. There may be immediate or annual management issues that need addressing.

5.1. First Nations

The level of First Nations' effort and harvest of Green Sea Urchin for food, social and ceremonial purposes is unknown at this time. Although harvest is believed to be minimal due to much of the stock only being available for harvest by dive. Catch monitoring programs are being developed in collaboration with some First Nations organizations.

5.2. Recreational

The level of recreational harvest of Green Sea Urchins is generally accepted by DFO to be low and supported by data received through recreational licence surveys and information from the Sport Fishery Advisory Boards. Catch monitoring programs for all sport caught fish are being improved in collaboration with recreational fishery organizations.

5.3. Commercial

- Impacts of the commercial Green Sea Urchin fishery on the ability of First Nations to harvest for food, social and ceremonial purposes need to be considered. Although DFO has not been made aware of any Nations that are struggling to acquire Green Urchins for FSC purposes.
- 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.
- The impacts of sea otters on Green Sea Urchin populations need to be evaluated for future consideration in the management of this fishery.
- High densities of urchins in some areas may require alternative management strategies to support ecosystem management. See Section 5.5
- Further assessment work will be required to continue to expand the fishery.

5.4. Conservation and Sustainability

There is currently no concern for the conservation of Green Sea Urchins. Conservation for the BC Urchin resource is defined as maintaining the stock to a level that will ensure the population isn't at risk of becoming extirpated or extinct.

Sustainability is the ability to be maintained at a certain rate or level. This term is being used to reflect the sustainability of the fishery, the ability to maintain the level of harvest. This may be difficult over time due to, but not limited to, impacts of Sea Otters, impact of climate change and closures implemented to achieve Marine Conservation Targets.

5.4.1. Sea Otters

The PUHA has identified Sea Otters as their biggest concern for the future sustainability of the Sea Urchin industry in BC. Currently, considering the location of the Green Urchin Fishery, Sea Otters have not significantly impacted the Green Urchin Fishery however this may change as the Sea Otter's range expands.

5.4.2. Impacts of Climate Change

Climate change will likely result in a wide variety of impacts, including rising sea level, loss of marine habitat, shifting distribution ranges for marine organisms and an imbalance between growth and recruitment within ecosystems. Ocean acidification is one of the climate impacts that could affect Urchin populations in BC. Oceans absorb carbon dioxide (CO_2) which increases the acidity of the water. There are concerns about the ability of marine ecosystems to adapt to acidification. Organisms that form calcium carbonate ($CaCO_3$) skeletons and shells, such as urchins, may be greatly limited in their ability to form their skeletons or shells since a decline in pH decreases the saturation state of $CaCO_3$. Fecundity, juvenile survival, and the ability to handle temperature stress may also be impacted negatively by ocean acidification (Haigh et al. 2015). Another emerging issue has been higher than normal water temperatures

over the last few years (Chandler et al. 2016). Warmer water temperatures cause the amount of dissolved nitrogen in seawater to decrease leading to reduced growth rates of kelp and are associated with the decline of apex predators like the *Pycnopodia* sea star. Kelp, the main food source of Urchins, recruits most successfully in areas with continuously cold, high nutrient waters. Higher water temperatures may also place physiological stress on Urchins and could lead to increased instances of disease. Kelp loss may also be further exacerbated by the decline of the Urchin predator the *Pycnopodia* sea star and the resulting population increases of urchins (Burt et al. 2018).

5.4.3. Disease

In the spring of 2016 sick or dying urchins were observed along the North and Central coasts of BC. Some urchins were still attached to the substrate but were missing all or a portion of their spines and some had already died. Samples were collected from afflicted individuals and were sent in for testing. Preliminary examination of the samples done by a disease expert at DFO suggests that the urchins were suffering from 'bald urchin disease'. This disease has been reported in species of urchins all over the world. It has been hypothesized that increasing sea temperature will lead to an increase in the frequency of disease outbreaks due to decreased host immunity, increased virulence of pathogens or pathogen range expansion (Burge et al., 2014).

A large scale disease event that impacted seas stars was first noticed in 2014/15, 'sea star wasting disease'. It is believed that as a result of decreases in Sea Star populations we have seen increases in urchin populations in many locations.

5.4.4. Marine Conservation Targets.

To protect biodiversity and meet its marine conservation targets, Canada is establishing marine protected areas and other effective area-based conservation measures (OECMs), in consultation with First Nations, other levels of government, industry, non-governmental organizations, and the public. Closures to Urchin harvest will likely be implemented to meet Canada's conservation targets. Closures will reduce the biomass available to the fishery and thus reduce harvest opportunity and may impact this fishery's sustainability.

5.5. Ecosystem

5.5.1. High Densities of Urchins (Urchin Barrens)

There are a some areas of the BC coast where there are areas of high Urchin density (urchin barrens). Urchin barrens are detrimental to the ecosystem since the combined grazing activity of the urchins inhibits the growth of kelp and sessile invertebrates, which in turn affects other species that may rely on kelp and/or sessile invertebrates for food and/or habitat. Urchins also directly compete with other herbivores such as abalone, snails and other species of urchins for food resources. Closures for conservation purposes may not be necessary for Urchins in areas of BC where urchin barrens are a known issue, especially if the goal of the closure is to promote a healthy ecosystem. Harvesters tend to not harvest urchins out of barrens since the gonad quality is typically low due to a lack of food. Only a small portion of the population located right below the kelp line (where food is abundant) is taken. Sea urchin barrens no longer exist in Sea Otter impacted areas, but for areas of the coast not yet impacted by Sea Otters other options could be tried to reduce the occurrence of barrens. One such option is to consider an increase in the harvest rate used in areas impacted by urchin barrens. DFO has started using an increased harvest rate in some areas where populations have seen an increase.

5.5.1. Urchin Culling

The practice of killing large numbers of urchins by squishing or cracking in situ (culling) in order to support increased kelp growth (kelp restoration) is a practice not supported by current policy. Green Sea Urchins are not an invasive species in BC and high densities are a natural part of a dynamic, changing ecosystem, especially in the absence of key predators like the sea otter and the sunflower star. Increased commercial harvest in areas of concern could be used as a tool to decrease the number of urchins over time in support of healthy ecosystems.

5.5.2. Depleted Species Concerns

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

The *Species at Risk Act* (SARA) came into force in 2003 "to prevent wildlife species from being extirpated or becoming extinct, and to provide for the recovery of a wildlife species that are extirpated, endangered or threatened as a result of human activity and to manage species of special concern to prevent them from becoming endangered or threatened."

SARA contains several prohibitions to protect species listed on Schedule 1 of SARA. Under sections 32 and 33 of SARA, it is an offence to: 1) kill, harm, harass, capture or take an individual of a wildlife species listed as extirpated, endangered or threatened under SARA; 2) possess, collect, buy, sell or trade an individual (or any part or derivative of such an individual) of a wildlife species listed as extirpated, endangered or threatened under SARA; and 3) damage or destroy the residence of one or more individuals of a wildlife species that is listed as an endangered or threatened species, or that is listed as an extirpated species if a recovery strategy has recommended its reintroduction into the wild in Canada. These prohibitions apply unless a person is authorized, by a permit, licence or other similar document issued in accordance with SARA, to engage in an activity affecting the listed species or the residences of its individuals. Species listed as special concern are not included in these prohibitions. Section 58(1) contains provisions to prohibit the destruction of any part of the critical habitat of listed endangered or threatened species or of any listed extirpated species if a recovery strategy has recommended the reintroduction of the species in the wild in Canada. Critical habitat is the habitat necessary for the survival or recovery of a listed wildlife species and is identified in the recovery strategy or an action plan for the species.

For information on aquatic species listed under SARA or assessed as at risk by the Committee on the Status of Endangered Wildlife in Canada, please visit the Species at Risk Public Registry at https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry.html

5.5.3. Marine Mammal Regulations

The *Marine Mammal Regulations* provide direction on conservation and protection of marine mammals, provide guidance for recovery of listed species under the *Species at Risk Act*, and set out provisions related to reducing human disturbance of marine mammals (e.g. viewing of marine mammals) and mandatory reporting requirements in the case there is accidental contact with a marine mammal and a vessel or fishing gear. These regulations were amended in 2018 and specify mandatory requirements to prevent disturbance of marine mammals.

As per section 7(2) of the *Marine Mammal Regulations*, disturbance is defined as a number of human actions including:

- Feeding, swimming or interacting with a marine mammal.

- Moving a marine mammal (or enticing/causing it to move).
- Separating a marine mammal from its group or going between it and a calf.
- Trapping a marine mammal or a group either between a vessel and the shore, or between a vessel and other vessels.
- Tagging or marking a marine mammal.

Boats are required to maintain a minimum approach distance of 100 m for whales, dolphins or porpoises, 200m when whales, dolphins or porpoises are in a resting position or with a calf, and 200m from all Killer Whales in Pacific Canadian waters except when in southern BC coastal waters which has an increased approach distance of 400m in support of Southern Resident Killer Whale recovery. Please visit the Southern Resident Killer Whale management measures website for more information on the management measures: https://www.pac.dfo-mpo.gc.ca/fm-gp/mammals-mammiferes/whales-baleines/srkw-measures-mesures-ers-eng.html

Any operator of a vessel or fishing gear involved in accidental contact with a marine mammal must notify DFO of the incident, as per section 39 of the *Marine Mammal Regulations.* Incident reporting includes:

- Reporting an injured, stranded, entangled or dead marine mammal to the BC Marine Mammal Response Network (Observe, Record, Report) 1-800-465-4336.
- Reporting as bycatch in a log book
- Reporting accidental contact through the marine mammal interaction form
- Depredation reporting to DFO by email at MarineMammals@pac.dfo-mpo.gc.ca, or by calling 1-800-465-4336 or reporting accidental contact through the marine mammal interaction form.

Please note, incidents involving abuse or harassment of a marine mammal should be reported as a fisheries violation, while injured, stranded, entangled or dead marine mammals should be reported to the BC Marine Mammal Response Network to enable a response if appropriate.

For more information on safe boating behavior around whales please visit: Watching Marine Mammals and Be Whale Wise, or by contacting the DFO Marine Mammal Unit (MMU) (Mammals.Marine@dfo-mpo.gc.ca).

5.5.4. Sighting Reporting

The Department appreciates your assistance in tracking the sighting of live cetaceans (whales, dolphins and porpoises), sea turtles and Basking Sharks. While there are many marine mammal species found in Pacific Canadian waters, sightings of Basking Shark and Leatherback Sea Turtles are infrequent. The collection of sighting data is useful to scientists in determining population size and species distribution and aids in recovery efforts under the *Species at Risk Act* (SARA).

To report whale or turtle sightings contact the B.C. Cetacean Sighting Network:

Toll free: 1.866.I.SAW.ONE (1-866-472-9663)

Email: sightings@ocean.org

Website: http://wildwhales.org/

App : WhaleReport

To report Basking Shark sightings contact the Basking Shark Sightings Network:

Toll free: 1-877-50-SHARK (1-877-507-4275)

Sharks@dfo-mpo.gc.ca ,

Website: www.pac.dfo-mpo.gc.ca/SharkSightings

Guides to distinguish between pinnipeds, emphasizing differences between Steller and California Sea Lions can be found here: https://wildwhales.org/wp-content/uploads/2020/08/BCCSN_IDGuide_Pinniped_email.pdf and between Sea and

River Otters: https://wildwhales.org/wp-content/uploads/2020/05/BCCSN_IDGuide_Otters_vertical_4.pdf

Incident Reporting

The Department is responsible for assisting marine mammals and sea turtles in distress. If your vessel strikes a whale, or if you observe an entangled, sick, injured, distressed, or dead marine mammal in B.C. waters, please contact the B.C. Marine Mammal Response Network Incident Reporting Hotline immediately:

1-800-465-4336 OR VHF CHANNEL 16

What to report:

- Your name and contact information
- Date and time of incident
- Location: Latitude/Longitude coordinates, landmarks
- Species
- Animal alive/dead (animal condition)
- Nature of injury and supporting details (if possible)
- Pictures/Video taken

Best practices to reduce entanglement and reporting an incident: https://www.pac.dfo-mpo.gc.ca/fm-gp/mammals-mammiferes/whales-baleines/docs/entanglements-empetrements-pub-eng.html

5.5.5. Southern Resident Killer Whales

The Government of Canada is taking important steps to protect and recover the Southern Resident Killer Whale population, in keeping with direction provided in *Species at Risk Act* (SARA) recovery documents. In May 2018, the Minister of Fisheries, Oceans and the Canadian Coast Guard and Minister of Environment and Climate Change determined the Southern Resident Killer Whale population faces imminent threats to its survival and recovery. Given the status of the population and ongoing threats to Southern Resident Killer Whale recovery, DFO implemented a number of measures since 2018, including measures aimed at increasing prey availability and accessibility for Southern Resident Killer Whales - particularly Chinook salmon—and reducing threats related to

physical and acoustic disturbance with a focus in key foraging areas within Southern Resident Killer Whale critical habitat. These measures include fishing closures, Interim Sanctuary Zones (i.e. no go zones), Speed Restricted Zones (vessel slowdown areas), vessel avoidance distances, and a number of voluntary measures in the presence of killer whales.

Since 2018, Indigenous groups, the Indigenous and Multi-Stakeholder Advisory Group (IMAG), Technical Working Groups (TWGs), and stakeholders have provided recommendations and feedback to Ministers and Departments on a range of measures (including measures related to increasing prey availability, sanctuaries, vessel disturbance [both noise and physical disturbance], and contaminants) to support Southern Resident Killer Whale recovery.

For the 2024 fishing season, the Department is working with Indigenous groups and stakeholders to inform potential changes for 2024. The Department intends for actions for the 2024 season be implemented to coincide with the return of Southern Resident Killer Whales in typically greater numbers to Canadian Pacific waters. For up-to-date information regarding the Southern Resident Killer Whale management measures, please visit: https://www.pac.dfo-mpo.gc.ca/fm-gp/mammals-mammiferes/whales-baleines/srkw-measures-mesures-ers-eng.html

The Government of Canada is asking vessel operators to respect the following voluntary measures:

- Stop fishing (do not haul gear) within 1,000 metres of killer whales and let them pass;
- Reduce speed to less than 7 knots when within 1000m of the nearest killer whale
- When safe to do so, turn off echo sounders and fish finders
- Place engine in neutral idle and allow animals to pass if your vessel is not in compliance with the approach distance regulations
- For more information on the best ways to help whales while on the water, when on both sides of the border, please visit: bewhalewise.org

For information regarding the Southern Resident Killer Whale management measures to support recovery, please contact the Marine Mammal Team (DFO.SRKW-ERS.MPO@dfo-mpo.gc.ca) or visit https://www.pac.dfo-mpo.gc.ca/fm-gp/mammals-mammiferes/whales-baleines/srkw-measures-mesures-ers-eng.html

5.6. Oceans and Habitat Considerations

5.6.1. Canada's Marine and Coastal Areas Conservation Mandate

To protect biodiversity and meet its marine conservation targets, Canada is establishing marine protected areas and other effective area-based conservation measures (OECMs), in consultation with First Nations, other levels of government, industry, non-governmental organizations, and the public.

More information is available online for:

Canada's marine conservation targets: https://www.dfo-mpo.gc.ca/oceans/conservation/index-eng.html

Canada's marine protected and conserved areas: https://www.dfo-mpo.gc.ca/oceans/conservation/areas-zones/index-eng.html

Marine refuges and fisheries management measures that qualify as OECMs: https://www.dfo-mpo.gc.ca/oceans/oecm-amcepz/index-eng.html

5.6.2. Marine Protected and Conserved Areas

Canada uses a variety of legislative tools for marine conservation, depending on the lead federal department or agency and their coastal mandates. As goals, objectives, and management plans are finalized for these initiatives, DFO's management of fisheries will be adapted as appropriate, in consultation with interested parties through initiative-specific consultations and annual Integrated Fisheries Management processes. The implementation of spatial marine conservation initiatives is informed by considerations under the Oceans Act, Fisheries Act and the Sustainable Fisheries Policy suite, and mandate commitments to the Blue Economy Strategy and Reconciliation with First Nations.

For more information on Canada's marine conservation tools: https://www.dfo-mpo.gc.ca/oceans/conservation/plan/index-eng.html

For more information see relevant legislation: Marine refuges and other measures - Fisheries Act: https://laws.justice.gc.ca/eng/acts/f-14/page-1.html

Marine Protected Areas - Oceans Act: https://laws-lois.justice.gc.ca/eng/acts/O-2.4/

National Wildlife Areas - Canada Wildlife Act: https://laws.justice.gc.ca/eng/acts/w-9/page-1.html

National Marine Conservation Areas (Reserves): National Marine Conservation Areas Act: https://laws.justice.gc.ca/eng/annualstatutes/2002_18/page-1.html

An overview map of federal marine conservation initiatives in Pacific region is provided in Figure 1, followed by a table outlining relevant details by initiative – both established and in progress. Many initiatives are types of marine protected areas (MPAs) or marine refuges (OECMs). See site-specific regulations and management plans for any restrictions on activities, or fisheries notices where applicable.

Figure 1. Pacific Fisheries Management Areas and Federal Marine Conservation Initiatives and Closures

Table 1. Overview of Federal Marine Conservation Initiatives in DFO Pacific Region (see Figure 1 map)

Name	Type	Lead	Weblinks	Contact	Fishery Considerations
Fisheries and Oceans Canada, *Ocean's Act* and *Fisheries Act*					
Endeavour Hydrothermal Vents Marine Protected Area	MPA	DFO	http://www.dfo-mpo.gc.ca/oceans/mpa-zpm/endeavour/index-eng.html	DFO.OceansPacific-OceansPacifique.MPO@dfo-mpo.gc.ca	See MPA website and regulations for more details: https://laws-lois.justice.gc.ca/eng/regulations/SOR-2003-87/ The MPA is closed to all commercial and recreational fishing activities.
SG̲áan K̲ínghlas-Bowie Seamount Marine Protected Area	MPA	DFO & Council of Haida Nation	http://www.dfo-mpo.gc.ca/oceans/mpa-zpm/bowie-eng.html	mailto:DFO.BowieMPA-ZPMBowie.MPO@dfo-mpo.gc.ca DFO.OceansPacific-OceansPacifique.MPO@dfo-mpo.gc.ca	See MPA website and regulations for more details: https://laws-lois.justice.gc.ca/eng/regulations/SOR-2008-124/ The MPA is closed to all commercial fishing activities. The MPA is also closed to recreational and FSC bottom-contact fishing activities.
Hecate Strait and Queen Charlotte Sound Glass Sponge Reefs Marine Protected Areas	MPA	DFO	http://www.dfo-mpo.gc.ca/oceans/mpa-zpm/hecate-charlotte/index-eng.html	mailto:DFO.HSQCSMPA-ZPMDHBRC.MPO@dfo-mpo.gc.ca DFO.OceansPacific-OceansPacifique.MPO@dfo-mpo.gc.ca	See MPA website and regulations for more details: https://laws-lois.justice.gc.ca/eng/regulations/SOR-2017-15/index.html In the MPA there are 3 different management zone types: **The entire MPA is closed to commercial bottom-contact fishing activities. Core Protection Zones (CPZ) are closed to anchoring and all fishing activities**. Vertical Adaptative Management Zones (VAMZs) and Adaptive Management Zones (AMZs) are closed to some commercial and recreational fishing activities.
Tang.ɢwan – ḥačxwiqak – Tsig̲is Area of Interest & Offshore Pacific Seamounts	Area of Interest for future MPA	DFO	https://www.dfo-mpo.gc.ca/oceans/oecm-amcepz/refuges/offshore-hauturiere-eng.html.	DFO.OceansPacific-OceansPacifique.MPO@dfo-mpo.gc.ca	Specific details of the Offshore Pacific Seamounts and Vents Closure (Offshore Fishery Closure) can be found in the Fishery Notice FN1241 (2017). All bottom-contact commercial and recreational fishing activities are prohibited.

and Vents Closure*					
Strait of Georgia and Howe Sound Glass Sponge Reef Marine Refuges*	Marine Refuges	DFO	https://www.dfo-mpo.gc.ca/oceans/ceccsr-cerceef/closures-fermetures-eng.html	DFO.PACFMMCT-OCMGPPAC.MPO@dfo-mpo.gc.ca	Specific details of the closures and restrictions on a site-by-site basis can be found in **Fisheries Notices FN0205** (2019), **FN0571** (2015), and **FN0039*** (2022). Prohibited commercial, recreational and Indigenous food, social and ceremonial (FSC) bottom-contact fishing activities include: • prawn and crab by trap • shrimp and groundfish by trawl • groundfish by hook and line • use of downrigger gear in recreational salmon trolling (in select sites via **Condition of Licence**). (Restrictions vary by site)
Rockfish Conservation Areas (RCAs)	RCAs	DFO	https://www.pac.dfo-mpo.gc.ca/fm-gp/maps-cartes/rca-acs/index-eng.html	DFO.PACFMMCT-OCMGPPAC.MPO@dfo-mpo.gc.ca	There are 162 Rockfish Conservation Areas (RCAs) in British Columbia, covering roughly 4,350km^2 of the Canadian Pacific Coast. These areas are closed to a range of recreational and commercial fisheries to protect inshore rockfish and their habitat. On website, see individual RCAs by area for details.
Gwaxdlala/Nalaxdlala (Lull / Hoeya)	Marine refuge	DFO	Gwaxdlala/Nalaxdlala (Lull/Hoeya) marine refuge (dfo-mpo.gc.ca)	DFO.PACFMMCT-OCMGPPAC.MPO@dfo-mpo.gc.ca	Specific details of the closures and restrictions on a site-by-site basis can be found in Fisheries Notices FN 0118 (2023). The Gwaxdlala/Nalaxdlala (Lull/Hoeya) marine refuge is closed to all fisheries (commercial, recreational and FSC fishing activities).
Lophelia Reef	Fishery Closure	DFO	<add link to Fishery Notice once published>	DFO.PACFMMCT-OCMGPPAC.MPO@dfo-mpo.gc.ca	Specific details of the closures and restrictions of this site can be found in Fisheries Notice FN 0085 (2024). The Lophelia Reef is closed to all bottom-contact commercial and

					recreational fisheries (including midwater trawl).
Parks Canada, *National Marine Conservation Areas Act*					
Gwaii Haanas National Park Reserve, National Marine Conservation Area Reserve, and Haida Heritage Site	NMCAR	Parks Canada	https://www.pc.gc.ca/en/pn-np/bc/gwaiihaanas	gwaiihaanas@pc.gc.ca	Refer to **Fishery Notice FN0536** (2019), released June 13, 2019 for a detailed description of the Strict Protection Zones. There is "no extraction or harvesting by anyone of the resources of the lands and non-tidal waters of the Archipelago for or in support of commercial enterprise" (s3.3). Contact the Gwaii Haanas administration office: 1-877-559-8818
Pacific Rim National Park Reserve	National park marine area	Parks Canada	https://www.pc.gc.ca/en/pn-np/bc/pacificrim	Pacrim.info@pc.gc.ca	Park regulations can be found at: https://laws-lois.justice.gc.ca/eng/acts/N-14.01/page-8.html#h-362395
Environment and Climate Change Canada, *Canada Wildlife Act*					
Scott Islands Marine National Wildlife Area*	mNWA	ECCC	https://www.canada.ca/en/environment-climate-change/services/national-wildlife-areas/locations/scott-islands-marine.html	mailto:DFO.ScottIslands-IlesScott_MPO@dfo-mpo.gc.ca DFO.PACFMMCT-OCMGPPAC.MPO@dfo-mpo.gc.ca	The Scott Islands Protected Marine Area Regulations can be found at: https://laws-lois.justice.gc.ca/eng/regulations/SOR-2018-119/index.html
Indicates ongoing planning process. See initiative websites, advisory board updates, and fisheries notices for information.					

