

PACIFIC REGION

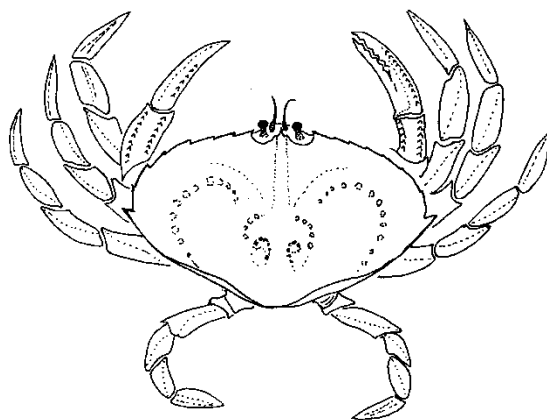
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# INTEGRATED FISHERIES MANAGEMENT PLAN

April 1, 2019 – March 31, 2020

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CRAB



**Dungeness crab: *Cancer magister***



Fisheries and Oceans  
Canada

Pêches et Océans  
Canada

Canada

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

## FOREWORD

The purpose of this Integrated Fisheries Management Plan (IFMP) is to identify the main objectives and requirements for the Crab by Trap 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 that 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.

Front cover drawing by Antan Phillips, Retired Biologist, Fisheries and Oceans Canada

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# 1. OVERVIEW

## 1.1. Introduction

This Integrated Fisheries Management Plan (IFMP) for Crab by Trap covers the period April 1, 2019 to March 31, 2020.

This IFMP provides a broad context to the management and interrelationships of all fishing sectors of the Dungeness crab (*Cancer magister*), Red Rock crab (*Cancer productus*), Red King crab (*Paralithodes camtschatic*) and Golden King crab (*Lithodes aequispinus*) trap fishery in the Pacific Region (British Columbia, Canada). However, at this time, this plan primarily focuses on Dungeness crab as over 99% of all crab harvesting by all sectors is this species.

The main body of the IFMP covers the general aspects of the fisheries including the background, science, management, objectives and allocation. Many aspects are similar among the 7 crab management areas and those are detailed in the main body of the IFMP. Section 1 provides an overview of the commercial, recreational and First Nations fisheries. Section 2 presents a biological synopsis and stock assessment. Section 3 provides a socio-economic profile. Section 4 describes the emerging management issues that may impact management measures in the fishery. Section 5 describes objectives for the fishery reflecting stock status presented in Section 2 and to address the issues identified in Section 4. Section 6 discusses access and allocation. Section 7 directs to the Appendices for the fishery management procedures that will be employed during the year to meet the objectives. Section 8 describes shared stewardship arrangements to achieve objectives. Section 9 provides enforcement information. Section 10 provides a running summary of key issues that have occurred in previous crab fishing seasons. Sections 11, 12 and 13 provide references, internet sites and a glossary to define terms.

The appendices detail the difference between the harvesters and the difference in the 7 crab management areas. The First Nations Harvest Plan is attached to this IFMP as Appendix 1. Appendix 2 is the Recreational Harvest Plan. Appendix 3 is the Commercial Harvest Plan for Crab by Trap. Appendix 4 discusses vessel safety. Appendix 5 provides an example of the crab trap commercial harvest log. Appendix 6 contains diagrams on where to determine crab soft-shell and correct rot cord placement. Appendix 7 contains maps of the licence areas, restricted areas and Area “A” soft-shell management areas. Appendix 8 contains DFO, Service Provider, and Sectoral Committee contact information. Appendix 9 contains the commercial fishery monitoring and catch reporting standards for electronic monitoring, catch reporting, biological sampling, area A hails, and plastic trap tag requirements. Appendix 10 contains the guidelines for the Area A soft shell monitoring program. Appendices 11 and 12 contain maps of closed areas in Gwaii Haanas, Howe Sound and the Strait of Georgia.

## 1.2. History

Dungeness crab is the most important crab species of British Columbia and is harvested coastwide for First Nation, recreational and commercial purposes. The inception of the commercial fishery occurred before the turn of the 19<sup>th</sup> century with the first recorded landings in 1885 (Butler, 1984). The recreational fishery has an equally long history and coastal First Nations have traditionally harvested Dungeness crab for food, social and ceremonial purposes since time immemorial.