5.6.3. Marine Spatial Planning in Canada

Marine Spatial Planning (MSP) is a process for managing ocean spaces to achieve ecological, economic, cultural, and social objectives. It is an internationally recognized and collaborative process that brings together rightsholders, responsible ocean authorities, and stakeholders to better coordinate how we use and manage marine spaces. In general, MSP is adaptive, ecosystem based, integrated, place based, strategic/anticipatory, and participatory. In Canada, MSP does not replace regulatory responsibilities of existing authorities, rather through this collaborative process, MSP develops a shared vision, principles, and knowledge base, as well as decision support tools, to make appropriate and evidence based decisions about ocean use and management.

For more information on marine spatial planning in Canada: https://www.dfo-mpo.gc.ca/oceans/management-gestion/msp-psm/index-eng.html

5.6.4. Marine Spatial Planning North

MSP in the Pacific North Coast is being undertaken in the Pacific North Coast Integrated Management Area (PNCIMA).

PNCIMA encompasses approximately 102,000km^2 of marine area and occupies approximately two-thirds of the B.C. coast. The boundary of PNCIMA was defined based on a mix of ecological considerations and administrative boundaries. Ecologically, the PNCIMA boundary represents the Northern Shelf Bioregion of the Pacific Ocean. The boundary extends from the base of the continental shelf slope in the west to the coastal watershed in the east (adjacent terrestrial watersheds are not included). North to south, PNCIMA extends from the Canada–U.S. border of Alaska to Brooks Peninsula on northwest Vancouver Island and to Quadra Island in the south.

5.6.5. Pacific North Coast Integrated Management Area (PNCIMA)

The PNCIMA Plan (2017) is the product of a collaborative process led through an oceans governance agreement between the federal, provincial and First Nations governments, and

contributed to by a diverse group of organizations, stakeholders and interested parties. The plan is high level and strategic, and provides direction on and commitment to integrated, ecosystem-based and adaptive management of marine activities and resources in the planning area.

The plan outlines a framework for ecosystem-based management (EBM) for PNCIMA that

includes assumptions, principles, goals, objectives and strategies.

Five priorities are identified for short-term implementation of the plan:

- governance arrangements for implementation
- marine protected area network planning
- monitoring and adaptive management
- integrated economic opportunities
- tools to support plan implementation

The PNCIMA Plan is available online at: https://www.dfo-mpo.gc.ca/oceans/management-gestion/pncima-zgicnp-eng.html

5.6.6. Northern Shelf Bioregion Marine Protected Area Network Planning Process

In February 2023, the Marine Protected Area (MPA) Network Action Plan (NAP) for the Northern Shelf Bioregion (NSB) was endorsed by the trilateral partnership of First Nations, the Province of BC, and Canada. The NAP is a key priority of the PNCIMA Plan and provides a framework for how to achieve an ecologically comprehensive, resilient and representative Network of MPAs in the NSB, and proposes the use of Indigenous, provincial, and federal conservation tools for consideration for potential new protected areas. The proposed MPA Network includes 30,493 km^2 (or about 30%) of the NSB. More than half of this area (about 62%) is comprised of existing MPAs.

Currently, trilateral partners are focused on network coordination and implementation, including establishing governance and development of a network workplan that will focus on monitoring, cumulative effects, reporting and engagement on Network implementation.

The MPA Network Action Plan for the Northern Shelf Bioregion is available online at: https://mpanetwork.ca/nap/

5.6.7. Marine Spatial Planning Southern BC

As part of the Government of Canada's marine spatial planning (MSP) initiative, DFO in collaboration with the Province of BC, federal departments (Transport Canada, Natural Resources Canada, Environment and Climate Change Canada, Parks Canada and others), Indigenous groups, and stakeholders are amidst 'early planning' efforts in the Strait of Georgia and Southern Shelf marine bioregions (Southern BC planning area). Early Planning is focused on gathering information and setting the stage for working collaboratively.

Key deliverables for the Southern BC MSP process include the Canada Marine Planning Atlas (Pacific), and the Marine Spatial Planning Framework for the Southern BC Planning Area. The framework summarizes the work undertaken to date on the Government of Canada's MSP program in Southern BC and provides guidance on future phases of MSP in Southern BC.

More information on marine spatial planning can be found at: https://www.dfo-mpo.gc.ca/oceans/management-gestion/msp-psm/index-eng.html

5.6.8. Managing Impacts of Fishing on Sensitive Benthic Areas

Benthic ecosystems provide habitat, support food webs and are an important source of biodiversity. They also support many aquatic species that play an important social, cultural and economic role in the lives of many Canadians. It is imperative that these ecosystems are considered when managing oceans activities, including the harvest of fisheries resources. This includes the consideration of target species, non-target species, the ecosystems of which they are a part and the impact of fishing on these ecosystems when making management decisions. This is the basis of an ecosystem approach to fisheries management, which, along with a precautionary approach, is key to the Sustainable Fisheries Framework.

To avoid serious or irreversible harm to sensitive benthic habitat, species and communities and to otherwise address impacts to benthic habitat, communities and species, this policy outlines a five (5) step process. Available at: http://www.dfo-mpo.gc.ca/reports-rapports/regs/sff-cpd/benthi-eng.htm

5.6.9. 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.

6. OBJECTIVES

6.1. 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.

6.2. Pacific Region Biological Objectives

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.

6.3. Green Sea Urchin

6.3.1. Stock Conservation

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. Studies have included density 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. In BC, an age validation project for Green Sea Urchins was initiated in 2001, however, work on the project ceased in 2007 due to funding constraints and competing priorities. Fisheries and Oceans Canada strives to revive research on age determination of Green Sea Urchins, as resources become available. 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.

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.

6.3.3 Ecosystem

The Green Sea Urchin fishery is selective and the harvest is conservative. It is believed that harvesting practises have little impact on the surrounding ecosystem. However, in some areas of the BC coast there are high densities of Urchins which may negatively impact ecosystem function. DFO's goal is to consider the ecosystem in management decisions.

6.3.4. Social, Cultural and Economic

DFO's objective is to continue to work collaboratively with the Urchin Sectoral Committee to ensure sustainable fisheries and to collect input from all interested fishing sectors in the annual development of the IFMP.

6.3.4.1 First Nations

DFO's objective is to continue to provide opportunities for First Nations to harvest fish for food, social, ceremonial and domestic purposes, in a manner consistent with the decision of the Supreme Court of Canada in *R. vs. Sparrow* and subsequent court decisions. For more information, see the internet at: http://www.pac.dfo-mpo.gc.ca/abor-autoc/index-eng.html

Collaborative management strategies are also being developed through the Aboriginal Aquatic Resource Oceans Management Program, (AAROM), see internet at: https://www.dfo-mpo.gc.ca/fisheries-peches/aboriginal-autochtones/aarom-pagrao/index-eng.html

More information on the Treaties can be found at: https://www.bctreaty.ca/

First Nations involvement in the commercial fishery is a shared goal between DFO and Indigenous People. First Nation participation in the commercial fisheries is partially addressed through the Allocation Transfer Program (ATP) and Pacific Integrated Commercial Fishery Initiative (PICFI) programs based on their participation in these Indigenous programs. PICFI CFEs are distributed communal commercial fisheries licences and quotas to increase Indigenous participation in commercial fisheries and support capacity building to operate their Indigenous community-owned commercial fishing enterprises.

Options to resolve FSC and domestic harvest access requests will continue to be developed including recommendations for potential management change approval.

The Department will continue to develop catch monitoring programs and standards in collaboration with First Nations organizations.

The Department will continue:

- To discuss conservation, management and collaboration, reasonable FSC and domestic needs, and options to meet shared interests.
- To encourage First Nation representatives to share any issues or needs pertaining to FSC and domestic Green Sea Urchin) in their communal areas.

The Department has worked to create an environment within the advisory process in which First Nation representatives are welcome to express their concerns and opinions at the table and to establish working mechanisms in conjunction with the other fishing sectors to reduce conflict and mitigate issues. The Department will continue to collaborate with First Nations and other fishing sectors on efforts to improve the advisory process. Direct bilateral consultation between DFO and individual First Nations is also available upon request.

6.3.4.2. Recreational

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

6.3.4.3. 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. For more information, see Appendix 6.

7. 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.*

7.1. First Nations

To date there are no limits on the First Nations harvest of Green Sea Urchins for domestic use under Treaty or for food, social and ceremonial (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 these purposes. Allocations of Green Sea Urchins may be provided to First Nations who identify their FSC needs are not being met.

7.2. Recreational

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

7.3. Commercial

The annual commercial Green Sea Urchin total allowable catch (TAC) for 2024/25 is 738,425 lbs. (334.9 tonnes). The commercial TAC provides for an annual Individual Vessel Quota (IVQ) of 15,070 lbs.

7.4. Experimental, Scientific, Education or Public Display

DFO supports and facilitates scientific investigations related to Urchins. Scientific licence requests received from scientific, educational, and public display institutions, including biological collecting firms, are considered. Existing policies with respect to scientific licences and the use-of-fish apply.

8. 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;
- Size Limits
- Control and Monitoring of Removals
- Licensing

9. SHARED STEWARDSHIP ARRANGEMENTS

9.1. Commercial

The PUHA and DFO may undertake a collaborative agreement for annual stock assessment activities in support of the commercial fishery. The PUHA may fund surveys and research activities and their costs include vessel time, diver salaries, travel costs and a salary for a biologist. DFO may also provide vessel and divers and provide in-kind support and data analysis.

The PUHA funds a dockside monitoring program and a hail program to track all commercial green sea urchin landings as required by conditions of licence for each licence holder.

9.2. Fisheries and Oceans Canada

One Stock Assessment and one Resource Management personnel are directly involved in this fishery. Contributions to the IFMP are provided by Fisheries Management, the Science Branch, the Shellfish Data Unit, Conservation and Protection, the Pacific Fishery Licence Unit, Reconciliation and Partnership Branch, 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.

9.3. First Nations

Some coastal First Nations, including Treaty nations, may contribute time and expertise through collaborative research surveys by providing biologists, vessels and divers.

10. COMPLIANCE PLAN

10.1. Overview

General information about the Conservation and Protection (C&P) program is available at:

Fisheries enforcement (dfo-mpo.gc.ca)

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 logs 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.

Users of the resource have a responsibility to report violations. Any suspected or actual fisheries, wildlife or pollution violations can be quickly and discretely reported to the appropriate

enforcement officer by using the toll free observe, record and report hotline. This toll-free number is available 24 hours a day.

OBSERVE, RECORD AND REPORT 1-800-465-4DFO (1-800-465-4336)

Enforcement enquiries can also be directed to the local field offices during regular office hours.

10.2. Main Program Activities

10.2.1. 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).

10.2.2. Dockside Monitoring

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

10.2.3. Vehicle Inspection

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

10.2.4. 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.

10.2.5. 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.

10.3. 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 • 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.
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.

11. PERFORMANCE REVIEW

Performance indicators are reported in the Post-Season Review (Appendix 1).

11.1. Stock Assessment and Research

Stock Assessment activities undertaken during the previous season will be outlined.

11.2. First Nations Fishery

The post season review may include outcomes of meetings with First Nations on specific issues, and green sea urchin information contributing to, or resulting from, the treaty process.

11.3. Recreational Fishery

The post season review may include interactions with the recreational fishing representatives of the Sport Fishing Advisory Board (SFAB). Any recommendations and action taken in response by DFO will be described.

11.4. Commercial Fishery

The delivery of the commercial fishery will be assessed by performance measures including the number of vessels participating in the fishery, the number of licence eligibilities fished, the amount of green sea urchins landed and the estimated value of the fishery. Input from representatives at the Green Sea Urchin Sectoral Committee meetings may also be included.

11.5. Compliance

The post season review may include time spent attending to enforcement of the fishery. It should be noted that low numbers of violations may be indicative of a successful proactive program, establishing a visible presence of enforcement authority as a deterrent to non-compliance.

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13. GLOSSARY

Area	Defined in Section 2 of the *Pacific Fishery Management Area Regulations*. A map of Pacific Fishery Management Areas is available on the Department's Internet site at: http://www.pac.dfo-mpo.gc.ca/fm-gp/maps-cartes/areas-secteurs/index-eng.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 *Aboriginal Communal Fishing Licences Regulations*, to carry on fishing and related activities.
communal commercial licence	Issued to First Nations organizations pursuant to the *Aboriginal Communal Fishing Licences Regulations* 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.
Centre for Scientific Advice – Pacific (CSAP)	Centre for Scientific Advice - Pacific, chaired by DFO and including other federal and provincial government agency representatives and external participants.

Canadian Science Advisory Secretariat (CSAS)	Canadian Science Advisory Secretariat - coordinates the peer review of scientific issues for Fisheries & Oceans Canada. The different Regions of Canada conduct their resource assessment reviews independently, tailored to regional characteristics and stakeholder needs. CSAS facilitates these regional processes, fostering national standards of excellence, and exchange and innovation in methodology, interpretation, and insight.
Indigenous Knowledge	There is no universal definition of Indigenous knowledge, and the composition of Indigenous knowledge is for Indigenous peoples to determine. Indigenous knowledge is intricately tied to Indigenous worldviews and ways of life, and is a complex and dynamic product of the unique cultures, languages, governance systems and histories of the Indigenous peoples of the specific area. The term Indigenous knowledge may not be universally used, and other terms such as Indigenous Knowledge Systems, Traditional Knowledge, Traditional Ecological Knowledge, or Aboriginal Traditional Knowledge, which all convey similar concepts, may be used instead. When working with Inuit, the term Inuit Qaujimajatuqangit (IQ) is more likely to be used than Indigenous knowledge. Similarly, when working with Métis knowledge holders, the term Métis Traditional Knowledge is more likely to be used than Indigenous knowledge. Knowledge holders are the only people who can truly define Indigenous knowledge for their communities. The term Indigenous knowledge is used throughout this document in line with the terminology in the *Fisheries Act*.
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 *Fishery (General) Regulations*.
PUHA	Pacific Urchin Harvesters Association
Quota Area	A defined portion of Pacific fisheries waters. Areas and Subareas, as described in the *Pacific Fishery Management Area Regulations*, 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 provider	An agency contracted by fish harvesters or their harvesters' association to co-ordinate 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 *Pacific Fishery Management Area Regulations*
TAC	Total allowable catch. The amount of catch that may be taken from a stock, determined by analytical procedures to achieve management objectives.
Transhipment	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: POST-SEASON REVIEW FOR THE 2023/2024 SEASON

Overall, the in-season management of the fishery for the 2023/24 season was successful. No major issues were documented and in general, compliance with licence conditions and the catch validation program was very good.

1. Stock Assessment and Research

Density surveys were completed in the following areas:

- 2023: Portions of Management Area 19.
- 2021: Portions of Management Area 12.
- 2020: Portions of Management Area 19

For more information on any of these surveys please contact DFO Science(see contacts in Appendix 10).

2. First Nations Fishery

Catch information is collected by some First Nations, by fisheries program personnel or by Band administration offices. Fisheries and Oceans Canada (DFO) is working on initiatives to receive, store and manage food, social and ceremonial (FSC) harvest information. Some catch data have been collected under Aboriginal Fisheries Strategy (AFS) agreements. Sea urchins (any species) historically have constituted roughly 3% of the reported catch by weight of any shellfish species. No concerns were voiced from First Nations about access to Green Sea Urchins for food, social and ceremonial purposes however there were concerns about increasing urchin populations and reductions in kelp.

3. Recreational Fishery

There were a few comments from the recreational sector highlighting concerns around urchin barrens. The amount of green sea urchins harvested by the recreational sector is minimal.

4. Commercial Fishery

The fishery opened on September 1. The majority of landings occurred between October and January. There were landings in all QMAs with the exception of the exploratory areas 11 and 17. Overall, at the time of finalizing this IFMP the harvest for 2023/24 was 93% of the TAC. The landings are the highest landings on record since the 1993 season prior to quotas.

Minimal amounts of Green Sea Urchin are processed each year; the majority is marketed live. Industry has continued to develop new markets including live local dock sales.

5. Compliance

In general compliance with the catch validation program and other management programs was considered good.

6. Historic Information

Table 1. History of Management Actions in the Green Sea Urchin Fishery, 1987 to 2023/24.

Timeline	
1987	Dive fishery began. Scientific permits were issued, July 22 to December 31, to fishing vessels for harvest by diving. Logbooks were issued with permits to collect data on stock abundance and distribution. Permits were limited to the inside waters of Vancouver Island, Areas 12 to 19, 28 and 29. Some minor area closures for parks or study areas were in effect as for most dive fisheries. A precautionary minimum size limit of 40 mm was set as a condition of the permit. Sales slip data did not have a separate species code, so green and red sea urchin landings are mixed. As a result, landings have been estimated from logbook returns and hails from processors. Effort was restricted by limiting the season to the months of traditional peak market demand for sea urchins, Oct.-Dec. and Jan.-Feb
1988	Sales data for green sea urchins was recorded with a separate species code. Conservative closure set Jan. 16 to Feb. 28 in subareas 13-1 to 13-3 due to the intensive fishery in a small area. A Z category (Z-A) licence for green sea urchins was introduced for the fall fishery which opened Oct. 1. Minimum size limit increased to 55 mm test diameter and set as a condition of licence. The season was limited again, Jan. 1-Feb. 28 and Oct. 1-Dec. 31.
1989	A conservation closure was set for subareas 12-1 and 13-29 to 13-40, north of Campbell River, Jan. 31-Feb. 28/89 due to heavy fishing pressure and a high incidence of undersized urchins landed. A consultative process was initiated (the Green Sea Urchin Sectoral Committee)
1990	Licence limitation for 1991 was announced with the eligibility criteria of landings of 9,072 kg (20,000 lb.) over the two year period 1988 and 1989. At least 33 vessels were expected to qualify before appeals were held.
1991	Licence limitation - 47 vessels qualified and 47 vessels reported landings.
1992	South Coast: A conservation closure was set in the Kelsey Bay area, subareas 12-1, 13-32, 13-33 and 13-35, Feb. 25-Feb. 28. These subareas did not reopen for fall fishing until Dec. 7. North Coast: Fishery open year round, no quotas.
1993	Licences increased to 49. Notification of fishing required. No suction devices. Additional permanently closed areas for parks and reserves. South Coast: Reduced fishing times; Inside waters: season Jan. 4 to Jan. 28, 7 days/wk; Feb. 1 to Feb. 25, 4 days/wk, Mon.-Thurs. Fall fishery Nov. 1 to Dec. 16, 4 days/wk, Mon.-Thurs.; Dec. 6 to Dec. 30, 7 days/wk. Kelsey Bay limited to 7 days, Jan. 4 to 10. W.C.V.I.: season reduced to Oct. 4 to 28, 1992, 7 days/wk. North Coast: 7 days/wk, season reduced to Jan. 1 to Feb. 28 and Oct. 1 to Dec. 31.
1994	South Coast: A ceiling catch of 990,000 lbs (449 t) was set along with area quotas. Fishers requested to harvest 25% in Jan.-Feb. and the balance in Nov.-Dec. The days fishing were limited to four days/week (M-R) for some periods and others at 7 days/week. North Coast: No quota set; season reduced to periods Jan. 1 to Feb. 28 and Nov. 1 to Dec. 31. Consideration will be given for spring/summer fisheries depending on roe quality and landings.
Prior to 1995	Maximum of 100 lbs. quota overage allowed for transfer
1995/96	Fishing licences changed to expire on May 31, 1996. No fishing occurred prior to Nov. Licence stacking allowed up to 3 licences per vessel.

	Landings must be weighed and validated by a Service Provider at the time of offloading. South Coast: Pilot individual licence quota (IQ) system implemented with port validation (49 licences with IVQ 3.539 t). Area quotas also established, with total of 382,276 lbs (173.4 t). Only Areas 12, 13, 17 to 20, and 28 open; other areas available under an exploratory protocol. Fishing season was Nov. 20, 1995 to May 31, 1996. North Coast: No individual quotas. Areas 3 and 4 only open from Nov. 20, 1995 to Jan. 31, 1996, with quota of 20,000 lbs (90.72 t). Other areas open to fishing only under an exploratory protocol.
1996/97	Harvest logs and validation forms combined onto one sheet. Biosamples (sample test measurements) collected by validators. Commercial fishery restricted to areas with a known catch history. South Coast: IQ system still in effect (quota divided between 49 licence holders), with port validation. Area quotas established, with a total of 359,435 lbs (163.0 t). Only Areas 11, 12, 13, 17 to 20 and 28 open; other areas available under an exploratory protocol. Fishing season was Nov. 12, 1996 to Jan. 31, 1997 North Coast: North Coast closed, except under an exploratory protocol.
1997/98	Two year Management Plan (October 15, 1997 to May 31, 1999). Biological sampling of commercial catch. South Coast: Areas 11, 12, 13, 17 to 20 and 28 open from Nov. 10, 1997 to Mar. 15, 1998. Area quotas, with total of 366,079 lbs (166.1 t) (IQ 7,471 lbs). North Coast: North Coast closed, except under an exploratory protocol. Survey undertaken in Area 4.
1998	The West Coast Green Urchin Association conducted a stock assessment survey of a portion of Area 4 in the North; a commercial quota was set for the 1999/00 fishery based on the survey results
1998/99	Biological sampling of commercial catch. South Coast: Areas 11, 12, 13, 17, 18, 19, 20, and 28 open from Nov. 10, 1998 to Mar. 15, 1999. Area quotas, with total of 366,079lb (individual quotas 7,471 lbs), other areas available under an exploratory protocol. North Coast: Total quota of 13,000 lbs allotted to Area 4 from Nov. 10, 1998 to Mar. 15, 1999, other areas available under an exploratory protocol.
1999/00	Biological sampling of commercial catch. South Coast: Areas 11, 12, 13, 18, 19, and 20 open from Nov. 10, 1999 to Mar. 15, 2000. Area quotas, with total of 414,393 lbs (individual quotas 8,457 lbs), other areas available under an exploratory protocol. North Coast: Total quota of 13,000 lbs allotted to Area 4 from Nov. 10, 1999 to Mar. 15, 2000, other areas available under an exploratory protocol.
2000/01	Biological sampling of commercial catch. South Coast: Areas 11, 12, 13, 18, 19, and 20 open from Nov. 10, 2000 to Mar. 15, 2001. Area quotas, with total of 414,393 lbs (individual quotas 8,457 lbs), other areas available under an exploratory protocol. North Coast: Total quota of 13,000 lbs allotted to Area 4 from Nov. 10, 2000 to Mar. 15, 2001, other areas available under an exploratory protocol.
2001/02	Biological sampling of commercial catch. South Coast: Areas 11, 12, 13, 18, 19, and 20 open from Nov. 20, 2002 to Apr. 19, 2002. Due to unstable market conditions the season closing date of March 15, 2002 was extended until Apr. 19, 2002. Area quotas, with total of 394,646 lbs (individual quotas 8,054 lbs), other areas available under an exploratory protocol. North Coast: Available under an exploratory protocol.
2002/03	Biological sampling of commercial catch.

	South Coast: Areas 11, 12, 13, 18, 19, and 20 open from Oct. 15, 2002 to Mar. 15, 2003. Area quotas, with total of 394,646 lbs (individual quotas 8,054 lbs), other areas available under an exploratory protocol. North Coast: Available under an exploratory protocol.
2003/04	South Coast fishing areas included Areas 11, 12, 13, 18, 19, 20 with a TAC of 410,055 lb. Fishery ran from Nov 1, 2003 to March 1, 2004. No north coast activity
2004/05	South Coast fishing areas included Areas 11, 12, 13, 18, 19, 20 with a TAC of 410,055 lb. Fishery ran from Nov 1, 2004 to March 1, 2005. No north coast activity
2005/06	South Coast fishing areas included Areas 11, 12, 13, 18, 19, 20 with a TAC of 410,055 lb. Fishery ran from Nov 1, 2005 to March 1, 2006. No north coast activity
2006/07	South Coast fishing areas included Areas 12, 13, 18, 19 with a TAC of 447,174 lb. Fishery ran from Nov 1, 2005 to March 1, 2006. Areas 11 and 20 were removed from IFMP due to limited effort. Biological Sampling program suspended. Fisher Identification Number (FIN) required on harvest logs
2007/08	South Coast fishing areas included Areas 12, 13, 18, 19 with a TAC of 447,174 lb. Fishery ran from Nov 1, 2005 to March 21, 2006. An extension was approved past March 1.
2008/09	South Coast fishing areas included Areas 12, 13, 18, 19 with a TAC of 447,174 lb. The Fishery opened September 3, 2008 and closed March 31, 2009.
2009/10	South Coast fishing areas included Areas 12, 13, 18, 19 with a TAC of 447,174 lb. The Fishery opened September 11, 2009 and closed March 31, 2010. Last recorded landing was March 11, 2010.
2010/11	South Coast fishing areas included Areas 12, 13, 18, 19 with a TAC of 447,174 lb. The Fishery opened September 13, 2010 and closed August 31, 2011. Last recorded landing was April 8, 2011.
2011/12	South Coast fishing areas included Areas 12, 13, 18, 19 with a TAC of 447,174 lb. The Fishery opened September 1, 2011 and closed August 31, 2012. Last recorded landing was August 31, 2012. Developing live local dock sales.
2012/13	South Coast fishing areas included Areas 12, 13, 18, 19 with a TAC of 447,174 lb. The Fishery opened September 1, 2012 and closed August 31, 2013. Last recorded landing was August 30, 2013. Licence stacking limit waived.
2013/14	South Coast fishing areas included Areas 12, 13, 18, 19 with a TAC of 447,174 lb. The Fishery opened September 5, 2013 and closed August 31, 2014. Last recorded landing was August 22, 2014.
2014/15	South Coast fishing areas included Areas 12, 13, 18, 19 with a TAC of 447,174 lb. The Fishery opened September 1, 2014 and closed April 22, 2014. Last recorded landing was February 3, 2015.
2015/16	South Coast fishing areas included Areas 12, 13, 18, 19 with a TAC of 447,174 lb. The Fishery opened September 1, 2015.
2016/18	Two year IFMP: South Coast fishing areas included Areas 11, 12, 13, 18, 19 and 20 with a TAC of 491,764 lb.
2018/21	Three year IFMP. South Coast fishing areas included Areas 11, 12, 13, 18, 19 and 20 with a commercial TAC of 578,200 lb. Areas 13 and 20 were split to help distribute effort.
2021/22	Annual IFMP to better address changes in biomass and Markets. Areas 12 and 19 were split to better distribute effort. Exploratory fishing was permitted in new Areas 14, 16 and 28 as well as Area 11 becoming an exploratory area. The commercial TAC was increased to 646,800 lbs.

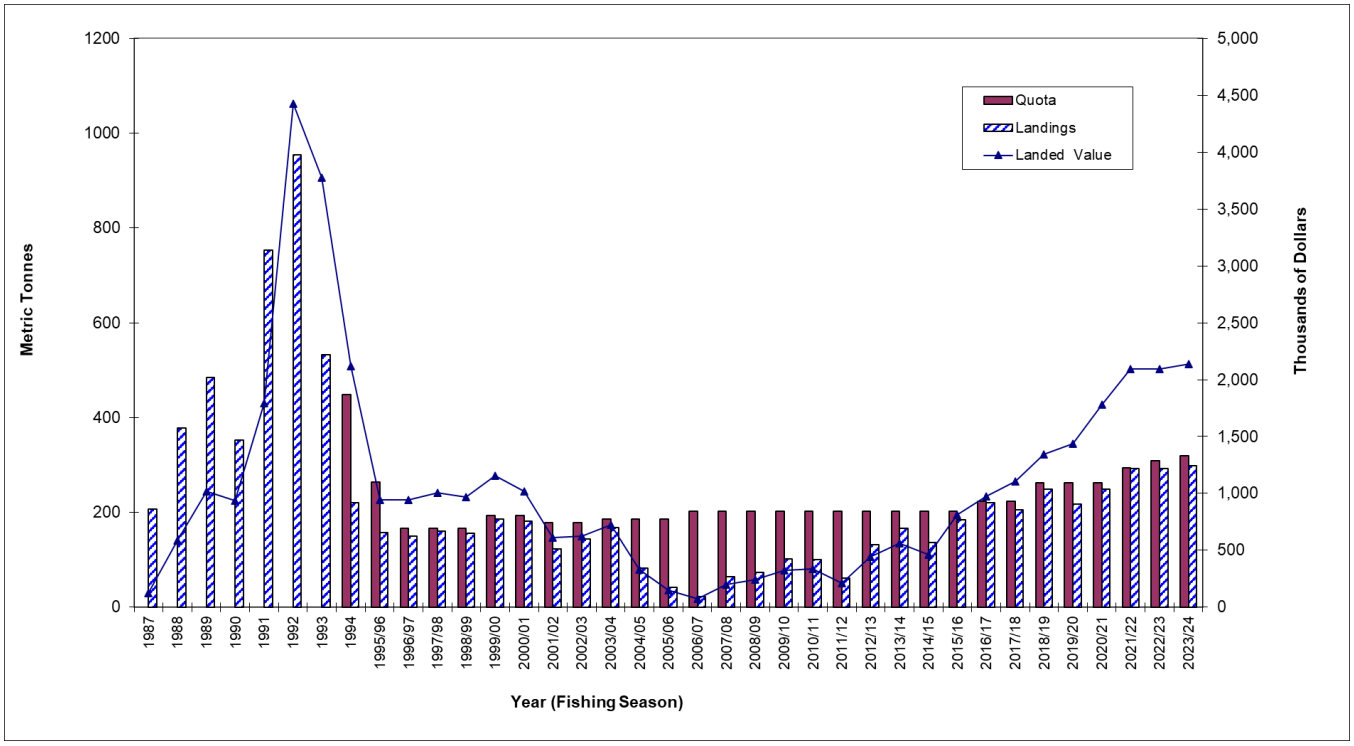
2022/23	Quota added to exploratory area 14, others remain exploratory. The commercial TAC was increased to 681,100 lbs.
2023/24	Area 17 added as an exploratory option. The commercial TAC was increased to 705,900 lbs.

Table 2. Overview of annual green sea urchin applied quota, landings, value and effort, 1987 to 2021, as reported on Validation and Harvest logs. Since 2002, harvest logs have provided the best estimate of catch and fish slips are no longer used. Average landed value is determined from a subsample of fish slips or an estimation of average price is provided by Industry.

Year	Type and Number of Licences Available	Number of Vessels with Landings	Quota (t)	Landings (lbs)	Landings (t)	Landed Value ($·10³)	Whole Landed Value [1] ($/t)
1987	Permit 38[2]	29			207	127	614
1988	Z 89	63			378	584	1,545
1989	Z 191	93			484	1,020	2,107
1990	Z 155	51			353	939	2,660
1991	Z 47	45			753	1,795	2,384
1992	Z 49	53			954	4,424	4,637
1993	Z 49	52			533	3,777	7,086
1994	Z 49	42	449*		221	2,122	9,602
1995/96	Z 45	39	173.4* (90.7**)		157	946	6,027
1996/97	Z 49	32	166.1		150	942	6,282
1997/98	Z 49	27	166.1		160	1,004	6,277
1998/99	Z 49	26	166.1		156	967	6,200
1999/00	Z 49	27	193.9		186	1,157	6,210
2000/01	Z 49	28	193.9		181	1,020	5,626
2001/02	Z 49	15	179.0		123	614	5,006
2002/03	Z 49	17	179.0		144	622	4,324
2003/04	Z 49	17	186.0	370,929	168	725	4,311
2004/05	Z 49	16	186.0	182,164	83	331	4,001
2005/06	Z 49	11	186.0	83,995	38	136	3,576
2006/07	Z 49	6	202.8	28,756	13	46	3,502
2007/08	Z 49	7	202.8	142,553	65	199	3,075
2008/09	Z 49	12	202.8	161,901	73	245	3,341
2009/10	Z 49	11	202.8	223,425	101	324	3,197
2010/11	Z 49	12	202.8	222,684	101	334	3,307
2011/12	Z 49	13	202.8	136,312	62	209	3,373
2012/13	Z 49	11	202.8	286,349	130	438	3,373
2013/14	Z 49	14	202.8	366,971	166	561	3,373
2014/15	Z 49	13	202.8	300,061	136	459	3,373
2015/16	Z 49	12	202.8	406,541	184	813	4,409
2016/17	Z 49	12	223.1	486,487	221	973	4,409
2017/18	Z 49	14	223.1	445,529	205	1,106	5,401
2018/19	Z 49	12	262.3	549,321	249	1,346	5,401
2019/20	Z 49	13	262.3	480,094	218	1,440	6,614
2020/21	Z 49	16	262.3	544,052	248	1,778	7,165
2021/22	Z 49	16	293.4	643,984	292	2,093	7,165
2022/23	Z 49	19	308.9	645,199	293	2,097	7,165
2023/24	Z 49		320.1	657,545	298	2,137	7,165

[1] from sales slip data
[2] scientific permits were issued to 38 vessels for fall 1987 to spring 1988 fishery.
Z licences were issued for the fall 1988 fishery.
* south coast quota only
** north coast quota only
Some values have changed due to finalization of data
Note: 2021-2024 data preliminary

Figure 1: Green Sea Urchin landings (tonnes), quotas (tonnes) and dollar value for 1987 to 2023/24 fishing seasons. (Note: 2021-24 values preliminary)



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 sources. The stock assessments include harvest options for the fishery and an evaluation of stock status. The stock status is assessed using fishery-independent data from biological dive surveys (index site density) and harvest options are derived from a Bayesian Biomass Dynamics Model. The model incorporates data from the commercial fishery (fishery-dependent data: catch per unit effort and catch) and fishery-independent data (density surveys) and is run separately for each of the two assessment regions; Northern Vancouver Island (NEVI; PFMAs 11, 12, and 13) and Southern Vancouver Island (SEVI; PFMAs 14, 18, 19, and 20) (Waddell et al. 2010; DFO 2010; DFO 2014; DFO 2016; DFO 2018; DFO 2021). The catch per unit effort (CPUE) used in the model is the median for each fishing season for each of the two regions. The CPUE estimates are calculated using commercial catch and effort data obtained from logbooks. The model also uses Green Sea Urchin biomass estimates from biological dive surveys. All of this information is run through the Bayesian model to estimate probability distributions for Maximum Sustainable Yield (MSY). Stock status is evaluated against the limit reference (LRP) and upper stock reference (USR) points developed in 2018 (DFO 2018).

An empirical approach was used to establish biological reference points (LRP and USR) based on the lowest observed historical estimates of population density for legal-sized urchins at index sites (on urchin habitat; DFO 2018) from which stocks recovered. From time series data at index sites, the minimum estimated mean density of legal-sized urchins (>55 mm Test Diameter; TD) from which stocks recovered was 0.9 urchins/m^2. This value was used to set reference points: a USR of 0.9 legal-sized urchins/m^2 and an LRP = 0.45 legal-sized urchins/m^2 on sea urchin habitat.

Biological dive surveys were conducted in the fall of 2021 in PFMA 12 and in March 2023 in PFMA 19. Preliminary results from the most recent biological surveys suggest that the Green Sea Urchin stocks within both NEVI (PFMA 12; 4.2 legal-sized urchins/m^2) and SEVI (PMFA 19; 5.7 legal-sized urchins/m^2) are in the healthy zone (DFO 2024).

An updated stock assessment report was finalized but in press at the time of publishing of this document and will be released in the summer of 2024 (DFO 2024). Advice from that report suggests that quotas, as set in this IFMP at 334.9 tonnes, would represent a <20% probability of exceeding the true MSY. The results are similar to the previous stock assessment paper.

DFO Science has developed a new multispecies benthic invertebrate dive survey (MSBIDS), which is designed specifically to generate the time-series data required for coastwide marine invertebrate stock status monitoring and assessment. The design of this new monitoring program was vetted through the Canadian Science Advice Secretariat Regional Peer Review process in July 2022 (Lochead et al. 2023). This new monitoring program is intended to provide an efficient way to monitor multiple benthic invertebrate stocks, including Green Sea Urchins, and support the implementation of coastwide reference points. Green Sea Urchins are currently considered a coastwide stock based on their distribution in BC and on inferences from other benthic broadcast spawners. However, the LRP and USR were developed for two historically high density areas (North East Vancouver Island and South East Vancouver Island) and it is uncertain whether these reference points are appropriate for coastwide use. Future work will include investigating

alternative ways to assess the stock , stock assessment program outputs, and reference points to determine if adjustments are necessary to determine coastwide stock status of Green Sea Urchins. Research into population connectivity will also commence this fiscal to assess the coastwide stock definition of the Green Sea Urchin stock.

The most recent multispecies benthic marine invertebrate dive survey (MSBIDS) was conducted in northern BC in the fall of 2023 (Haida Gwaii and along the North and Central coasts). Full implementation of the MSBIDS survey program began in fall 2023, following peer review of the survey design in 2022 (Lochead et al. 2023). The next MSBIDS is scheduled for September 2024 and will take place in southern BC (West Coast Vancouver Island, Salish Sea, Johnstone and Queen Charlotte Straits, and mainland inlets).

http://www.meds-sdmm.dfo-mpo.gc.ca/csas-sccs/applications/publications/index-eng.asp#RES

The latest stock assessment advisory report is available at:

http://www.dfo-mpo.gc.ca/csas-sccs/Publications/ScR-RS/2021/2021_036-eng.html

APPENDIX 3: GREEN SEA URCHIN FIRST NATIONS HARVEST PLAN

1. OVERVIEW OF THE FISHERY

Fish and marine resources are central to the culture, society, well-being, and economy of First Nations and provide a critical connection to language, traditional knowledge, and health of communities. Fisheries & Oceans Canada (DFO) remains committed to respecting First Nations' Aboriginal right to fish for food, social and ceremonial (FSC) purposes, or domestic purposes under Treaty, which has priority after conservation over other users of the resource.

DFO seeks to provide for the effective management and regulation of the First Nation fishery through negotiation of mutually acceptable and time-limited agreements which outline provisions pertaining to the fisheries and co-management activities. The agreements include provisions by which First Nations manage fishing by their members for FSC purposes, in addition to outlining First Nation involvement in a range of co-management activities and economic development opportunities which may include, but not be limited to, habitat enhancement, FSC catch monitoring and enforcement, fish management and community research.

Communal licences and, under Treaty, harvest documents (domestic purposes) are issued annually to First Nations under the authority of the *Aboriginal Communal Fishing Licences Regulations* made under the *Fisheries Act*. Communal licences and harvest documents can be amended in-season for resource conservation purposes. Where an agreement cannot be concluded, Fisheries & Oceans Canada still issues communal fishing licences to First Nations organizations.

First Nations may also participate in the commercial fishery.

2. MANAGEMENT MEASURES FOR FIRST NATIONS' FISHERIES

The amount of Green Sea Urchins harvested for FSC or domestic use purposes under treaty coastwide is believed to be minimal.

To date there are no limits on the First Nations harvest of Green Sea Urchins for these 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 these purposes. Allocations of Green Sea Urchins may be provided to First Nations who identify their FSC needs are not being met.

There is no size limit for the First Nations FSC Green Sea Urchins fishery.

3. OPEN TIMES AND AREAS

First Nations harvest for Green Sea Urchins for FSC, and for domestic purposes under treaty, are open year round if authorized by a communal licence or harvest documents.

4. LICENCING

First Nations access to fish for FSC purposes is managed through a communal licence, or under treaty, a harvest document which can permit the harvest of Green Sea Urchins. These licences are issued under the authority of the *Aboriginal Communal Fishing Licences Regulations*. Additional information on communal licences, are available at www.pac.dfo-mpo.gc.ca/abor-autoc/index-eng.html

5. CLOSURES

5.1. Harvesting on Aquaculture Tenures

Licensed aquaculture facilities are considered private property. Under the *Fisheries Act*, fishing within an aquaculture facility already under federal licence (*Pacific Aquaculture Regulations* aquaculture licence) is prohibited. The Department recommends that harvesters familiarize themselves with the location of aquaculture tenures in fishing areas. All tenures must be clearly marked.

6. CONTROL AND MONITORING OF FIRST NATIONS' FISHING ACTIVITIES

This fishery is regulated through the issuance of communal licences to First Nations organizations. Further arrangements for First Nations 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 First Nations fishery in co-operation with the Department.

Communal licences and harvest documents can be amended in-season for resource conservation purposes. Even where agreement cannot be concluded, Fisheries & Oceans Canada issues communal licences to First Nations organizations.

6.1. Treaty Fisheries

Fisheries chapters in modern First Nation treaties articulate treaty fishing rights for domestic purposes that is protected under Section 35 of the *Constitution Act, 1982*. Commercial access may be provided either through the general commercial fishery or a Harvest Agreement, which is negotiated at the same time as the treaty and is referenced in the treaty, but is not protected under the *Constitution Act*. While the following modern treaties do provide for bivalve harvest, no specific allocations for Geoduck or Horse clams are provided in them.

Nisga'a Domestic Fishing

The Harvest agreement for domestic (FSC) purposes under the Nisga'a Final Agreement (Treaty) came into effect on May 11, 2000. The Nisga'a territory is located within the Nass River valley on

the northwest coast of B.C. More information on the Treaty and the Nisga'a annual fishing plan can be found at: https://www.rcaanc-cirnac.gc.ca/eng/1100100030588/1542730442128

Tsawwassen Domestic Fishing

The Tsawwassen fishery for domestic (FSC) purposes under the Tsawwassen Final Agreement (Treaty) came into effect on April 3, 2009. The Tsawwassen First Nation is located in the lower mainland near the city of Vancouver, and their territory spans portions the Strait of Georgia near the mouth of the Fraser River as well as portions of the lower Fraser River and Boundary Bay. More information on the Treaty can be found at: https://www.rcaanc-cirnac.gc.ca/eng/1100100030588/1542730442128

Maa-nulth Domestic Fishing

The Maa-nulth First Nations fishery for domestic (FSC) purposes under the Maa-nulth First Nations Final Agreement (Treaty) came into effect on April 1, 2011. The Maa-nulth First Nations comprise five individual First Nations; Huu-ay-aht First Nations, Ka:'yu:'k't'h'/Che:k'tles7et'h' First Nations, Toquaht Nation, Uchucklesaht Tribe and the Yuułu?ił?ath First Nation on the west coast of Vancouver Island. More information on the Treaty can be found at: https://www.rcaanc-cirnac.gc.ca/eng/1100100030588/1542730442128

Tla'amin Domestic Fishing

The Tla'amin fishery for domestic (FSC) purposes under the Tla'amin Final Agreement (Treaty) came into effect on April 5, 2016. The Tla'amin Nation is located near the City of Powell River, 130 km northwest of Vancouver. More information on the Treaty can be found at: https://www.rcaanc-cirnac.gc.ca/eng/1100100030588/1542730442128

6.2. Five Nations Right-Based Fishery

Five Nuu-chah-nulth First Nations located on the west coast of Vancouver Island - Ahousaht, Ehattesaht, Hesquiaht, Mowachaht/Muchalaht, and Tla-o-qui-aht (the Five Nations) – have aboriginal rights to fish for any species, with the exception of Geoduck, within their Fishing Territories and to sell that fish.