Size restrictions have been the primary management tool for Dungeness crab since 1906 when a 6 inch (153 mm) size limit was initiated. This limit was changed to 6.5 inches (165 mm) in 1914. The 165 mm minimum size limit (measured across the maximum width of the carapace, commonly called “spine to spine”) was designed to protect sexually mature male crabs for at least one year prior to harvest.

Few females reach the size limit but were protected from the commercial fishery by a regulation from 1926 to 1957 that prohibited the retention of ovigerous females. This regulation was revoked in 1957 as it was considered largely redundant with the size limit; however, it was reintroduced as a condition of licence in the commercial fishery prohibiting the retention of all females in 1991. Since 2007, recreational harvesters have been required to release all female crab. Prior to this the release of females was voluntary.

Licensing of the commercial crab fishing fleet began in 1966 with the licensing of other commercial fisheries. All three of the initial salmon licence categories issued, A, B, and N, were authorized to harvest crab. Subsequent licence categories C (General), G (Geoduck), K (Sablefish), L (Halibut), S (Shrimp Trawl), and T (Groundfish Trawl) also included the authority to harvest crab using traps. This gave a potential fleet of over 6000 vessels.

An “R” category licence for crab was initiated by the Department in 1990 in response to high levels of fishing effort on crab. The licence eligibility criterion was 15,000 lbs. cumulative crab landings from 1987 to 1989. There are now 221 crab licence eligibilities for this fishery.

The fishery is currently managed under a precautionary regime whereby the productive potential of crab is protected. This regime includes a minimum harvestable size limit, limited commercial licensing, area licensing, trap limits, soak limits, sex restrictions, soft-shell restrictions, closure areas, closed periods and gear restrictions.

## **1.3. Type of Fishery and Participants**

### **1.3.1. First Nations**

First Nations’ harvest for food, social and ceremonial purposes may occur where authorized by an Indigenous communal licence, harvest document, or under treaty fishery agreements. First Nations will typically designate harvesters from their communities under their communal licence. For more information please refer to the First Nations Harvest Plan in Appendix 1.

The Nisga’a, Tsawwassen, Maa-nulth and Tla’amin First Nation Treaties came into effect in 2000, 2009, 2011 and 2016 respectively. Under these Treaties, Fisheries Operation Guidelines (FOG) set out the operational principles, procedures and guidelines needed to assist Canada, BC, and First Nations in implementing Fisheries Chapters of their respective treaties and managing Treaty fisheries on an annual basis. The FOGs provide guidance on how management decisions, with respect to treaty fisheries, will be made via the Joint Fisheries Committee (JFC), how abundance is estimated, biological and harvesting considerations, fisheries monitoring and catch reporting requirements, etc. Each year the JFC, established under each treaty, make recommendations to the Minister on the issuance of specific ‘Harvest Documents’ to licence the fisheries for Domestic (food, social and ceremonial) harvests.

More information on the Treaties can be found at: <http://www.BCtreaty.net/>

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 of fish within their Fishing Territories and to sell that fish, with the exception of geoduck.

DFO is working with the Five Nations to implement a Fishery Management Plan (FMP) for salmon, groundfish, crab and prawn by April 1, 2019. The FMP may lead to in-season management changes. DFO will make every effort to advise stakeholders of any such changes in advance of changes being implemented.

### **1.3.2. Recreational**

Recreational fishing may occur to provide food for personal use, as a leisure activity, or as a combination of the two. The recreational fishery includes harvest by local BC residents, residents within Canada and non-residential anglers outside of Canada. A British Columbia Tidal Waters Sport Fishing Licence is required for the recreational harvest of crab. Tidal Waters Sport Fishing Licences can be obtained via the internet at: <http://www.pac.dfo-mpo.gc.ca/fm-gp/rec/licence-permis/index-eng.htm>. For more information please refer to the Recreational Harvest Plan in Appendix 2.

### **1.3.3. Commercial**

The commercial fishery is a limited entry fishery with 221 licence eligibilities distributed throughout the Pacific coast in seven management areas. For 2019, 32 of these licences have been designated as communal commercial licences for First Nations participation in the commercial fishery. All licences in the commercial fishery are single-licensed vessels and vessel size ranges from 4.42 m to 20.47 m. For more information please refer to the Commercial Harvest Plan in Appendix 3.