Since 2019, DFO has released an annual Five Nations Multi-Species Fishery Management Plan (FMP). The FMP provides for a right-based multi-species sale fishery that DFO considers to accommodate the Five Nations' Aboriginal commercial fishing rights. The FMP outlines the Five Nations' fishing opportunities for salmon, groundfish, crab, prawn, Sea Cucumber and Gooseneck Barnacle and the fishery management regime.

The 2023/24 FMP is the fifth Multi-Species FMP developed by DFO since the 2018 BC Supreme Court Order and integrates changes following the 2021 BC Court of Appeal decision. DFO may make further changes in-season and amend the FMP as needed. The 2023/24 FMP has been extended to June 30, 2024 while the Government of Canada and the Five Nations complete negotiations for an Incremental Reconciliation Agreement for Fishery Resources.

DFO and the Five Nations will continue to work together to identify opportunities to harvest additional species and expand the multi-species sale fishery in future years. These opportunities will be developed, where possible, based on other access that DFO provides the Five Nations outside the FMP.

A PDF version of the 2023/24 FMP is available here: https://waves-vagues.dfo-mpo.gc.ca/library-bibliotheque/41096605.pdf

APPENDIX 4: GREEN SEA URCHIN RECREATIONAL MANAGEMENT MEASURES

1. INTRODUCTION

1.1. Tidal Waters Sport Fishing Licence

The recreational harvest of various fish and invertebrate species in BC is regulated via the *British Columbia Sport Fishing Regulations*, 1996 made under the *Fisheries Act*. A DFO Tidal Waters Sport Fishing licence is required for the recreational harvest of all species of fish and marine invertebrates.

Tidal Waters Sport Fishing licences may be purchased for a 1 day, 3 day, or 5 day period, or as an annual licence, covering the period April 1 (or date of purchase, whichever is later) to March 31 the following year. The annual licence fee is not pro-rated for annual licences purchased mid-season. Fees depend on licence duration, age (senior, adult, juvenile) and residency status. Licences for juveniles (under 16 years old) are free. Concessionary fees are not otherwise available. There were 302,000 adult fishers participating in BC's tidal waters recreational fishery in 2022/23.

Alternatively licences may be purchased over the counter at Independent Access Providers (IAPs) in many areas (note that the IAP may charge an additional service fee).

Licences may be purchased online via the National Recreational Licensing System:

http://www.pac.dfo-mpo.gc.ca/fm-gp/rec/licence-permis/application-eng.html.

A list of IAPs is available at:

http://www.pac.dfo-mpo.gc.ca/fm-gp/rec/licence-permis/iap-fai-eng.html.

1.2. Online Regulations

The regulations for recreational fishing are provided online in the British Columbia Tidal Waters Sport Fishing Guide, which lists open and closed times, catch limits, size limits (where applicable), and open and closed areas.

Changes to regulations are issued in Fishery Notices which are posted online and sent to subscribers by email.

The printed Sport Fishing Guide booklet is no longer being produced or distributed to reduce costs and environmental impacts. The online Sport Fish Guide allows for in-season regulations to be accurately provided and ensures all the regulations are up. Staff at local DFO offices can also provide regulatory information.

The British Columbia Tidal Waters Sport Fishing Guide is available at:

http://www.pac.dfo-mpo.gc.ca/fm-gp/rec/index-eng.html

Viewing Fishery Notices and application to receive Fishery Notices by email is available at:

http://notices.dfo-mpo.gc.ca/fns-sap/index-eng.cfm

Contact Information for DFO offices is available at:

https://www.dfo-mpo.gc.ca/contact/regions/pacific-pacifique-eng.html

For questions or comments of a general nature regarding SFO in the Pacific Region, call 604-666-0384 or email info@dfo-mpo.gc.ca

1.3. Using mobile devices and the FishingBC App

The FishingBC App, developed by the Sport Fishing Institute of BC, can be downloaded to a mobile device to assist with access to regulatory information for species, areas, fishing gear while on the water (along with other functionality).

Please note: the DFO Sport Fishing Guide website is the official site for regulatory information in the event of a discrepancy with the FishingBC App.

The FishingBC App may be downloaded at:

http://www.fishingbcapp.ca/

1.4. E-licences and Paper licences

At this time most fishers continue to use the traditional paper copy of their licence; however, an e-licence, which is an electronic/pdf copy of the licence, may be used on a mobile device but there are restrictions on its use.

Please consider these licensing requirements before a fishing trip:

- For all recreational tidal waters fishers that do not have an electronic copy of their licence on their mobile device, fishers must have a paper copy of their licence to show to a fishery officer;
- For users of the FishingBC App or on any electronic device, a PDF copy of their licence on the device is acceptable and must be immediately presented to a fishery officer upon request.

- **Catch recoding requirement:** Immediately upon retention of Chinook and Halibut in any Management Area and Lingcod in Management Areas 12 to 19 (excluding Subarea 12-14), Subareas 20-5 to 20-7 and 29-5, fishers must record these catches on their paper licence (preferred) or in their National Recreational Licensing System account (which requires internet access).
  - The catch recording requirement above applies even to fishers with an e-licence and catch details in the FishingBC App or in their mobile device.
  - Fishers who record their Chinook, Halibut and Lingcod catch records in their National Recreational Licensing system account may find it helpful to immediately take a screenshot of their catch records when they have internet access should they subsequently move out of range of a mobile network.

1.5. Supporting Sustainable Fisheries - Catch Reporting

The Sport Fishing Advisory Board (SFAB) is the primary consultative body for the recreational fishing communityand includes individual representatives from all geographic regions in BC as well as delegates from a number of fishing and service provider organizations. The SFAB and the recreational fishing sector strongly support effective fishery monitoring and catch reporting

programs in recreational fisheries. The SFAB continues to work with DFO on initiatives to strengthen fishing monitoring and catch reporting in the recreational fishery.

Recreational fishers are required as a condition of the Tidal Waters Sport Fishing Licence to report accurate information on their recreational fishing activity and catch upon request of designated authorities including creel surveyors, fishery officers and fishery guardians and if selected to the online iREC reporting program (see below).

1.6. Internet Recreational Effort and Catch (iREC) Reporting program

The internet Recreational Effort and Catch (iREC) reporting program is an online program that has been collecting effort and catch information from Tidal Waters Sport Fishing licence holders since July 2012. All 2023/24 adult Tidal Water Recreational Fishing licences will be selected to iREC reporting program and assigned to reporting period. Annual licence holders are required to report for only one month to limit their reporting burden. Term licence holders are required to report for all or most of the days that their licence is valid. Information regarding the iREC reporting requirement is printed on each licence including the reporting period, the website at which to report, a unique iREC Access ID and reporting deadline. Further, licence holders with a valid email address in the National Recreational Licencing system will receive emails reminding them to complete their iREC reports. Providing complete and accurate information to the iREC program when selected is a condition of licence (i.e. mandatory requirement).

The iREC reporting program is one of the sources that may be used in developing DFO official catch and effort estimates. The iREC reporting program methodology was peer reviewed and published by the Canadian Science Advisory Secretariat (CSAS) in 2015. This program provides monthly estimates of effort for six fishing methods and catch for over 80 species of sport caught finfish and invertebrates in all Pacific Fishery Management Areas based on responses by Tidal Waters Sport Fishing Licence holders. The recreational fishing methods covered by the iREC reporting program include boat-based angling, angling from shore, shellfish trapping from boat and shore, beach collecting, and diving. iREC estimates are used for methods and species not covered by the marine creel surveys, which cover only boat-based angling, and for months and areas not covered by marine creel surveys.

More information about the iREC reporting program is available at: https://www.pac.dfo-mpo.gc.ca/fm-gp/rec/report-declarez-eng.html

2. OPEN TIMES AND AREAS

Recreational fisheries are open as described in the British Columbia Tidal Waters Sport Fishing Guide for the recreational fishery

3. CLOSURES

Recreational fisheries are open year-round in all areas, or as described in the British Columbia Tidal Waters Sport Fishing Guide for the recreational fishery. All commercial and recreational fisheries are closed within the following areas within the Gwaii Haanas National Marine Conservation Area:

1. Kwoon Cove to Gowgaia Bay: Those waters of Subareas 2-38 to 2-41 and 142-1 inside a line commencing at a point on land on T'aaxwii XaaydaGa Gwaay.yaay iinaGwaay (Moresby Island)

at 52°23.311’N and 131°35.794’W northwesterly to a point on land on GuuGaalas Gwaay (south Gowdas Islands) at 52°23.340’N and 131°35.859’W, thence northerly following the shoreline of GuuGaalas Gwaay (south Gowdas Islands) to 52°23.489’N and 131°36.092’W, thence southwesterly to a point in water at 52°19.074’N and 131°43.794’W, thence northwesterly to a point in water at 52°38.115’N and 132°09.939’W, thence southeasterly to a point on land on T’aaxwii XaaydaGa Gwaay.yaay iinaGwaay (Moresby Island) at 52°38.177’N and 131°56.374’W, and thence southerly following the western shoreline of T’aaxwii XaaydaGa Gwaay.yaay iinaGwaay (Moresby Island) to the beginning point. [Kun Skuujii sda GawGaay.ya (Kwoon Cove to Gowgaia Bay)]

2. Wailing Island: Those waters of Subareas 2-31 and 142-1 inside a line commencing at a point on the western shoreline of T’aaxwii XaaydaGa Gwaay.yaay iinaGwaay (Moresby Island) at 52°07.210’N and 131°15.838’W easterly following the shoreline to 52°07.440’N and 131°14.307’W, thence southeasterly to a point on the northern shoreline of K’il (Flatrock Island) at 52°06.468’N and 131°10.300’W, thence easterly following the shoreline to 52°06.388’N and 131°10.079’W, thence southeasterly to the westernmost point of Sii.niihl Gwaay.yaay (Gordon Islands) at 52°06.018’N and 131°09.391’W, thence southerly following the shoreline of Sii.niihl Gwaay.yaay (Gordon Islands) to 52°05.884’N and 131°09.283’W, thence southeasterly to 52°05.806’N and 131°09.208’W, thence easterly following the shoreline of Sii.niihl Gwaay.yaay (Gordon Islands) to 52°05.787’N and 131°09.097’W, thence northeasterly to the shoreline of Sii.niihl Gwaay.yaay (Gordon Islands) at 52°05.788’N and 131°08.938’W, thence easterly following the shoreline and thence crossing the channel to 52°05.778’N and 131°08.861’W, thence southeasterly following the shoreline to 52°05.741’N and 131°08.788’W, thence following the shoreline of Sii.niihl Gwaay.yaay (Gordon Islands) to 52°05.708’N and 131°08.697’W, thence easterly across the channel to 52°05.709’N and 131°08.673’W, thence southerly following the shoreline of Sii.niihl Gwaay.yaay (Gordon Islands) to 52°05.468’N and 131°08.425’W, thence southeasterly to a point on the western shoreline of Gangxid Gwaay.yaay (Kunghit Island) at 52°04.414’N and 131°07.720’W, thence northerly and southerly following the shoreline of Gangxid Gwaay.yaay (Kunghit Island) to 52°04.366’N and131° 07.720’W, thence southwesterly to a point in water at 52°03.175’N and 131°14.399’W, thence northwesterly to a point in water at 52°05.826’N and 131°17.913’W, and thence northeasterly back to the beginning point. [SGang Gwaay (Wailing Island)]

3. South Kunghit Island: Those waters of Subareas 2-19, 102-3, 130-3 and 142-1 inside a line commencing at a point on the western shoreline of Gangxid Tllgaay (South Kunghit Island) at 51°57.689’N and 131°03.375’W easterly following the southern shoreline of Gangxid Tllgaay (South Kunghit Island) to 52°00.343’N and 130°59.788’W, thence southeasterly to a point in water at 51°50.163’N and 130°53.208’W, thence southwesterly to a point in water at 51°47.954’N and 130°53.612’W, thence northwesterly to a point in water at 51°54.940’N and 131°07.779’W, and thence northeasterly to the beginning point. [Gangxid Tllgaay (South Kunghit Island)]

4. Lyman Point to Receiver Point: Those waters of Subareas 102-2 and 102-3 inside a line commencing at a point on land of Kildaga T’awts’iiGaay (unnamed islet) at 52°04.541’N and 130°56.293’W following the shoreline of the islet to 52°04.591’N and 130°56.348’W, thence northwesterly to the eastern shoreline of Gangxid Gwaay.yaay (Kunghit Island) at 52°04.652’N and 130°56.414’W, thence northerly following the eastern shoreline of Gangxid Gwaay.yaay (Kunghit Island) to 52°05.734’N and 130°56.365’W, thence northeasterly to a point in water at 52°10.222’N and 130°49.514’W, thence southwesterly to a point in water at 52°02.635’N and

130°50.918’W, thence northwesterly back to the beginning point. [Gangxid Xyuu Kun sda Kan ’Láas Kun (Lyman Point to Receiver Point)]

5. Benjamin Point: Those waters of Subareas 2-17, 2-18 and 102-2 inside a line commencing at a point on the eastern shoreline of T’aaxwii XaaydaGa Gwaay.yaay iinaGwaay (Moresby Island) at 52°10.262’N and 131°01.993’W northerly following the eastern shoreline to 52°13.232’N and 131°00.777’W, thence northeasterly to a point in water at 52°17.735’N and 130°55.064’W, thence southeasterly to a point in water at 52°12.476’N and 130°49.103’W, and thence southwesterly back to the beginning point. [Kayjuu Kun (Benjamin Point)]

6. Head of Flamingo Inlet: Those waters of Subarea 2-37 north of a line drawn from a point on T’aaxwii XaaydaGa Gwaay.yaay iinaGwaay (Moresby Island) at 52°14.455’N and 131°22.232’W southeasterly across St’aa K’ii GawGa (Flamingo Inlet) to a point on land on the opposite shore at 52°14.228’N and 131°21.503’W. [St’aa K’ii GawGa (Flamingo Inlet) – Head]

7. Head of Louscoone Inlet: Those waters of Subarea 2-34 north of a line drawn from a point on land on T’aaxwii XaaydaGa Gwaay.yaay iinaGwaay (Moresby Island) at 52°11.841’N and 131°15.670’W northeasterly across the inlet to a point on the opposite shoreline of GawGajaang (Louscoone Inlet) at 52°12.245’N and 131°14.568’W. [GawGajaang (Louscoone Inlet) – Head]

8. Head of Rose Inlet: Those waters of Subarea 2-18 north of a line drawn from the western shoreline of K’insiGid (Rose Inlet) on T’aaxwii XaaydaGa Gwaay.yaay iinaGwaay (Moresby Island) at 52°11.327’N and 131°08.370’W northeasterly across the inlet to a point on the opposite shore at 52°11.328’N and 131°07.115’W. [K’insiGid (Rose Inlet) – Head]

9. Head of Huston Inlet: Those waters of Subarea 2-15 south of a line drawn from a point on the western shoreline of GawGan (Huston Inlet) at 52°15.732’N and 131°15.643’W northeasterly across the inlet to a point on the opposite shore at 52°16.111’N and 131°14.231’W. [GawGan (Huston Inlet) – Head]

10. Skincuttle Inlet to Burnaby Island: Those waters of Subareas 2-13 to 2-16 and 102-2 inside a line commencing at a point on the eastern shoreline of SGwaay Kun Gwaay.yaay (Burnaby Island) at 52°26.521’N and 131°14.153’W southeasterly to a point in water at 52°25.979’N and 131°04.470’W, thence southeasterly to a point in water at 52°22.829’N and 131°00.867’W, thence southwesterly to a point on the eastern shoreline of T’aaxwii XaaydaGa Gwaay.yaay iinaGwaay (Moresby Island) at 52°18.124’N and 131°18.347’W, thence northerly following the eastern shoreline of T’aaxwii XaaydaGa Gwaay.yaay iinaGwaay (Moresby Island) to 52°23.055’N and 131°23.441’W, thence northeasterly to the western shoreline of Gwaay GudgiiGaagid (Kat Island) at 52°23.082’N and 131°22.916’W, thence easterly following the southern shoreline of Gwaay GudgiiGaagid (Kat Island) to 52°23.147’N and 131°22.260’W, thence northeasterly to the western shoreline of SGwaay Kun Gwaay.yaay (Burnaby Island) at 52°23.276’N and 131°21.333’W, thence southerly following the western shoreline of SGwaay Kun Gwaay.yaay (Burnaby Island) to 52°20.949’N and 131°15.569’W, thence northeasterly to the easternmost point of SGwaay Kun Gwaay.yaay (Burnaby Island) at 52°22.315’N and 131°14.689’W, thence following the western shoreline of SGwaay Kun Gwaay.yaay (Burnaby Island) to 52°22.377’N and 131°14.683’W, thence northwesterly to a point on the eastern shoreline of SGwaay Kun Gwaay.yaay (Burnaby Island) at 52°24.494’N and 131°15.832’W, and thence following the eastern shoreline to the beginning point. [Suu Kaahlii sda SGwaay Kun Gwaay.yaay (Skincuttle Inlet to Burnaby Island)]

11. Poole Inlet: Those waters of Subarea 2-14 south of a line drawn from a point on the shoreline of SGwaay Kun Gwaay.yaay (Burnaby Island) in Gid Gwaa GyaaGa GawGa (Poole Inlet) at 52°22.764'N and 131°18.249'W southeasterly across the inlet to a point on the opposite shore at 52°22.505'N and 131°17.665'W. [Gid Gwaa GyaaGa GawGa (Poole Inlet)]

12. Mathieson Inlet to Huxley Island: Those waters of Subareas 2-12 and 2-13 inside a line commencing on the eastern shoreline of T'aaxwii XaaydaGa Gwaay.yaay iinaGwaay (Moresby Island) at 52°30.038'N and 131°28.071'W southeasterly to a point on land on Gwaay Guusdagang (All Alone Stone Island) at 52°29.081'N and 131°24.042'W, thence southeasterly to a point on the northern shoreline of Gaaduu Gwaay (Huxley Island) at 52°28.066'N and 131°21.772'W, thence southerly following the western shoreline of Gaaduu Gwaay (Huxley Island) to 52°25.934'N and 131°21.927'W, thence southwesterly to the northern shoreline of GaysiiGas K'iidsii Gwaay (Section Island) at 52°25.435'N and 131°22.425'W, thence westerly following the northern shoreline of GaysiiGas K'iidsii Gwaay (Section Island) to 52°25.460'N and 131°22.513'W, thence northwesterly to a point on the eastern shoreline of T'aaxwii XaaydaGa Gwaay.yaay iinaGwaay (Moresby Island) at 52°26.039'N and 131°25.343'W, thence northerly following the eastern shoreline of T'aaxwii XaaydaGa Gwaay.yaay iinaGwaay (Moresby Island) to 52°28.460'N and 131°27.972'W, and thence northerly to the beginning point. [Kuuniisii Xaw GawGa sda Gaaduu Gwaay (Matheson Inlet to Huxley Island)]

13. Juan Perez Sound to Lyell Island: Those waters of Subareas 2-11 and 102-2 inside a line commencing on the eastern shoreline of Tllga Kun Gwaay.yaay (Lyell Island) at 52°42.074'N and 131°26.535'W southeasterly to a point in water at 52°41.070'N and 131°14.485'W, thence southeasterly to a point in water at 52°38.677'N and 131°12.957'W, thence southwesterly to 52°35.106'N and 131°22.254'W, thence following the northern shoreline of Xiina Gwaay.yaay (Ramsay Island) to 52°34.964'N and 131°22.963'W, thence southwesterly following the shoreline to 52°34.116'N and 131°25.603'W, thence southwesterly following the shoreline to 52°33.844'N and 131°26.324'W, thence southwesterly to a point on Gandaawuu.ngaay Gwaay.yaay (Marco Island) at 52°31.498'N and 131°30.354'W, thence northwesterly to a point on Gandaawuu.ngaay Gwaayts'idaay (Hoskins Islets) at 52°32.405'N and 131°32.946'W, thence following the northern shoreline of Gandaawuu.ngaay Gwaayts'idaay (Hoskins Islets) to 52°32.435'N and 131°33.055'W, thence southwesterly to a point on the eastern shoreline of T'aaxwii XaaydaGa Gwaay.yaay iinaGwaay (Moresby Island) at 52°32.211'N and 131°34.475'W, thence easterly following the eastern shoreline to 52°32.956'N and 131°37.729'W, thence northeasterly to a point on the shoreline of Kingts'ii Gwaay.yaay (Bischof Islands) at 52°34.143'N and 131°33.379'W, thence easterly following the southeastern shoreline of Kingts'ii Gwaay.yaay (Bischof Islands) to 52°34.340'N and 131°33.098'W, thence northeasterly to a point on an islet at 52°34.530'N and 131°32.890'W, thence northeasterly to a point on the southern shoreline of Tllga Kun Gwaay.yaay (Lyell Island) at 52°35.767'N and 131°32.891'W, and thence easterly and northerly following the shoreline of Tllga Kun Gwaay.yaay (Lyell Island) to the beginning point. [Gandaawuu.ngaay Xyangs sda Tllga Kun Gwaay.yaay (Juan Perez Sound to Lyell Island)]

14. Darwin Sound: Those waters of Subarea 2-10 inside a line commencing at a point on land on Shuttle Island at 52°40.053'N and 131°42.328'W northeasterly to a point on the western shoreline of Tllga Kun Gwaay.yaay (Lyell Island) at 52°40.466'N and 131°41.105'W, thence southerly following the western shoreline of Tllga Kun Gwaay.yaay (Lyell Island) to 52°37.301'N and 131°38.800'W, thence northwesterly to a point on land of Gwaay DaaGaaw (Shuttle Island) at

52°38.522’N and 131°41.409’W, and thence following the eastern shoreline of Shuttle Island to the beginning point. [Didxwahxyangs (Darwin Sound)]

15. Klue Passage to Lost Islands: Those waters of Subareas of 2-7 and 2-8 inside a line commencing on a point of the eastern shoreline of T’aaxwii XaaydaGa Gwaay.yaay iinaGwaay (Moresby Island) at 52°48.606’N and 131°39.403’W northeasterly to a point in water at 52°49.405’N and 131° 29.042’W, thence southeasterly to a point in water at 52°48.148’N and 131°28.849’W, thence southwesterly to a point in water at 52°44.898’N and 131°34.035’W, thence northwesterly to 52°45.113’N and 131°34.125’W, thence following the northern shoreline of K’ang.Guu Gwaay.yaay (Kunga Island) to 52°45.220’N and 131°35.574’W, thence southwesterly to a point on T’aanuu Gwaay (Tanu Island) at 52°45.002’N and 131°36.770’W, thence northerly following the eastern shoreline of T’aanuu Gwaay (Tanu Island) to 52°46.725’N and 131°38.878’W, thence northwesterly across to a point on T’aaxwii XaaydaGa Gwaay.yaay iinaGwaay (Moresby Island) at 52°47.837’N and 131°39.371’W, and thence northerly following the eastern shoreline to the beginning point. [T’aanuu K’aadxwah Xyangs sda Gwaay Xaa’ans (Klue Passage to Lost Islands)]

3.1. Harvesting on Aquaculture Tenures

Licensed aquaculture facilities are considered private property. Under the *Fisheries Act*, fishing within an aquaculture facility already under federal licence (PAR aquaculture licence) is prohibited. The Department recommends that commercial harvesters familiarize themselves with the location of aquaculture tenures in fishing areas. As per the conditions of licence, all sub-tidal and intertidal boundaries shall be marked clearly.