### **1.3.4. Aquaculture**

The Department currently licenses aquaculture activities for two hatchery facilities for Dungeness Crab culture in BC. However, these facilities are not actively culturing the species and nor has any crab aquaculture ever occurred.

DFO is the lead federal department for sustainable management of fisheries and aquaculture. Under the *Fisheries Act*, *Pacific Aquaculture Regulations*, *Aquaculture Activities Regulations* and *Fishery (General) Regulations*, DFO regulates finfish, shellfish and freshwater aquaculture operations in BC. Cultivation of fish within the province requires a federal aquaculture licence issued under the *Pacific Aquaculture Regulations*, and, where applicable, a federal *Navigable Waters Protection Act* permit and a provincial Crown Lands tenure. Other government agency approvals may also be necessary.

Applications currently under review by the Department are available on the DFO website at: <https://www.pac.dfo-mpo.gc.ca/aquaculture/licence-permis/index-eng.html#applications>.

To view the Pacific Aquaculture Regulations: <http://laws-lois.justice.gc.ca/eng/regulations/SOR-2010-270/FullText.html>

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

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

## **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 harvest. Harvest areas are generally located within claimed First Nation traditional territories.

### **1.4.2. Recreational**

Recreational crab fishing occurs predominately in near shore areas in close proximity to BC coastal communities. Traditionally, it is a vessel-based fishery, which takes place in waters shallower than 100ft. Shore and Pier based fishing for recreational crab does take place in many locations, some of which are designated for improving recreational crab access.

### **1.4.3. Commercial**

Commercial fishing for Dungeness crab (*Cancer magister*) and Red Rock crab (*Cancer productus*) occurs throughout BC waters. Golden King crab (*Lithodes aequispinus*) and Red King crab (*Paralithodes camtschatica*) fishing occasionally occurs in Area B where it is permitted under special arrangement with the Prince Rupert DFO Crab Manager and amended Crab Conditions of Licence. Non-retention of graceful crab (*Cancer gracilis*) has been in effect since 2004 and there are no other species of crab permitted for commercial harvesting. Appendix 7 shows the map of the seven commercial crab management areas in the Pacific Region.

## **1.5. Fishery Characteristics**

### **1.5.1. First Nations**

First Nations' fishing for food, social and ceremonial (FSC) purposes is the first priority after conservation and is open coast-wide throughout the year. First Nations fishing effort for an FSC domestic purpose 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. Gear marking is required and the main target species are Dungeness and Red Rock crab. First Nations are subject to the same size limit as the recreational and commercial fisheries: a minimum of 165mm for Dungeness crab, and 115mm for Red Rock crab. In support of sustainable fishing, many First Nations have developed their own best management practices and includes additional conditions that are not currently part of their communal licence requirements such as the release of females, and inclusion of trap escape rings. A consultation process to review their current license requirements and consulting on new conservation measures began in 2017. For more First Nations harvesting information please refer to the First Nations Harvest Plan in Appendix 1.

### **1.5.2. Recreational**

The recreational fishery is an open entry fishery open all year in most areas. It typically targets Dungeness crab (*Cancer magister*), although Red Rock crabs (*Cancer productus*) are retained. The majority of

recreational crab fishing takes place during daylight hours, in conjunction with other recreational fishing activities.

Management measures in the recreational fishery include female non-retention, size limits for Red Rock and Dungeness crab, specific buoy and trap regulations, and area specific daily and possession limits. There are also additional regulations within select areas. A new requirement for 2019 is for recreational crab traps to have two 105mm escape rings installed to allow the escape of female and undersized male crabs. To enhance sustainable fishing, best management practices have also been developed for recreational harvesters. For more recreational harvesting information please refer to the Recreational Harvest Plan in Appendix 2.

### **1.5.3. Commercial**

The commercial crab fishery is a limited entry, competitive fishery for legal male crab. It is divided into seven crab management areas having specific management rules. Some of these regulations include size, sex, and hardness restrictions, seasonal closures, trap limits, gear marking and gear size requirements, daily fishing time restrictions and weekly haul limits. The catch is 99% Dungeness crab and this fishery has fishery monitoring and catch reporting requirements to address conservation, harvest allocation and theft issues. In 2016, all active harvesters hired a service provider to meet biosampling, electronic monitoring, gear identification, and harvest logbook requirements for the 2016-2019 licence area selection period. To enhance sustainable fishing, best management practices have also been developed for commercial harvesters. For more commercial harvesting information please refer to the Commercial Harvest Plan in Appendix 3.

## **1.6. Governance**

The Minister of Fisheries and Oceans has ultimate and final responsibility for the management of fisheries in Canadian waters, and for the conduct of Canadian vessels operating in international waters. Ministerial functions are assisted and administered by the Department of Fisheries and Oceans at the national level in Ottawa, and by the regional structure in the following regions: Newfoundland-Labrador, Central and Arctic, Gulf, Maritimes, Quebec, and Pacific.

The Crab by Trap fisheries are 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 (1996)*, the *Aboriginal Communal Fishing Licences Regulations* and the *Pacific Aquaculture Regulations*. Areas and Subareas are described in the *Pacific Fishery Management Area Regulations*.

Marine Protected Areas may be established under the *Oceans Act* (1996, c. 31). National marine conservation areas may be established under the *Canada National Marine Conservations Areas Act* (2002, c. 18).

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 existing 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.

The documents listed above are available on the internet at:

[www.dfo-mpo.gc.ca/acts-loi-eng.htm](http://www.dfo-mpo.gc.ca/acts-loi-eng.htm)

More information on the SARA is available at:

[www.sararegistry.gc.ca](http://www.sararegistry.gc.ca)

Final agreements (treaties) with the following Indigenous Nations effect the direction of these fisheries:

- The *Nisga'a Final Agreement Act*;
- The *Maa-nulth First Nations Final Agreement Act*; and,
- The *Tla'amin Final Agreement Act*.

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

- *A Fishery Decision-Making Framework Incorporating the Precautionary Approach*;
- *The Policy for Managing Impacts of Fishing on Sensitive Benthic Habitat*;
- *The Policy on New Fisheries for Forage Species*;
- *The Guidance for the Development of Rebuilding Plans under the Precautionary Approach Framework: Growing Stocks out of the Critical Zone*;
- *The Guidance on Implementation of the Policy on Managing Bycatch*;
- *A Strategic Framework for Fishery Monitoring and Catch Reporting in the Pacific Fisheries*; and,
- *An Ecological Risk Assessment Framework (ERAF) for Coldwater Corals and Sponge Dominated Communities*.

Along with other economic and shared stewardship policies, these will help the Department meet objectives for long-term sustainability, economic prosperity, and improved governance.

For more information on the Sustainable Fisheries Framework, please visit:

<http://www.dfo-mpo.gc.ca/reports-rapports/regs/sff-cpd/overview-cadre-eng.htm>

Scientific advice for this fishery is peer-reviewed primarily through a process managed under the Canadian Science Advisory Secretariat (CSAS).

## **1.7. Consultation**

DFO has a broad mandate, with the authority to regulate and enforce activities, develop policy, provide services and manage programs. To help ensure the Department's policies and programs are aligned with its vision and effectively address the interests and preferences of Canadians, DFO supports consultations that are transparent, accessible and accountable. DFO Pacific Region undertakes consultations in order to meet the duty to consult with First Nations, improve departmental decision-making processes, promote understanding of fisheries, oceans and marine transport issues, and strengthen relationships.

For more information on the consultative process for crab, please visit:

<http://www.pac.dfo-mpo.gc.ca/fm-gp/commercial/shellfish-mollusques/crab-crabe/index-eng.html>

### **1.7.1. Indigenous People of British Columbia**

The Department consults with Indigenous nations on the annual Pacific Crab IFMP and the management of Pacific Crab more broadly to ensure that the duty to consult is fulfilled and that the proposed plans are informed by the best available information, including traditional knowledge and understanding of

fisheries practices. Consultation occurs through a variety of means including through bi-lateral discussions, group advisory processes and other processes that may be available or requested. Consultation, as provided for under Final Agreements (currently the Tla'amin Final Agreement, Tsawwassen First Nation Final Agreement; Maa-nulth First Nations Final Agreement and Nisga'a Final Agreement) are also undertaken.