4. 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 on the DFO website (link below) showing the British Columbia Tidal Waters Sport Fishing Guide which lists closed times, daily and possession limits and closed areas. http://www.pac.dfo-mpo.gc.ca/fm-gp/rec/index-eng.html

Please also refer to your Tidal Water Sport Fishing licence which lists important Conditions of Licence restrictions for many species/areas.

4.1. Gear

Green Sea Urchin may only be harvested by handpicking.

4.2. Daily Limits

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

4.3. Possession Limits

The possession limit for urchin species combined is two times the daily limit, twenty- four (24).

4.4. Size Limits

There is no size limit for the recreational sea urchin fishery.

APPENDIX 5: GREEN SEA URCHIN AQUACULTURE MANAGEMENT MEASURES

1. AQUACULTURE MANAGEMENT

1.1. Regulatory Regime:

In December 2010, the *Pacific Aquaculture Regulations* (PAR) came into effect, giving DFO the authority to govern the management and regulation of aquaculture activities at marine finfish, shellfish, freshwater/land-based and enhancement facilities. The Province of B.C. continues to have authority over land tenures and workplace safety related to aquaculture in B.C. New applications, amendments and related referrals are coordinated through Front Counter B.C. More information is available on the B.C. government's website: http://www.frontcounterbc.gov.bc.ca/. DFO approves and issues aquaculture licences.

DFO requires comprehensive environmental monitoring to be undertaken by industry, and the Department also conducts additional monitoring, audits, and investigations (where warranted). Public reporting is undertaken to ensure the transparency and accountability of the management of aquaculture in B.C. Associated reporting can be found on the DFO web pages: http://www.pac.dfo-mpo.gc.ca/aquaculture/reporting-rapports/index-eng.html.

There are multiple units within the B.C. Aquaculture Regulatory Program, including those dedicated to aquaculture compliance and monitoring the activities of industry on an on-going basis. The Program provides oversight and works to ensure the orderly management of the industry, including planning and licensing, linkages with national and regional policy, and consultation and communications requirements. Contact information for staff with responsibilities related to Aquaculture Management within DFO can be found in the Departmental Contacts section of this plan.

1.2. Integrated Management of Aquaculture Plans:

Integrated Management of Aquaculture Plans (IMAPs) provide an overview of each aquaculture sector and associated management and regulation. IMAPs are available on the DFO website: Aquaculture regulations and compliance | Pacific Region | Fisheries and Oceans Canada (dfo-mpo.gc.ca).

1.3. Aquaculture Management Advisory Committees:

Aquaculture Management Advisory Committee (AMAC) meetings engage the aquaculture industry, First Nations, and other stakeholders in development of IMAPs and provide on-going feedback relevant to the management of aquaculture. Information relating to AMAC meetings is posted on the DFO website: http://www.pac.dfo-mpo.gc.ca/consultation/aquaculture/index-eng.html.

For more information on IMAPs and AMACs, please contact DFO.PACAquacultureEngagement-EngagementdelaquaculturePAC.MPO@dfo-mpo.gc.ca..

2. GREEN URCHIN AQUACULTURE

2.1. Objective

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 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:

http://www.dfo-mpo.gc.ca/aquaculture/ref/AWAR-ARAS-eng.htm

Requests to access the wild Green Sea Urchin resource for the purpose of aquaculture 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).

2.2. Access and Allocation

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.

3. LICENSING

3.1. Broodstock Collection

The collection of broodstock for enhancement and aquaculture purposes is facilitated through a collection licence from DFO Fisheries Management and a licence from the Introductions and Transfers Committee (ITC). Requests for access are reviewed according to the DFO policy, *Access to Wild Aquatic Resources As It Applies to Aquaculture, (2004)*. Under this policy, it is estimated that up to 0.1% of the commercial total allowable catch, may be allocated for aquaculture purposes such as broodstock collection.

Contact the Introductions and Transfers Committee at DFO.BCITC-CITCB.MPO@dfo-mpo.gc.ca.

4. CLOSURES

4.1. Harvesting on Aquaculture Tenures

Licensed aquaculture facilities are considered private property. Under the *Fisheries Act*, fishing within an aquaculture facility already under federal licence (PAR aquaculture licence) is prohibited. The Department recommends that commercial harvesters familiarize themselves with the location of aquaculture tenures in fishing areas. As per the conditions of licence, all sub-tidal and intertidal boundaries shall be marked clearly.

APPENDIX 6: 2024/2025 GREEN SEA URCHIN COMMERCIAL HARVEST PLAN

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1. MANAGEMENT CHANGES AND HIGHLIGHTS

This Commercial Harvest Plan will be in effect from September 1, 2024 to August 31, 2025. There may be updates to many sections of the Commercial Harvest Plan. Fish harvesters are advised to carefully review all information.

- **Fishing Season:** The 2024/25 IFMP will be in effect from September 1, 2024 to August 31, 2025. See Section 3.
- **Commercial Total Allowable Catch (TAC) (changed):** An annual commercial TAC has been set at 334.9 tonnes (738,425 lbs). Increased from last management plan set at 320.1 tonnes (705,600 lbs). See Section 3.
- **Individual Quota (changed):** The annual individual quotas (IQ) will equal 1/49th of the coast-wide commercial TAC or 6.84 tonnes (15,070 lbs) per licence. Increased from last management plan set at 6.53 tonnes (14,400). See Section 3.
- **Exploratory Quotas:** Allison Harbour (Area 11), the Sunshine Coast (ptn of Area 14, Area 16 and portions of Area 28) and Nanaimo (Area 17 and 29-5) remain as exploratory quotas. Cape Lazo (ptn. Area 14) will also hold an exploratory option above the set quota. These areas will be fished under an exploratory protocol. Quotas are limited and any product harvested from these areas will have quota removed from existing quota areas to not exceed the overall TAC but allows for opportunity to look for new fishing locations. See Section 3.3
- **Changes to Quota Management Areas:** Subarea 29-5 has been added to the quota management area 17 (Nanaimo). Subarea 29-4 has been add to the quota management area 18 (Southern Gulf Islands). Subareas 28-9 through to 28-14 have been removed from quota management area 16 (Sunshine Coast/Howe Sound). Subareas 20-1 and 20-2 have been removed from quota management area 20B (Sooke West).
- **Seasonal Research Closures:** Specific areas of the coast may be closed temporarily or be delayed in opening 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 for the commercial 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

Limited entry licensing 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 or FZA).

Currently there is one licence designated as Communal commercial FZA. This license is monitored with the commercial fishery and has 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 total (ZA and FZA) licences eligible for this fishery.

2.3. Individual Quota Program

IQs were implemented for the Green Sea Urchin fishery, starting as a pilot in November 1995. The IQ program includes an equal allocation of the coast-wide TAC among licences. A third party service provider was hired to monitor catch.

2.4. Area Quotas

The coast-wide commercial TAC is the sum of Area quotas. Quota Areas are comprised of Areas, Subareas and/or portions of Subareas.

3. OPEN TIMES AND QUOTA AREAS

The commercial fishery will open no earlier than September 1, and close no later than August 31, of the following year. The commercial fishery generally opens early in the fall depending on market demand and generally closes in the spring of the following year. Markets generally guide harvest. 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 Pacific Urchin Harvesters Association (PUHA).

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

The South Coast commercial Total Allowable Catch (TAC) is 334.9 tonnes (738,425 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	Name	Description	Quota(lbs)	Quota (tonnes)
11*	Allison Harbour	All of area 11	***3,000***	***1.36***
12A	12 West	12-1 to 12-21, 12-24, 12-26, 12-39	259,425	117.67
12B	12 East	12-22, 12-23, 12-27 to 12-38, 12-40 to 12-48	50,000	22.68

13A	Cape Mudge	13-1, 13-14 and 13-15	95,000	43.09
13B	S. Johnstone St.	13-27 to 13-35	55,000	24.95
13C	Cordero Channel	13-23 to 13-26 & 13-36 to 13-43	30,000	13.61
13D	Discovery Pass North/Sonora Island	13-7 to 13-13 and 13-16 to 13-22	20,000	9.07
13E	Willow Point	13-2	38,000	17.24
13F	Discovery Pass South	13-3, 13-4, 13-5 and 13-6	35,000	15.88
14**	14	Area 14 excluding 14-3	20,000	9.07
16*	Sunshine Coast/Howe Sound	14-03, 15-01 to 15-05, 16-01 to 16-04, 16-09 to 16-12, 16-16 to 16-22, 28-1 to 28-8 ***	***16,000***	***7.26***
17*	Nanaimo	Area 17 and Subarea 29-5***	***3,000***	***1.36***
18	Southern Gulf Islands	Area 18; Subareas 29-4, 19-6 and that portion of subarea 19-5 north of a line running due east from Cormorant Point ***	30,000	13.61
19A	19 East	Area 19 except subareas 19-3, 19-6 and ptn of 19-5 north of a line running east from Cormorant Pt	43,000	19.50
19B	19 West	19-3	7,000	3.18
20A	Sooke East	Ptn of Area 20-5 East of Otter Pt. 20-6, 20-7	45,000	20.41
20B	Sooke West	Area 20-3, 20-4 and ptn of 20-5 West of Otter Pt.***	11,000	4.99
Coastwide Total			**738,425**	**334.95**

* Exploratory
** Quota plus 10,000 lb Exploratory option
*** Change in Area Description since previous season.

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

3.2. Urchin Barren Management

The Department, A-Tlegay Fisheries Society and PUHA are piloting an Urchin Barren Management Approach for both Red Sea Urchins and Green Sea Urchins as part of an ecosystem management approach in Management Area 13. Urchin barrens exist around Management Area 13 and may be negatively impacting the growth of kelp and sessile invertebrates. In order to reduce the number of Green Sea Urchins in this area, for the past five seasons a TAC has been allocated to a previously closed area in Discovery Passage. Discussions involving DFO, A-Tlegay Fisheries Society and PUHA will be ongoing to determine the future of the pilot program. Urchin Barrens continue to persists, this season a higher quota was recommended and implemented in this area.

The Department is aware that Green Sea Urchin Barrens are becoming more common within other areas within the Straight of Georgia. Increased harvest rates will be considered in urchin barren areas as part of the ecosystem management approach.

3.3. Exploratory Quota Protocol

The Green Sea Urchin fishery has been limited, for many years, due to poor market conditions. In recent years market conditions have improved and at the same time urchin populations have increased due to changes in ocean conditions and a decrease in predators. This increase in urchin populations has been detrimental to the local ecosystem. In order to meet the increased market demand and attempt to reduce urchin numbers, a number of areas have been recently added to allow harvesters to explore beyond current quota area boundaries. Any quota taken from exploratory areas will not increase the overall TAC but will allow harvesters to determine the feasibility of fishing in these areas. Feedback from harvesters will inform whether surveys should be undertaken and if quota should be added on a longer term basis moving forward.

3.4. Other Areas

Areas of the coast not listed in the Quota Areas above may be considered for openings upon discussion with PUHA and local First Nations. An independent stock assessment survey of the area that demonstrate a sustainable harvest quota can be established, may be required to include quota options within the TAC outside the exploratory protocol. Fish harvesters will be required to fund any stock assessment surveys. Proposals for new areas may be sent to the Department for review.

There is interest in returning to the North Coast and the West Coast of Vancouver Island for commercial harvest opportunities. Consultation is ongoing with First Nations, industry and other Stakeholders.

4. LICENSING REQUIREMENTS FOR THE COMMERCIAL FISHERY

4.1. National Online Licensing System (NOLS) – Licensing Services

All fish harvesters/licence holders/vessel owners are required to use the National Online Licensing System (NOLS) to view, pay for and print their commercial fishing licences, licence conditions and/or receipts. NOLS website: http://www.dfo-mpo.gc.ca/fm-gp/sdc-cps/licence-permis-eng.htm

Training materials, including step-by-step guides and a detailed user training manual, are available online (http://www.dfo-mpo.gc.ca/FM-GP/SDC-CPS/licence-permis-eng.htm) to guide users of the system in completing their licensing transactions. The Department also provides client support and assistance on how to use the system via email at fishing-peche@dfo-mpo.gc.ca or by calling toll-free at 1-877-535-7307 (7:00AM to 8:00PM Eastern, Monday to Friday).

Information on the National Online system may be found on the DFO internet site at: http://www.dfo-mpo.gc.ca/fm-gp/sdc-cps/licence-permis-eng.htm

Please visit the Pacific Region Licensing website and subscribe to fishery notices for updates on the National Online Licensing System and licensing services: http://www.pac.dfo-mpo.gc.ca/fm-gp/licence-permis/index-eng.html

For more information on how to register and use the system, visit the Department's website at the website address above, or contact our client support.

Licence Renewal:

In order to retain the privilege to be issued a commercial licence in the future, it is critical that you renew you licence and pay the applicable licence renewal fees through the online system on an annual basis, whether fishing takes place or not. Should the licence not be renewed by the licence expiry date of the next calendar year, the licence eligibility will cease to exist and DFO will be unable to consider any licence issuance requests in the future.

4.2. Licence Category

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

Category ZA licence eligibilities are limited entry and party-based. Category FZA licence; a First Nations group is the licence eligibility holder.

4.3. Licence Renewal Fees

In accordance with the Service Fees Act, annual licence renewal fees will be adjusted by the annual rate of inflation determined by the Consumer Price Index (CPI) published by Statistics Canada.

The commercial Green Sea Urchin Species (Category ZA) licence renewal fee may be found on the following link: Commercial fishing licence renewal fees 2024-2025 | Pacific Region | Fisheries and Oceans Canada (dfo-mpo.gc.ca)

There is no annual licence renewal fee for communal commercial category FZA licences.

4.4. Licence Application and Issuance

Renewal of a commercial Green Sea Urchin licence and payment of the fees must be done on an annual basis to retain the privilege to be issued the licence in the future, regardless of whether or not fishing is carried out. Those commercial green sea urchin licences not renewed by August 31st will cease and licence issuance requests will be unable to be considered in future.

Prior to annual licence issuance licence eligibility holders are required to annually designate the fishing vessel to hold the licence. This must be done by navigating to the 'Submit a Request' menu selection within the National Online Licensing System (NOLS). Full instructions are available at:

http://www.dfo-mpo.gc.ca/fisheries-peches/sdc-cps/products-produits/request-demande-eng.html

Prior to licence issuance, licence eligibility holder(s) must:

- Meet any Ministerial conditions placed on the licence eligibility.
- Ensure any conditions of the previous year's licence such as submission and approval of logbooks have been met.
- Designate a registered commercial fishing vessel eligible for a commercial or communal commercial licence for salmon, schedule II, Sablefish, Halibut, crab, shrimp, prawn, Geoduck or groundfish trawl.

To avoid delays please ensure the payment and vessel designation information is submitted all at the same time through the 'Submit a Request' menu selection within the NOLS.

Vessel length restrictions for vessels used to harvest Green Sea Urchins under the IQ program have been waived by Fisheries and Oceans Canada. Fisheries and Oceans Canada reserves the right to reinstate vessel length restrictions at the lengths associated with each licence eligibility.

4.5. Designation of Harvesters to Fish a Communal Commercial Licence

Under the *Aboriginal Communal Fishing Licence Regulations*, every person working on a vessel that is fishing under authority of a Communal Commercial Licence must be designated by the First Nation that holds the licence. The designation must be made in writing and include the person's name and reference the Communal Commercial Licence.

The designation must be carried on-board and be produced on request of any Fishery Officer.

First Nations licence holders interested in obtaining an example template to use to designate their fish harvesters may contact a DFO Resource Manager or Pacific Fishery Licencing Unit office (see Contacts in Appendix 10).

4.6. Individual Quotas

The holder of the licence eligibility to the commercial harvest of Green Sea Urchins is provided the opportunity to harvest up to 6.84 tonnes (15,070 lbs.) of Green Sea Urchins.

4.7. Licence Documents

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

Replacements for lost or destroyed licence documents may be obtained by reprinting the licence document through the National Online Licensing System.

4.8. Vessel Re-designations

Re-designation of Green Sea Urchin licenses is allowed as long as any Conditions of Licence, such as the completion of logbooks, have been met and accepted by the Shellfish Data Unit.

Navigate to 'Submit a Request' Re-Designate a vessel. Full instructions can be found at Online Licensing - Submitting a Request and Checking the Request Status (dfo-mpo.gc.ca)

4.9. Licence Eligibility Nominations

Category ZA Green Sea Urchin licence eligibilities may be nominated from one party to another. Nominations must be completed and submitted to the Pacific Fishery Licence Unit via the National Online Licensing System (NOLS) by the licence holder. Notarize the application 'Nomination for Party-Based Licence Eligibility'. Scan the document and attach it to a 'Submit Request' in NOLS. PDF or standard picture formats are accepted (jpg, etc.).

The following requirements must be met:

a.) Any Condition of Licence such as the completion of logbooks have been submitted and approved by the Shellfish Data Unit.

b.) Communal commercial (category FZA) licence eligibilities are not eligible for Nomination.

4.10. Fisher Identification Number (FIN)

A unique FIN is assigned to each vessel owner and holders of commercial licence eligibilities, or Fisher Registration Cards (FRC) in the Pacific Region. This allows for quick and accurate identification. (The FIN is printed on the FRC and both party and vessel based licences.)

Licence holders may be asked to provide their FIN when applying for a licence, or for dockside monitoring, or for enforcement purposes.

For further information, please contact a PFLU or a resource manager (see Contacts, Appendix 10)

4.11. 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 (CFIA) inspection regulations for holding or transporting fish and have appropriate licences.

4.12. Licence to Transport Green Sea Urchins

Any registered vessel with a commercial or communal commercial Salmon, Schedule II, Geoduck, Sablefish, Crab, Shrimp, Groundfish or Prawn licence, a transporting, category D or a Herring seine licence, category HS may transport Green Sea Urchins under special Conditions of Licence which are included with all vessel-based licences issued for the current fishing year. For further information contact a Pacific Fishery Licence Unit.

Note: When product is transferred from one vessel to another vessel or a vehicle, that vessel or vehicle requires a provincial Fish Vendor licence. This licence is required for all types of vessels and vehicles including aircraft. The licence may also be required for personal vehicles in some instances, when a vehicle is carrying the catch from more than one vessel, even if the licence holder owns both vessels.

Fish harvesters should check the Province of British Columbia's website for additional information: http://www2.gov.bc.ca/gov/content/industry/agriculture-seafood/fisheries-and-aquaculture/seafood-industry-licensing.

4.13. Processing

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 Pacific Urchin Harvesters Association (PUHA) and Fisheries and Oceans Canada.

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 PUHA to provide notification, validation, biological sampling and data services for the 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 complement those in the Conditions of Licence (issued with each commercial licence), that outline the requirements for fishery control and monitoring. See Appendix 9.

5.1. Quantities Permitted

Annual IQ for the period of this management plan has been set at 6.84 tonnes (15,070 lbs).

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. Containers used to Hold or Transport Green Sea Urchins

There are several requirements for the type, size and marking of containers used to hold or transport sea urchins and the condition of containers for food inspection purposes.

Any containers used in the transport of "fish" (including urchins) for export must meet the requirements outlined in Part 4 of the Safe Food for Canadians Regulations (SFCR). See CFIA's website for further information: https://inspection.canada.ca/food-safety-for-industry/toolkit-for-food-businesses/sfcr-handbook-for-food-businesses/eng/1481560206153/1481560532540?chap=0

5.3.1. 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#.

5.3.2. 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. Transhipment

All product harvested under a green sea urchin licence must be harvested from and retrieved by the vessel designated on the licence. If that product is to be retrieved at a later time by the licensed vessel, it must be appropriately tagged. If that product is going to be transhipped to another vessel (i.e. for landing purposes), that vessel must be appropriately licensed for packing purposes. At no time should unlicensed vessels be used to harvest, retrieve, store, or tranship product

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 seabed 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 PUHA.

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. 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. Harvesters taking product in excess of the individual licence quota are subject to prosecution.

5.6.4. Lost Product

Product lost or wasted at sea will use the following protocol.

i. 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 individual quota and the applicable area quota.

ii. The weight of product spoiled or wasted because of weather-related delays will also be applied to both the catcher vessel's individual quota and the applicable area quota.

iii. The Department, in consultation with the service provider, will use the estimated packer or ground weight and appropriate water loss calculation for the harvest site to determine an estimated dock weight.

Situations requiring use of this protocol will be discussed with the PUHA prior to implementation.

5.6.5. Conditions and Procedures for Quota Overage Transfer

5.6.5.1. Quota Area Quota Overages

Any Quota Area overages 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 result in prosecution and seizure of the overage.

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.

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.

Remaining Quota on Second Licence - The amount transferred cannot exceed the remaining quota of Green Sea Urchin Licence "B".

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).

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.

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 Vessel Registration Number (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 the service provider contracted by the PUHA to provide data services for the Green Sea Urchin Fishery. The service provider will provide the Validation & Harvest Logbook coding and data entry 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 having validation services completed by the service provider contracted by the PUHA 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 PACSDU@dfo-mpo.gc.ca

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 System 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 wishes 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 Condition of Licence.

5.8.4. Confidentiality of Harvest Data

Harvest data (including fishing location data supplied through latitude and longitude co-ordinates, 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 harvester.

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

For more information: Fish slip information (dfo-mpo.gc.ca).

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: https://inspection.canada.ca/food-safety-for-industry/eng/1299092387033/1299093490225. However, as these requirements can vary, exporters of sea urchins are encouraged to verify foreign country import requirements though their customers prior to export.

6. CLOSURES

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

6.1. Human Waste Containment Regulation

Disposal of human waste into waters where shellfish are harvested or adjacent to shellfish harvest areas creates unnecessary and potentially serious health risks for shellfish consumers. In accordance with the Canadian Shellfish Sanitation Program (CSSP) and Regulations administered by Transport Canada, raw sewage (human wastes, sewage or refuse) shall not be discharged from vessels while in or adjacent to shellfish areas. Vessels operating at a distance which does not allow for timely access to on-shore washroom facilities are expected to have a designated human waste receptacle on board. Receptacles could include a portable toilet, a fixed toilet, or other containment device as appropriate. Such devices must be made of impervious, cleanable materials and have a tight-fitting lid. (Refer to Division 4 of the Vessel Pollution and Dangerous Chemicals Regulations under the *Canada Shipping Act*):

1. Portable toilets or other designated human waste receptacles shall be used only for the purpose intended, and shall be so secured and located as to prevent contamination of the shellfish area or any harvested shellfish on board by spillage or leakage.
2. The contents of toilets or other designated human waste receptacles shall be emptied only into an approved sewage disposal system.
3. Every person onboard a shellfish harvest vessel must wash and sanitize their hands after using or cleaning a waste receptacle, or after using an onshore washroom facility.

Information on Human Waste Containment Receptacle Requirements under the CSSP can be found at the following Canadian Food Inspection Agency internet site:
https://www.inspection.gc.ca/preventive-controls/fish/cssp/questions-and-answers/eng/1563470479199/1563470589053

6.2. 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.

6.3. Harvesting on Aquaculture Tenures

Licensed aquaculture facilities are considered private property. Under the *Fisheries Act*, fishing within an aquaculture facility already under federal licence (PAR aquaculture licence) is prohibited. The Department recommends that commercial harvesters familiarize themselves

with the location of aquaculture tenures in fishing areas. As per the conditions of licence, all sub-tidal and intertidal boundaries shall be marked clearly.

6.4. 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. Research undertaken in these areas are a co-operative effort between Fisheries and Oceans Canada, PUHA, and local First Nations and are aimed at quantifying variability in population structure and density over time in commercially unfished areas. For further information on the research areas please contact the Science Branch (see Appendix 10).

6.4.1. Year Round Research Closures

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 Plumper 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.

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.

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

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)

6.4.2. 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.

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)

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 to 48°24.99’ N, 123°14.99’ W northwest to 48°25.83’ N, 123°16.11’ W then back to the point of commencement. (See Figure 6, Appendix 5)

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)

6.5. Permanent Closures

The following areas will be closed for Green Sea Urchins.

6.5.1. Area 1

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

6.5.2. Area 2

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 52º23.071' N and 131º20.427' W, east to a point at 52º23.079' N and 131º22.790' W, then following the southern shoreline of Kat Island east to a point at 52º23.104' N and 131º22.193' W, then east to a point at 52º23.303' N and 131º22.277' W, then following the western shoreline of Burnaby Island south to a point at 52º20.982' N and 131º20.427' W, then west to a point at 52º20.733' N and 131º21.063' W, then north following the eastern shoreline of Moresby Island back to the point of commencement. (National Marine Conservation Area).

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 52º11.828' N and 131º15.662' W east to 52º12.269' N and 131º14.579' W. (National Marine Conservation Area).

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 52º14.523' N and 131º22.24' W southeast to 52º14.245' N and 131º21.481' W. (National Marine Conservation Area).

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 52º24.947' N and 131º32.13' W southeast to 52º24.233' N and 131º32.021' W. (National Marine Conservation Area).

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 51º56.509' N and 131º01.547' W, southwest to a point at 51º55.499' N and 131º02.468' W, then southeast to a point at 51º52.493' N and 130º57.907' W, then south to a point at 51º51.655' N and 130º57.780' W, then southeast to a point at 51º50.395' N and 130º56.561' W, then northeast to a point at 51º51.054' N and 130º54.702' W, then north to a point at 51º53.826' N and 130º55.640' W, then northwest to a point at 51º58.517' N and 130º59.468' W, then west to a point at 51º58.727' N and 131º00.620' W then west following the southern shoreline of Kungit Island back to the point of commencement. (National Marine Conservation Area).

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 52º05.655' N and 131º13.178' W. (National Marine Conservation Area).

6.5.3. Area 5

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)

6.5.4. Area 12

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

6.5.5. Area 13, 14, 15

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)

6.5.6. Area 14

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 239º true for 0.5 nautical miles, thence 126º true for 3.5 nautical miles, thence 64º true for 4.9 nautical miles, thence 304º true for 2.9 nautical miles, thence 213º true for 0.5 nautical miles to Cape Gurney on Hornby Island. (Marine Reserve)

6.5.7. Area 15

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)

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)

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

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)

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

6.5.8. Area 16

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)

6.5.9. Area 18

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

6.5.10. Area 19

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)

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

Race Rocks: Those waters of Subareas 19-3 and 20-5 within 0.5 nautical miles of Great Race Rock. (Marine Reserve) This area is being considered for a Marine Protected Area (MPA). The closure boundary description may change.

6.5.11. Area 20

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)

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)

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)

6.5.12. Area 23

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

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)

6.5.13. Area 24

Barney Rocks: Those waters of Subarea 24-2 and 124-3 within 25 m of Barney Rocks. (First Nations access for food, social and ceremonial purposes)

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. Long Beach: Those waters of Subarea 124-1 and 124-3 from Wya Point along the 20m bathymetry to Cox Point. (Park)

6.5.14. Area 25

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)

6.5.15. Area 26

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 127º49.58' W long., 50º05.18'N lat.), thence due south to the 50º parallel, thence due east to Alert Point on Lookout Island, thence northeasterly to a point on Vancouver Island near McLean Island (at 127º25.03' W long., 50º02.1' N lat.), thence northwesterly along the shore of Vancouver Island to Malksope Point (at 127º28.95 W long., 50º05.53' N lat.), thence due west to a point mid-channel on the southeast end of Gay Passage (at 127º30.1' W long., 50º05.53' N lat.), thence mid-channel through Gay Passage to a point mid-channel on the northwest end of Gay Passage (at 127º31.8' W long., 50º06.7' N lat.), thence northwesterly to the shore of Vancouver Island, just west of Theodore Point (at 127º32.8' W long., 50º07.7' N lat.), thence westerly along the Vancouver Island shore to an unnamed point on the east side of Nasparti Inlet (at 127º38.6 W long., 50º08.75' N lat.), thence westerly across Nasparti Inlet to an unnamed point on Vancouver Island (at 127º37.8' W long., 50º08.7' N lat.), thence along the Vancouver Island shore to the point of commencement

6.5.16. Area 28

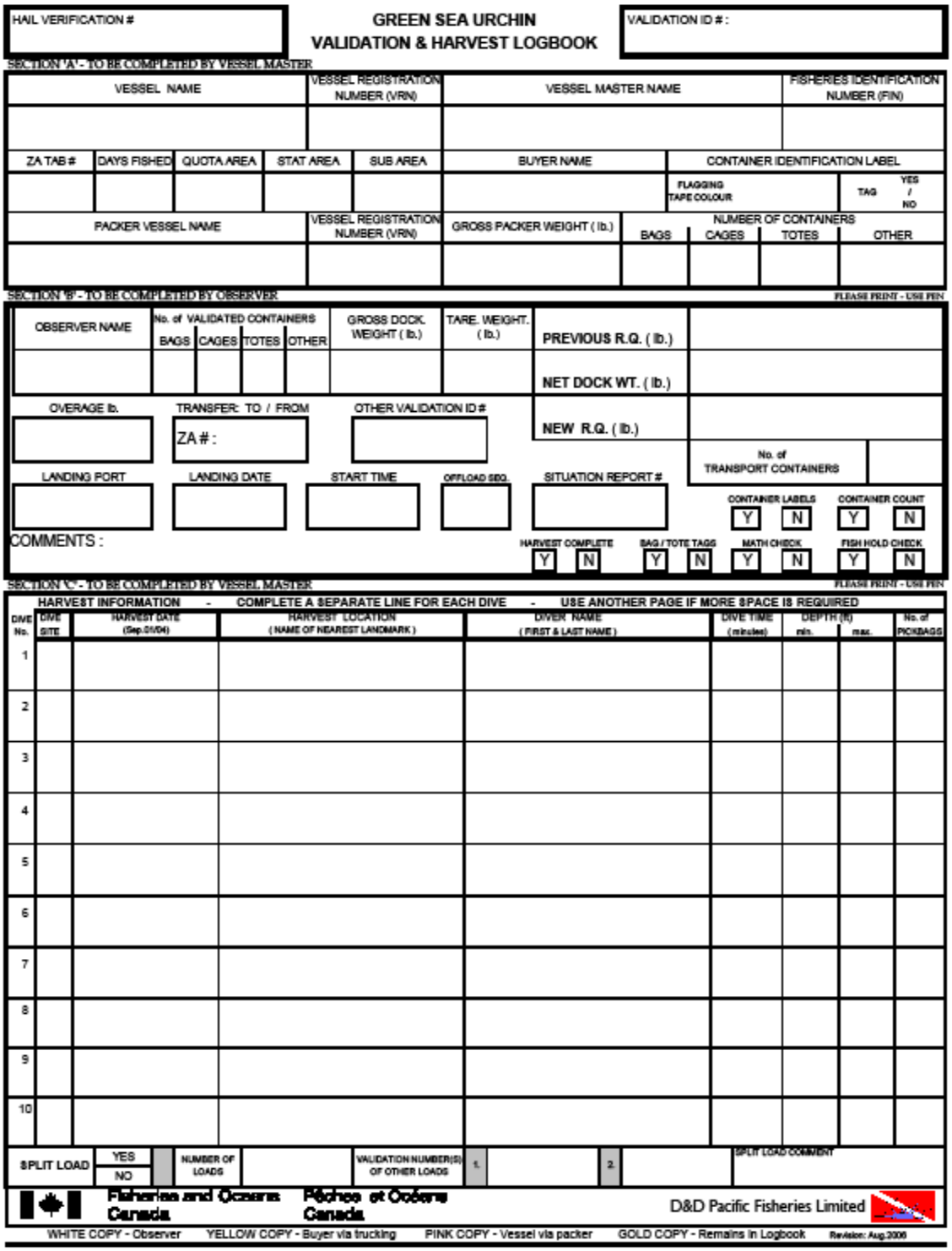
Porteau Cove: That portion of Subarea 28-4, east of a line drawn from a white fishing boundary sign located on the south shore of Porteau Cove to a white fishing boundary sign located on the north shore of Porteau Cove. (Marine Reserve)

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)

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

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)

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.)		
	BAGS	CAGES	TOTES	OTHER			PREVIOUS R.Q. (lb.)	
							NET DOCK WT. (lb.)	
OVERAGE lb.	TRANSFER: TO / FROM		OTHER VALIDATION ID #				NEW R.Q. (lb.)	
	ZA # :						No. of TRANSPORT CONTAINERS	
LANDING PORT	LANDING DATE	START TIME	OFFLOAD SEQ.	SITUATION REPORT #			CONTAINER LABELS Y N	CONTAINER COUNT Y N

COMMENTS :

HARVEST COMPLETE Y N | BAG / TOTE TAGS Y N | MATH CHECK Y N | FISH HOLD CHECK 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.01/04)	HARVEST LOCATION (NAME OF NEAREST LANDMARK)	DIVER NAME (FIRST & LAST NAME)	DIVE TIME (minutes)	DEPTH (ft) min.	DEPTH (ft) max.	No. of PICKBAGS
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								

SPLIT LOAD	YES / NO	NUMBER OF LOADS	VALIDATION NUMBER(S) OF OTHER LOADS	1.	2.	SPLIT LOAD COMMENT

Fisheries and Oceans Canada / Pêches et Océans Canada — D&D Pacific Fisheries Limited

WHITE COPY - Observer YELLOW COPY - Buyer via trucking PINK COPY - Vessel via packer GOLD COPY - Remains in Logbook Revision: Aug.2006

APPENDIX 8: MAPS OF GREEN SEA URCHIN QUOTA AREAS

Refer to Appendix 6 for Quota Area Descriptions and Closure Descriptions

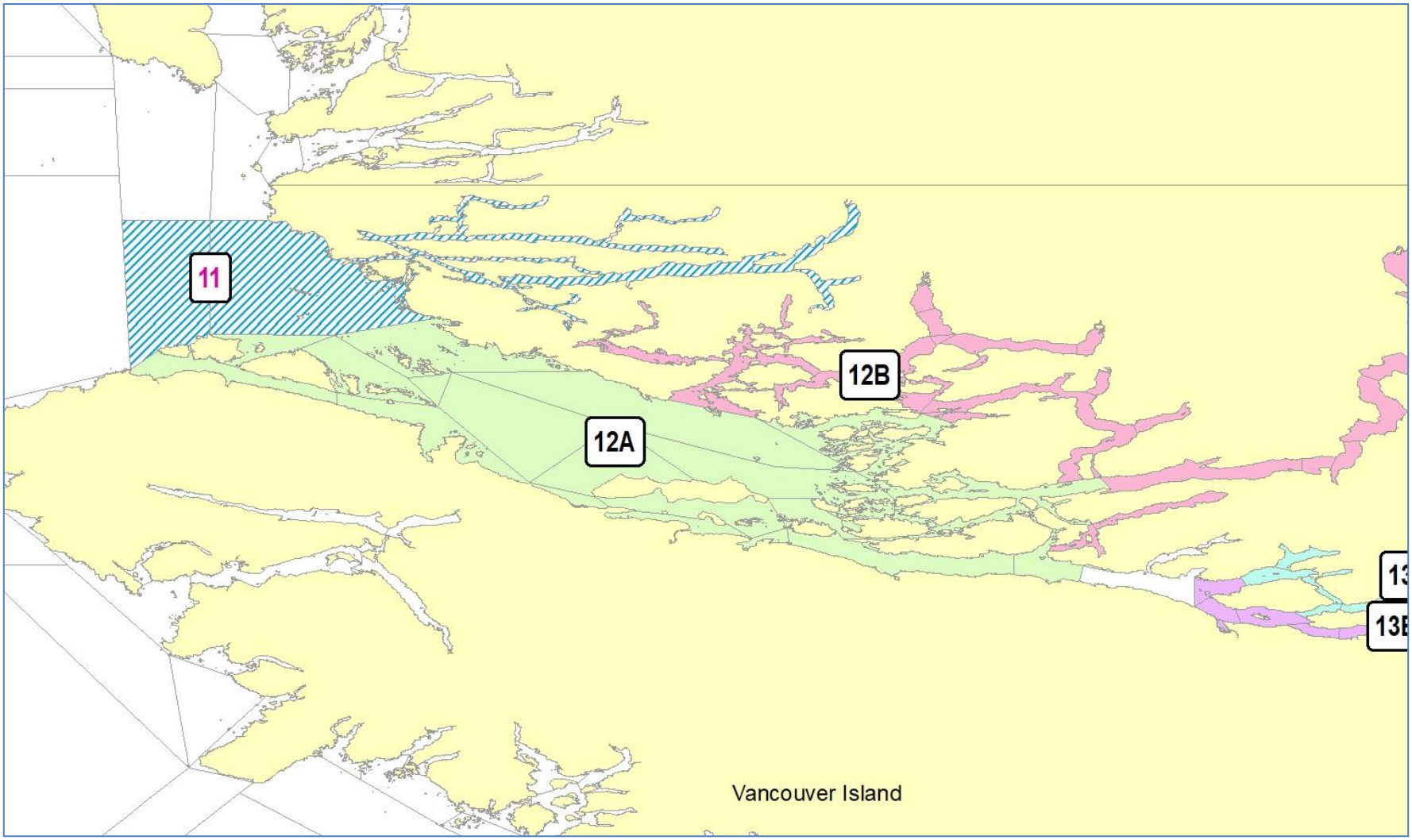


Figure 1: Green Sea Urchin Quota Area 12A and 12B. Exploratory Quota Area 11.

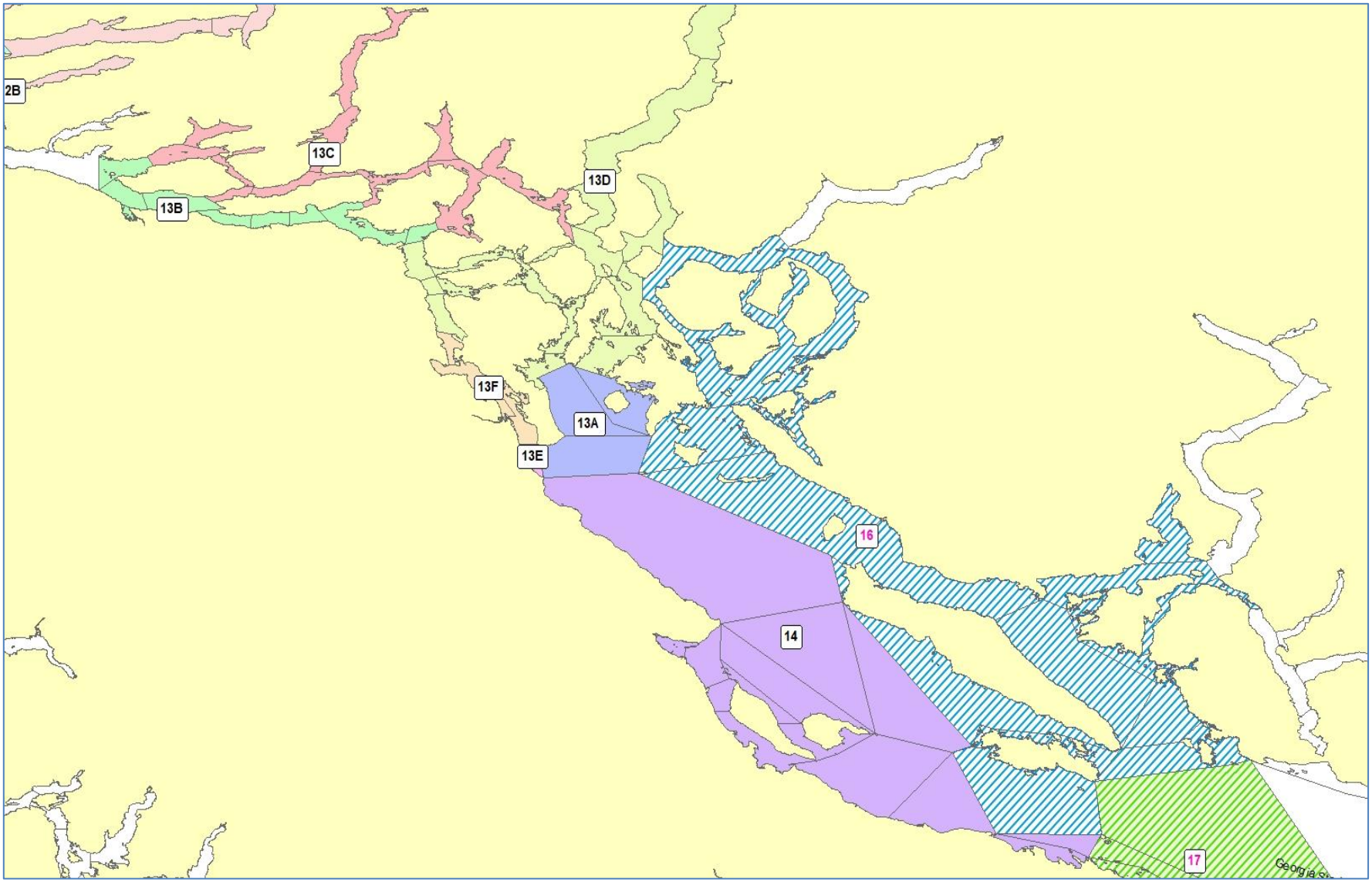


Figure 2: Green Sea Urchin Quota Areas 13A, 13B, 13C,13D, 13E, 13F, 14 and Exploratory Quota Area 16.

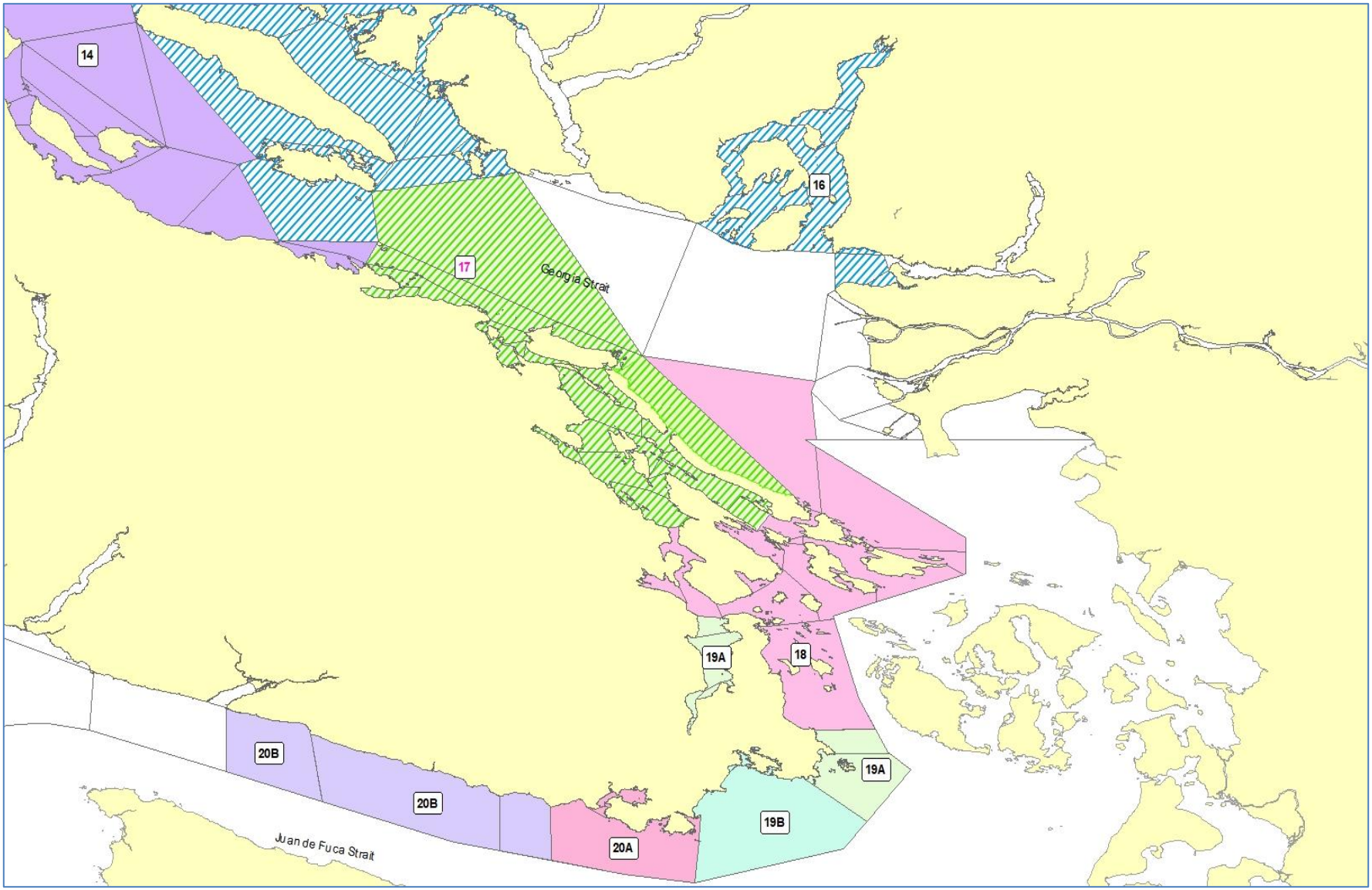


Figure 3: Green Sea Urchin Quota Areas exploratory quota areas 16, 17 and 23, 18, 19E, 19W, 20A and 20B.

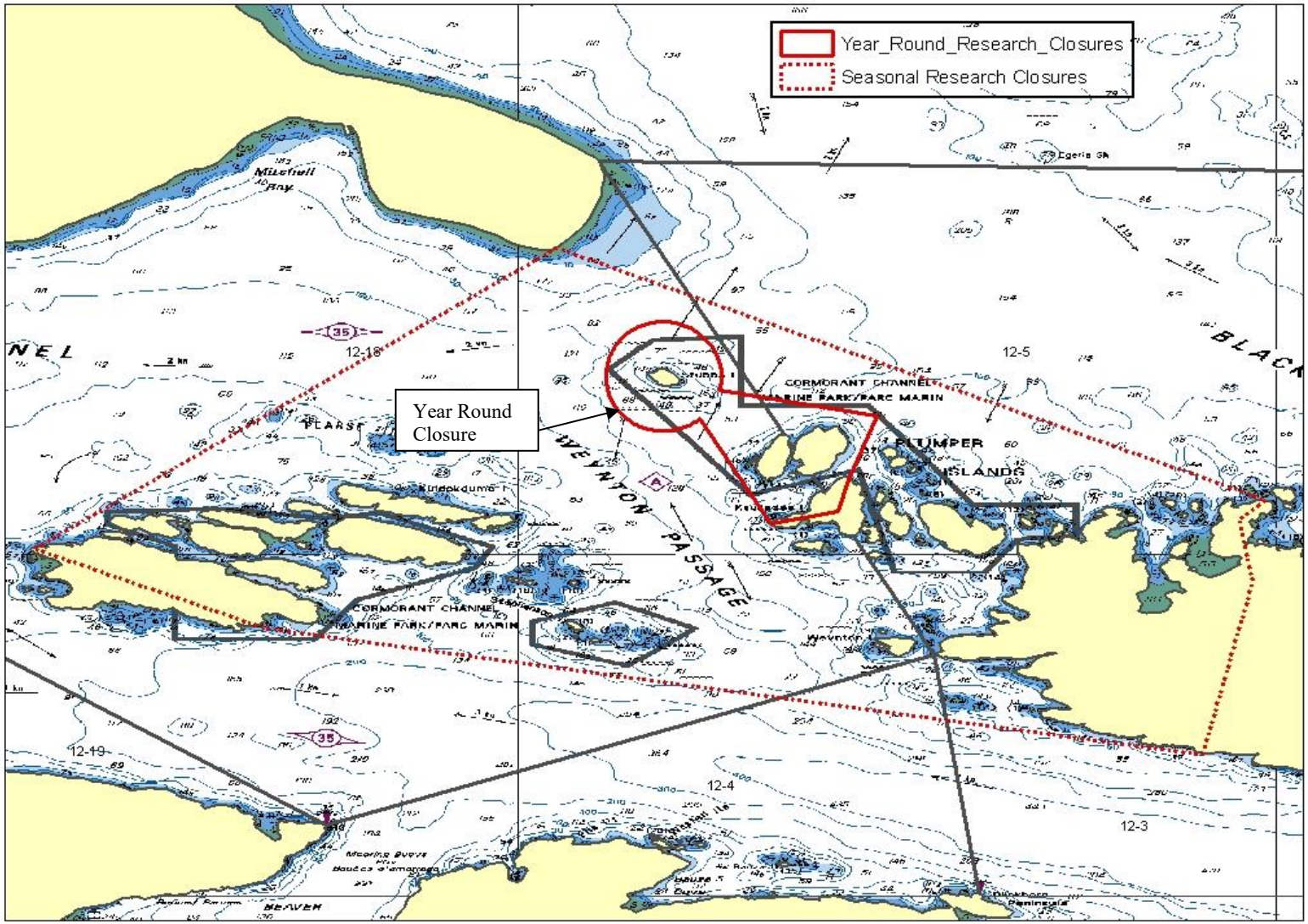


Figure 5: Area 12 Seasonal and Year Round Research Closures.

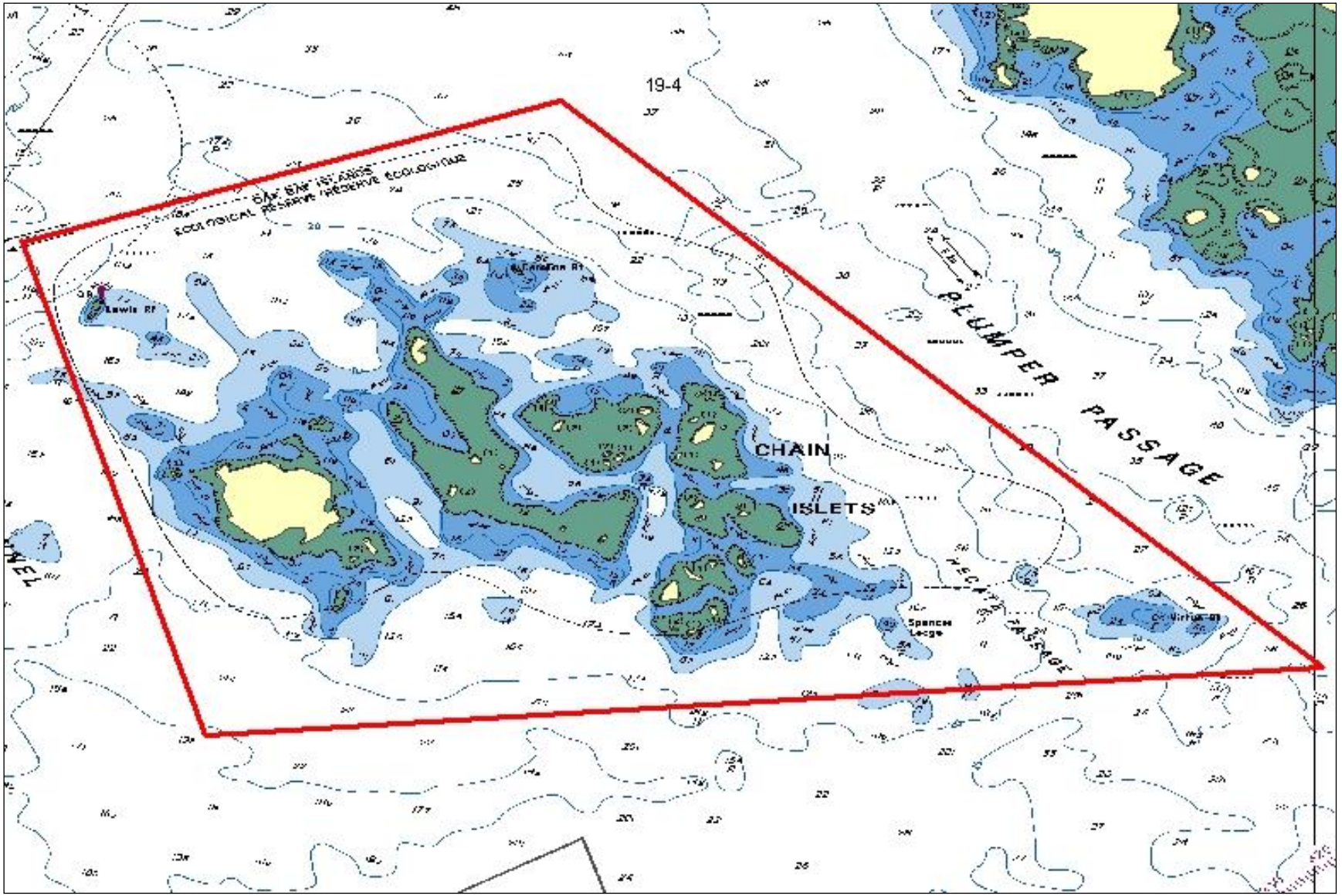


Figure 6: Area 19 Seasonal Research Closure Chain Islets.

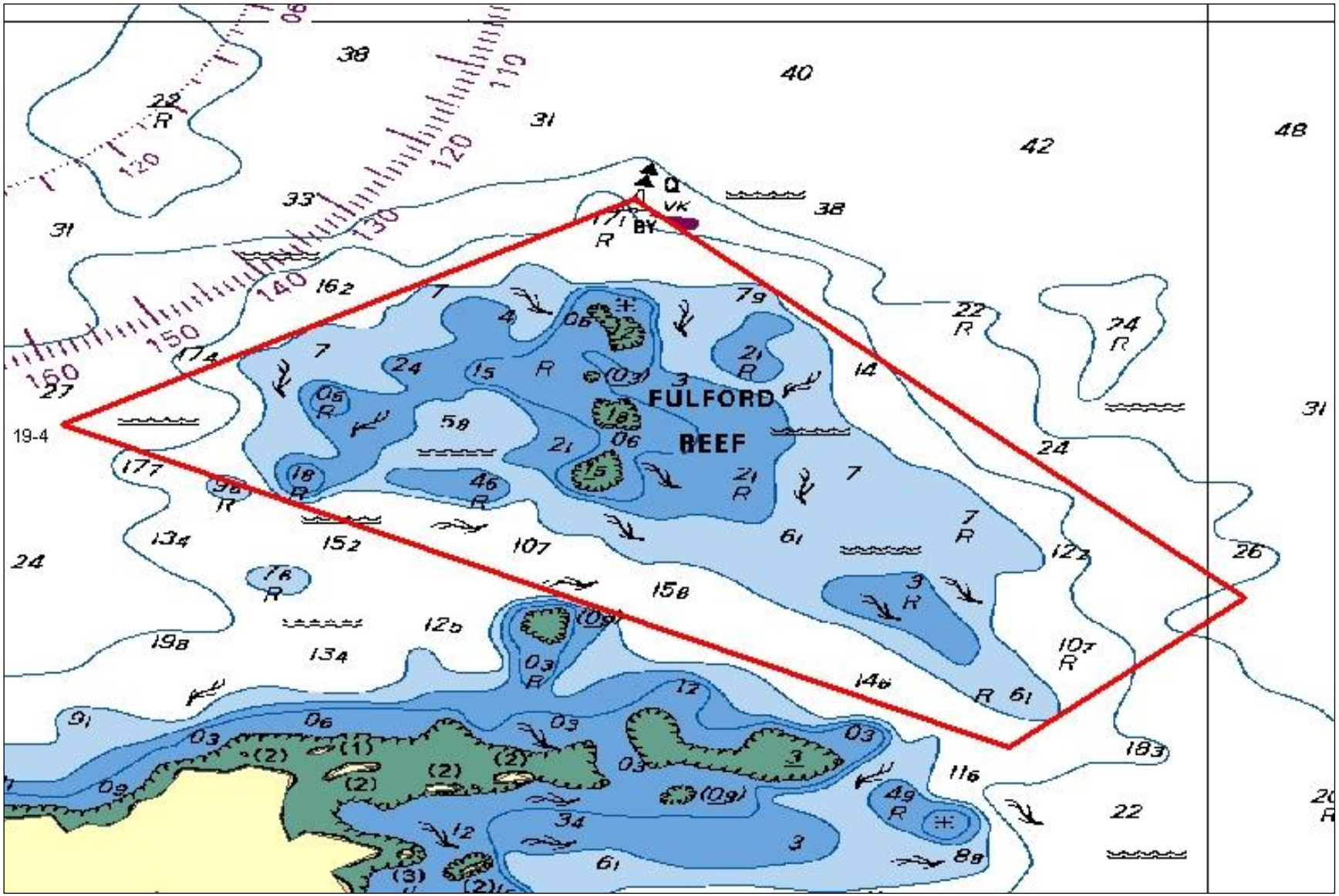


Figure 7: Area 19 Seasonal Research Closure Fulford Reef.

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.

"Designated service provider" means D&D Pacific Fisheries Ltd., the private sector company authorized by the Department for the

purpose of assisting licence holders and vessel masters in meeting these conditions of licence with regards to reporting of information.

"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.

"harvest log" means a log of all harvest operations that meets the requirements of the Department's Stock Assessment and Research Division Shellfish Data Unit and available from the designated service provider who provides logbook and data keypunch services.

"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 master" means the individual embarked on the vessel and responsible for the operation of the vessel and the fishing activities carried out under authority of this licence.

"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 ### kg (### lb.) of Green Sea Urchin harvested from within the area set out in this licence subject to all applicable regulations.

4. Minimum size limit:
The minimum size of Green Sea Urchin that may be taken is 55 mm in shell diameter, measured between the spines, through the greatest diameter of the shell.

5. Disposition of fish:
Fish caught under authority of this licence may be sold, traded or bartered.

6. Designated fishers:
Individuals fishing under authority of this licence shall carry proof of designation and shall provide proof of designation on request by any fishery officer or fishery guardian.

Designations are personal and non-transferable.

7. Waters in which fishing is permitted:
Area of fishing is as set out in this licence.

8. Identification of fishing vessel and gear:
(1) The designated vessel shall be identified in accordance with section 26 of the *Fishery (General) Regulations*.
(2) Fishing gear shall be identified in accordance with sections 27 and 29 of the *Fishery (General) Regulations*.

9. Fishing gear permitted to be used:
Hand picking by divers only. Suction devices are not permitted to be used.

10. 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.

11. 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 shall 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 shall 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.

12. Transhipment:
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 10;
(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.

13. Locations permitted for the landing of Green Sea Urchin:
Green Sea Urchin shall be landed at one of the following ports:
(1) South Coast: Port Hardy, Port McNeill, Kelsey Bay, Quadra Island, Campbell River, Brown's Bay, Sidney, Sooke, Victoria or Vancouver.
(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.

14. Validation:
(See Explanatory Note after section 17)
(1) All Green Sea Urchin harvested or removed from the sea bed floor under the authority of this licence shall be validated at the point and time the fish is 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 shall 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.

15. Oral Reports:

(1) The vessel master shall, under the circumstances set out in subsections 14(2) to 14(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 14(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:
(a) vessel name, vessel master's name and vessel registration number;
(b) species fished;
(c) Subarea(s) fished; and
(d) 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.

16. Harvest Logs and Chart Data:
(See Explanatory Note after Section 17)

(1) The vessel master shall maintain a log of all harvest operations and provide this information in both hard (paper) copy and electronic copy to the Department in accordance with the timing set out in subsection 16(8). The content and format of this log (paper and electronic) shall meet the requirements as defined by the Department's Stock Assessment and Research Division 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 shall be kept on board the licensed vessel.

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

(6) The vessel master shall provide a chart record of the locations fished to the Department.
(a) The chart shall 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 shall 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 shall make provisions to have chart information referred to in subsection 15(6) electronically captured into Geographic Information System (GIS) software and forwarded to the Pacific Biological Station, Nanaimo.

(8) The licence holder shall ensure that the completed log pages (white original copy) and electronic copy of the log are forwarded not later than 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 PACSDU@dfo-mpo.gc.ca

(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.

17. Fish Slips:
(1) An accurate written report shall be provided on a fish slip of all fish caught and retained under the authority of this licence.

(2) A report shall be made even if the fish are used for bait, personal consumption or disposed of otherwise.

(3) The report shall be mailed not later than seven days after the offloading and sent to:

Fisheries and Oceans Canada
Fisheries and Aquaculture Management Branch, FM Data Unit
Suite 200 - 401 Burrard Street
Vancouver B.C. V6C 3S4

Fish slips may be downloaded and printed at http://www.pac.dfo-mpo.gc.ca/stats/fishslips-carnets/index-eng.html. Phone (604) 666-2716 for more information.

18. Marine Mammal Reporting Requirements:

(1) The vessel master shall provide information regarding all interactions with marine mammals during fishing trips;
(2) For the purpose of subsection 18(1), interactions refer to cases of incidental mortality and serious injury to marine mammals. This includes accidental drowning, bycatch, entanglements, collisions, and fatalities.
(3) The vessel master shall immediately phone the Marine Mammal Incident Hotline at 1-800-465-4336 to report cases of mortality and serious harm.
(4) The vessel master shall complete the DFO reporting form "MARINE MAMMAL INTERACTION FORM."
(5) The Marine Mammal Interaction Form shall be submitted as per the instructions provided on the form.

Note: The Marine Mammal Interaction Form is available from: http://www.dfo-mpo.gc.ca/species-especes/mammals-mammiferes/report-rapport/fish-harvester-pecheur-eng.asp

19. Workers' Compensation Board Requirements
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.

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

Fisheries Management

Regional Resource Manager - Invertebrates	Lisa Mijacika	(604) 666-3869
Lead Green Sea Urchin Manager	Erin Wylie	(250) 713-1569
Regional Recreational Fisheries Co-ordinator	Greg Hornby	(604) 666-3271
North Coast, Areas 1 through 10	General inquiries	(250) 627-3499
Resource Management Biologist	Pauline Ridings	(250) 618-8699
Aboriginal Affairs Advisor – First Nations Fisheries	Melanie Anthony	(250) 643-0345
South Coast, Areas 11 to 27	General Inquiries	(250) 756-7270
Resource Management Biologist	Erin Wylie	(250) 713-1569
Resource Manager – First Nations Fisheries (NEVI)	Kent Spencer	(250) 268-5885
Resource Manager – First Nations Fisheries (SEVI)	Jorn Meier	(250) 616-4885
Resource Manager – First Nations Fisheries (WCVI)	Kevin Conley	(250) 756-7196
Lower Fraser Area, Areas 28 and 29	General Inquiries	(604)666-8266
Resource Manager	Hong Tjhie	(236)330-3240
Resource Manager – First Nations Fisheries	Matthew Parslow	(604)666-6608

Fisheries Protection	1-866-845-6776
Negotiations and Implementation Division	(604) 666-0197
Indigenous Programs Division	(604) 666-6757

Science Branch

Pacific Biological Station		
Echinoderms Program Head	Christine Hansen	(778)268-2079
Sea Urchin Biologist	Lyanne Curtis	(778)268-3374
Program Head, Shellfish Data Unit	Rob Flemming	PACSDU@dfo-mpo.gc.ca

Commercial Licensing

Pacific Fishery Licence Unit (By appointment only)
200-401 Burrard Street Vancouver, B.C. V6C 3S4 Toll-Free: 1-877-535-7307
Email fishing-peche@dfo-mpo.gc.ca

Aquaculture Resource Management

Senior Shellfish Coordinator	Melinda Scott	(250) 754-0399

General Shellfish Aquaculture Mailbox email address:
E-mail DFO.AQSF-AQMC.MPO@dfo-mpo.gc.ca

Canadian Food Inspection Agency

Molluscan Shellfish Operations	PacificShellfish@inspection.gc.ca

WorkSafe BC

Occupational Safety Officer, Courtenay	Cody King	(250) 334-8733
Occupational Safety Officer, Victoria	Jessie Kunce	(250) 881-3461
Manager of Interest for Marine and Fishing	Pat Olsen	(250) 334 8777
	toll free	1 888 621 7233 (ext. 8777)
Projects related to commercial fishing	Tom Pawlowski	(604)233-4062
	toll free	1 888 621 7233 (ext. 6922)

Pacific Urchin Harvesters Association (PUHA) **www.puha.org**

President	Mike Featherstone	(604) 230-1686

Green Sea Urchin Service Provider www.d-dpacificfisheries.com

D&D Pacific Fisheries Ltd.	Darin Macey	(604) 886-4819
Box 1445		
Gibsons, BC V0N 1V0	Hail-line	(800) 775-5505

Sighting Networks

BC Cetacean and Sea Turtle Sighting Network (866) 472 9663
Email: sightings@vanaqua.org or turtles@vanaqua.org
On the internet at:
www.wildwhales.org/sightings/ or www.bcreptiles.ca/reportsightings.htm#1

Basking Shark Sighting Network 1 (877) 50 SHARK
Email: BaskingShark@dfo-mpo.gc.ca
On the internet at:
www.pac.dfo-mpo.gc.ca/science/species-especes/elasmobranch/sightings-signalez-eng.html

Appendix 11: Fishing Vessel Safety

1. OVERVIEW – 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 TC; emergency response with the Canadian Coast Guard (CCG) and DFO has responsibility for management of the fisheries resources. The Transportation Safety Board is an independent agency that advances transportation safety by investigating selected occurrences in the air, marine, pipeline and rail modes of transportation including fishing vessel occurrences. In British Columbia, WorkSafeBC exercises jurisdiction over workplace health and safety and conducts inspections on commercial fishing vessels in order to ascertain compliance with the *Workers Compensation Act* (WCA) and the *Occupational Health and Safety Regulation* (OHSR).

Before departing on a voyage the authorized representative (normally the owner), must ensure that the fishing vessel is capable of and safe for the intended voyage and fishing operations. Critical factors for a safe voyage include the seaworthiness of the vessel, having the required personal protective and life-saving equipment in good working order, adequate number of properly trained crew, and knowledge of current and forecasted weather conditions. As safety requirements and guidelines may change, the vessel's authorized representative, 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 training
- Fish Safe – Stability Education Program & 1 Day Stability Workshop
- Fish Safe – SVOP (Subsidized rate for BC commercial fishers provided)
- Fish Safe – *Safest Catch* program – **FREE** for BC commercial fishers
- Fish Safe *Safe At Sea* DVD Series – Fish Safe
- Fish Safe Stability Handbook – *Safe at Sea* and *Safest Catch* – DVD Series
- Fish Safe *Safest Catch* Log Book
- Fish Safe *Safety Quiz*
- First Aid training
- Radio Operators Course (Subsidized rate for BC commercial fishers provided)
- Fishing Masters Certificate training
- Small Vessel Operators Certificate training

Publications:

- *Gearing Up for Safety* - WorkSafeBC
- https://tc.canada.ca/en/marine-transportation/marine-safety/tp-15393e-adequate-stability-safety-guidelines-fishing-vessels TP 15393E - Adequate stability and safety guidelines for fishing vessels
- TP 15392E - Guidelines for fishing vessel major modification or a change in activity. https://tc.canada.ca/en/marine-transportation/marine-safety/tp-15392e-guidelines-fishing-vessel-major-modification-change-activity
- Transport Canada Publication TP 10038 Small Fishing Vessel Safety Manual (can be obtained at Transport Canada Offices from their website at: http://www.tc.gc.ca/eng/marinesafety/tp-tp10038-menu-548.htm
- Amendments to the *Small Fishing Vessel Inspection Regulations* (can be obtained from: http://www.gazette.gc.ca/rp-pr/p2/2016/2016-07-13/html/sor-dors163-eng.php)
- Safety Issues Investigation into Fishing Safety in Canada report can be accessed: https://www.tsb.gc.ca/eng/rapports-reports/marine/etudes-studies/M09Z0001/M09Z0001.html

For further information see: https://tc.canada.ca/en/marine-transportation
www.fishsafebc.com
www.worksafebc.com
www.tsb.gc.ca/eng/rapports-reports/marine/index.html

2. IMPORTANT PRIORITIES FOR VESSEL SAFETY

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

2.1. 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 to correct ballasting. Fish harvesters must be familiar with their vessel's centre of gravity, the effect of liquid free surfaces on stability (e.g. loose water or fish on deck), loading and unloading operations, watertight integrity and the vessel's freeboard. Know the limitations of your vessel; if you are unsure contact aa naval architect, marine surveyor or the local Transport Canada Marine Safety Office.

Fishing vessel authorized representatives/owners are required to develop detailed instructions addressing the limits of stability for each of their vessels. These instructions must include detailed safe operation documentation kept on board the vessel.

In 2017, Transport Canada Marine Safety (TC) issued Ship Safety Bulletin (SSB) No. 03/2017 announcing the coming into force of the New *Fishing Vessel Safety Regulations*.

The initial regulations were published in the Canada Gazette Part II on July 13, 2016 and came into force on July 13, 2017. The bulletin includes important information on changes to requirements for Written Safety Procedures, Safety Equipment and Vessel Stability.

As of July 13, 2017, new regulations pertaining to stability assessments to be performed by a competent person came into effect, as follows:

- A new fishing vessel that has a hull length of more than 9 m where the vessel construction was started or that a contract was signed for the construction after July 13, 2018;
- A fishing vessel more than 9 m and that has undergone a major modification or a change in activity that is likely to adversely affect its stability;
- A fishing vessel that is fitted with an anti-roll tank at any time;
- A fishing vessel more than 15 gross tonnage and used for catching herring or capelin during the period beginning on July 6, 1977 and ending on July 13, 2017
- For an existing fishing vessel that is not required to undergo a stability assessment, the owner shall be capable of demonstrating that their vessel has adequate stability to safely carry out the vessel's intended operations. Guidelines have been developed and are available online to help small fishing vessel owners and operators meet their regulatory requirements.
- Two good resources can be found here: TP 15393 - Adequate stability and safety guidelines for fishing vessels (2018) and TP 15392 – Guidelines for fishing vessel major modification or a change in activity (2018)

Further, the new Regulation requires a "Stability Notice" to be developed after a stability assessment. This notice includes a simple diagrammatic of the vessel, its tanks and fish holds, or deck storage as the case may be. It is intended to assist fishing vessel crews in quickly determining the safe carriage limits of the vessel without having to reference a complicated Trim and Stability Book.

Additionally, Transport Canada published a Stability Questionnaire (SSB No. 04/2006) and Fishing Vessel Modifications Form (SSB No. 01/2008) which enable operators to identify the criteria which will trigger a stability assessment. Please contact the nearest Transport Canada office if you need to determine whether your vessel requires a stability assessment, or to receive guidance on obtaining competent assessor.

In 2019, TC provided an updated SSB 03/2019, which sets out a voluntary record of modifications for the benefit of owners/masters of any fishing vessels. For vessels of more than 15 gross tons, the record of modifications was to be reviewed by TC inspectors during regular inspections and entered on the vessel's inspection record. However, information gathered during the Transportation Safety Board's (TSB) Safety Issues Investigation into the fishing industry showed minimal recording of vessel modifications prior to this date.

The TSB has investigated several fishing vessel accidents since 2008 and found a variety of factors that effected the vessel's stability were identified as contributing factors in vessels capsizing, such as with: M08W0189 - *Love and Anarchy*, M09L0074 – *Le Marsouin I*, M10M0014 - *Craig and Justin*, M12W0054 – *Jessie G*, M12W0062 - *Pacific*

Siren, M14P0121 – *Five Star*, M15P0286 – *Caledonian*, M16A0140 – *C19496NB*, M17C0061 – *Emma Joan,* *M*17P0052 – *Miss Cory,* M18P0073 – *Western Commander,*M18A0425 – *Charlene A,* M18A0454 – *Atlantic Sapphire,* M20P0229 – *Arctic Fox II,* M20A0434 – *Chief William Saulis and* M20A0160 – *Sarah Anne.*

Vessel masters are advised to carefully consider stability when transporting gear. Care must be given to the stowage and securing of all traps, cargo, skiffs, equipment, fuel containers and supplies and also to correct ballasting. Know the limitations of your vessel; if you are unsure contact a reputable marine surveyor, naval architect or the local Transport Canada Marine Safety office.

WorkSafeBC's *Occupational Health and Safety Regulations (*OHSR) require owners of fishing vessels to provide documentation on board, readily accessible to crew members, which describes vessel characteristics, including stability.

Fish Safe has developed a code of best practices for the food and bait/roe herring fisheries, dive fisheries and the prawn fishery: These Best Practices are available on Fish Safe's website for convenient download here: https://www.fishsafebc.com/best-practices Please contact John Krgovich at Fish Safe for a copy of the program materials they developed to address safety and vessel stability in these fisheries. John Krgovich – office: (604) 261-9700 - Email: john@fishsafebc.com.

2.2. Emergency Drill Requirements

The *Canada Shipping Act, 2001* requires that the Authorized Representative of a Canadian Vessel shall develop procedures for the safe operation of the vessel and for dealing with emergencies. The *Act* also requires that crew and passengers receive safety training. The *Marine Personnel Regulations* require that all personnel on board required to meet the minimum safe manning levels have received MED (Marine Emergency Duties) training to an A1 or A3 level, depending on the vessel's voyage limits, within 6 months of serving aboard. MED A3 training is 8 hours in duration and is applicable to seafarers on fishing vessels less than 150 GRT that are within 25 miles from shore (NC2). MED A1 training is 19.5 hours duration and is applicable to all other fishing vessels.

To assist fishers in meeting their crew training requirements, Fish Safe has created a downloadable '*New Crew Orientation Form and How To Guide'* available on Fish Safe's website here: https://www.fishsafebc.com/downloadable-tools

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.

WorkSafeBC's *Occupational Health and Safety Regulation* (OHSR) requires written rescue and evacuation procedures for work on or over water. Additionally, fishing vessel masters must establish procedures and assign responsibilities to each crew member to cover all emergencies, including the following: crew member overboard, fire on board,

flooding of the vessel, abandoning ship, and calling for help. Fishing vessel masters are also required to conduct emergency drills at the start of each fishing season, when there is a change of crew, and at periodic intervals to ensure that crewmembers are familiar with emergency procedures.

Between 2015 and 2021, 15 fishing vessel accidents were reported to the TSB which resulted in 34 fatalities. In all 15 occurrences, distress alerting devices (EPIRBs, PLBs) were not used. The report's findings highlighted the lack of safety drills and safety procedures and practices. The *Safest Catch* program, delivered by Fish Safe and free to BC commercial fishers, includes comprehensive practice of drills such as abandon ship, man overboard and firefighting drills.

2.3.Cold Water Immersion

Drowning is the number one cause of death in BC's fishing industry. Cold water is defined as water below 25 degrees Celsius, but the greatest effects occur below 15 degrees C. BC waters are usually below 15 degrees C. Normal body temperature is around 37 degrees Celsius; cold water rapidly draws heat away from the body. 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 WorkSafeBC Bulletin Cold Water Immersion (available from the WorkSafeBC website at www.worksafebc.com).

Under the recently amended (June 2019) *OHS Regulation*, section 24.96.1, a crewmember must wear a PFD or lifejacket when on board a fishing vessel that has no deck or deck structure or when on the deck of a fishing vessel that has a deck or deck structure. The use of a PFD will prepare a crewmember to remain afloat, to survive the effects of cold shock, reduce the need to swim and give rescuers time to respond.

Section 8.26, which requires workers to wear a PFD or lifejacket when working "under conditions which involve a risk of drowning", would continue to apply to fishing crewmembers and other workers (e.g. when they are working on shore, docks and other vessels). The specific requirements can be found on WorkSafeBC's PFD Primer provided on Fish Safe's website here: https://www.fishsafebc.com/cold-water-survival.

It has been demonstrated time and again that, when worn, PFD's save lives - and the chance of surviving a mishap increases significantly when these devices are worn while working on deck.

Resulting from the TSB investigations into the *Diane Louise* - M14P0110, *Caledonian* – M15P0286 and the *C19496NB* - M16A0140 fishing vessel accidents the Board recommended that both TC, WorkSafeBC and WorkSafeNB require that persons wear a suitable personal flotation devices (PFDs) at all times when: on the deck of a commercial fishing vessel; or, when on board a commercial fishing vessel without a deck or deck structure, and ensure that programs are developed to confirm compliance. Between 2015

and 2021, 15 occurrences were reported to the TSB, resulting in the loss of life of 34 fish harvesters. In 11 of the 15 occurrences, personal flotation devices (PFDs) were not used.

2.4. Other Issues

2.4.1. 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: http://www.weatheroffice.gc.ca/marine/index_e.html

2.4.2. Emergency Radio Procedures, EPIRB's, PLBs and AIS

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). All fishing vessels greater than 20m in length must carry a Class A AIS, as well as a float free 406 MHz Emergency Position Indicating Radio Beacon (EPIRB). These beacons must be registered with the Canadian Beacon Registry. 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. The TSB notes in the *Island Lady* – M21A0315 that there have been 15 similar occurrences reported to the TSB, resulting in the loss of life of 34 fish harvesters. In all 15 occurrences, distress alerting devices (e.g., emergency position-indicating radio beacons [EPIRBs] and personal locator beacons [PLBs] were not used. (M15A0189, M16A0140, M16A0327, M18A0076, M18A0303, M18A0078, M18P0184, M18P0394, M19A0082, M19A0090, M19P0242, M20A0258, M20A0160, M21A0412, and M21A0161). The carriage of both AIS, PLB and EPIRB is strongly encouraged for all fishing vessels who do not fall under the mandatory threshold.

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. Further information is available at Radio Aids to Marine Navigation General

Since August 1, 2003 all commercial vessels greater than 8 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 Coast Guard website at: http://www.ccg-

gcc.gc.ca/eng/CCG/Home or go directly to the Industry Canada web page: www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf01032.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 DSC can be found here: TC DSC Safety Bulletin. Questions regarding Coast Guard DSC capabilities can be obtained by contacting your local MCTS centre (Prince Rupert MCTS (250) 627-3070 or Victoria MCTS (250) 363-6333.

2.4.3. 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 either Prince Rupert MCTS (250) 627-3070 or Victoria MCTS (250) 363-6333 or from the Coast Guard website: https://www.ccg-gcc.gc.ca/publications/mcts-sctm/ramn-arnm/part3-eng.html

2.4.4. 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/voyage 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.

3. WorkSafeBC

WorkSafeBC exercises jurisdiction over workplace health and safety, including the activities of crews of fishing vessels. Commercial fishing, diving and other marine operations are subject to the provisions of the *Workers Compensation Act (*WCA*)* and requirements in Part 24 of the *Occupational Health and Safety Regulation* (OHSR). Examples of Part 24 regulatory requirements related to fishing include, but are not limited to, the requirement to establish emergency procedures, to conduct emergency drills, to provide immersion suits for the crew, to provide stability documentation for the vessel, safe work procedures, injury reporting, correction of unsafe working conditions, the requirement to wear personal floatation devices (PFDs), etc.

Other sections of the OHSR also apply to commercial fishing operations. For example, Part 3 addresses training of young and new workers, first aid, and employer incident/accident investigations. Part 4 addresses general conditions such as maintenance of equipment, workplace conduct and impairment. Part 8 addresses issues related to safety headgear, safety footwear, eye and face protection, limb and body protection and personal flotation devices (PFDs) when working on the dock. Part 12 addresses issues related to tools, machinery and equipment, including safeguarding. Part 15 addresses issues related to rigging.

Both owners and masters of fishing vessels are considered to be employers. Under the *Workers Compensation Act* and the *OHS Regulation* (OHSR) they have varying and overlapping duties and responsibilities. Masters, because they have the most control during fishing and related activities, are considered to be the employer with primary responsibility for the health and safety of the crew.

The OHSR and the WCA are available from the Provincial Crown Printers or by visiting the WorkSafeBC website: www.worksafebc.com

NOTE: Regarding the OHSR requirement to wear PFD's, WorkSafeBC has produced a video entitled "Turning the Tide – PFD's in the Fishing Industry". For more information on PFD use, including a link to the video, please access the following site:

https://www.worksafebc.com/en/about-us/news-events/news-releases/2018/November/new-fishing-industry-safety-video?origin=s&returnurl=https%3A%2F%2Fwww.worksafebc.com%2Fen%2Fsearch%23q%3DTurning%2520the%2520Tide%26sort%3Drelevancy%26f%3Alanguage-facet%3D%5BEnglish%5D

For further information, contact an Occupational Safety Officer:

Bruce Logan	Field Services	Vancouver/ Richmond/Delta	(604) 244-6477
Cody King	Field Services	Courtenay	(250) 334-8733
Paul Matthews	Field Services	Courtenay	(250) 334-8741
Wayne Tracey	Field Services	Central	(604) 232-1939

or the Manager of Interest for Marine and Fishing, Pat Olsen (250) 334-8777

For information on projects and initiatives related to commercial fishing health and safety please contact Tom Pawlowski, Manager, OHS Consultation and Education Services, at (604) 233-4062 or by email: tom.pawlowski@worksafebc.com or Helen Chandler, OHS Consultant at (604) 276-3174 or by email: helen.chandler@worksafebc.com.

4. Fish Safe BC

Fish Safe encourages Vessel masters and crew to take ownership of fishing vessel safety. Through this industry driven and funded program Fish Safe provides fishing relevant tools and programs to assist fishers in this goal. The Fish Safe Stability Education Program and 1 Day Stability Workshop are available to all fishers who want to improve their understanding of stability and find practical application to their vessel's operation. The SVOP (Small Vessel Operator Proficiency) Course is designed to equip crew with the skills they need to safely navigate during their wheel watch. The Safest Catch Program, along with fisher-trained Safety Advisors, is designed to give fishers the tools they need to create a vessel specific safety management system.

As referenced throughout the above documentation, Fish Safe provides a broad range of courses, programs and services that are either free for BC commercial fishers or highly subsidized.

Fish Safe is managed by John Krgovich, Program Manager and support staff including John Krgovich, Program Coordinator, Stephanie Nguyen, Program Assistant, Rhoda Huey, Bookkeeper/Administrative Assistant, and an experienced team of fisher Safety Advisors. All activities and program development is directed by the Fish Safe Advisory Committee (membership is open to all interested in improving safety on board fishing vessels). The Advisory Committee meets two to three times annually to discuss safety issues and give direction to Fish Safe in the development of education and tools for fish harvesters.

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

John Krgovich
Program Coordinator
Fish Safe
#100, 12051 Horseshoe Way

Cell: (604) 729-8407
Office: (604) 261-9700
Email: john@fishsafebc.com

5. Transportation Safety Board

The Transportation Safety Board (TSB) is not a regulatory board. The TSB is an independent agency that investigates marine, pipeline, railway and aviation transportation occurrences to determine the underlying risks and contributing factors. Its sole aim is the advancement of transportation safety by reporting publicly through Accident Investigation Reports or Marine Safety Information Letters or Advisors. It is not the function of the Board to assign fault or determine civil or criminal liability. Under the *TSB Act*, all information collected during an investigation is completely confidential.

In 2014 the TSB pacific region released three investigation reports:

- the collision between trawl fishing vessel *Viking Storm* and US long line fishing vessel *Maverick* and the subsequent fatality,
- the person over board off the prawn fishing vessel *Diane Louise* and the subsequent fatality, and
- the capsizing of the crab fishing vessel *Five Star* and subsequent fatality.

In 2016 the TSB pacific region released one investigation report:

- the capsizing of the trawl *Caledonian* and subsequent fatalities.

In 2018 the TSB Pacific Region released two investigation reports:

- the capsizing and sinking of the *Miss Cory* and subsequent fatality
- the sinking of the *Western Commander* and loss of life.

In 2022 the TSB pacific region released one investigation report:

- the sinking of the *Arctic Fox II* and subsequent fatalities.

The TSB issued five recommendations following the *Caledonian* report. Three recommendations issued are aimed at ensuring all crews have access to adequate stability information that meets their needs. That means:

- All commercial fishing vessels should have a stability assessment appropriate for their size and operation.
- The information from that assessment must then be kept current, and it must be used to determine safe operating limits.

Moreover, these operating limits must be easily measurable, and relevant to the vessel's operation. For example, that could mean marking the sides of a vessel's hull to indicate the maximum operating waterline, or maximum permitted loads can be specified in the most relevant unit of measure—total catch weight for instance, or the safe number of traps. Regardless, for it to be of real, practical use, the information must be presented in a format that is clearly understood and easily accessible to crew.

The other two recommendations address the most basic step that harvesters can take: wearing a personal flotation device. Here in British Columbia, roughly 70 percent of all fishing-related fatalities in the past decade came while not wearing a PFD. Yet many

harvesters still do not wear them. TC regulations currently require that PFDs be worn only if harvesters identify a risk, however; you never know when you could end up in the water. So the TSB is recommending to TC to require persons to wear suitable personal flotation devices at all times when on the deck of a commercial fishing vessel or when on board a commercial fishing vessel without a deck or deck structure and that programs are developed to confirm compliance. In June 2019, WorksafeBC amended its fishing regulation related to the use of PFDs. Under the amendments, crewmembers must wear a PFD or lifejacket when on board a fishing vessel that has no deck or deck structure, or when on the deck of a fishing vessel that has a deck or deck structure. Crewmembers are not required to wear lifejackets or PFDs below deck or when inside a deck structure where there is risk of entrapment. This amendment removes the need for a risk of drowning to be present before a PFD must be worn.

For more information about the TSB, visit the website at www.tsb.gc.ca
For information about the TSB's investigation into fishing safety, or to view a brief video, visit:
http://www.tsb.gc.ca/eng/medias-media/videos/marine/m09z0001/index.asp

To view information on the TSB's recent safety Watchlist, visit: http://www.tsb.gc.ca/eng/surveillance-watchlist/marine/2020/marine-01.html

Reporting an Occurrence: www.tsb.gc.ca/eng/incidents-occurrence/marine/
After a reportable occurrence happens; you can fill out the TSB 1808 form or call the TSB at the contact information below.

Recently the TSB produced a Safe at Sea: Activity book on fishing safety intended for the next generation of fish harvesters (ages 4-7). Download a copy.
www.tsb.gc.ca › eng › medias-media › prudence-safe › safe-at-sea

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