### **1.7.2. Crab Sectoral Committee (CSC)**

The Crab Sectoral Committee (CSC) is the primary multi-stakeholder body providing input and advice to DFO's decision making processes for Pacific crab fisheries. The CSC was established by DFO to promote a more streamlined, representative, cross-sectoral advisory process related to crab harvest planning, management, and post-season review. The Sectoral Committee meets annually in October (or more frequently as required).

The goal of the CSC is to support the development of fishing plans that are coordinated and integrated, to identify potential conflicts, and to make recommendations for resolving disputes. The committee operates on a consensus basis where possible. Membership in the CSC is comprised of representatives from Indigenous communities, the area crab industry advisory boards, the Sport Fishing Advisory Board (SFAB), the Province of BC, commercial licence eligibility holders, processors and DFO. See Appendix 8 for committee members.

Crab Sectoral participants have requested a review of the existing committee format and to have an opportunity to propose a new format that better meets the needs of the participants. A subcommittee of Crab Sectoral participants is being established to develop recommendations on a new process for consideration in 2019 and subsequent years.

The committee terms of reference and calendar are available from the Resource Managers (see Appendix 8) or from the Department's consultation Internet site at:

<https://www.pac.dfo-mpo.gc.ca/consultation/shell-crust/csc/index-eng.html>

Additional consultations may also occur bilaterally with First Nations, Recreational, or Commercial representatives or other stakeholder groups at any point throughout the year as required.

### **1.7.3. Area Crab Industry Committees and Regional Crab Industry Committee**

The 7 crab areas have area based meetings that occur in the summer and usually once more per year. Each Area has one elected crab representative that sits on the Regional Crab Industry Committee and the CSC. In addition to the elected representatives, there are 2 processors, 1 or more Indigenous advisors, 1 recreational and other representatives, if necessary, selected to represent other significant interests in the fishery (e.g., parks, aquaculture, crew).

Beginning in 2010, the Regional Crab Industry Committee has met annually (or more frequently as required) to address commercial harvesting issues and discuss conflicts with other fisheries. A report on topics discussed is provided to Crab Sectoral participants at the CSC.

## **1.8. Approval Process**

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

## **2. STOCK ASSESSMENT, SCIENCE AND TRADITIONAL KNOWLEDGE**

### **2.1. Biological Synopsis for Dungeness Crab**

Dungeness crab are distributed along the west coast of North America from Mexico to Alaska and occur from the low intertidal to depths of 230 m. During spring months, adult males and females generally move inshore into shallower water and then back into deeper water in late summer or early winter, all the while remaining segregated from one another. Females are relatively inactive during the winter; they do not feed and remain buried in the bottom sediment for much of the time. Adult Dungeness crabs inhabit substrates comprised of sand, mud or silt, and eelgrass beds. When incubating their eggs, females prefer sandy substrate. Sub-adults require littoral habitats as important foraging areas. Megalopae larvae often settle out in favourable inshore intertidal and subtidal habitats, which are often estuaries with freshwater input. Zoea larvae can be found in offshore areas in the water column.

Mating is generally synchronous coast-wide in BC, normally occurring in the late spring (April/May). Adult males usually moult during the summer, while adult females usually moult during the spring. Moulting timing differs between males and females, because males can only breed newly moulted (soft) females and will carry them around in a mating embrace when they are about to moult, and even several days after to ensure no other males mate with her. Females store the sperm so they can fertilize the eggs at a later date. In October and November the eggs are fully developed and are fertilized as they are extruded. Since females can fertilize at least two successive batches of eggs from one breeding event, they can skip-moult (only need to breed every second year). Females can produce 200,000 to two million eggs depending on her size. The eggs adhere to the abdomen and are protected and aerated by the female throughout the winter. The eggs hatch late winter/early spring depending on the area and water temperature. Dungeness crab larvae emerge first into the water as prezoae, but moult quickly (within one hour) to the first zoea stage. The spined zoeae are distributed by ocean currents for up to four months and move offshore and alongshore during late winter and the winter-to-spring transition period. Upwelling occurs around April/May and, after five zoea stages, megalopae appear in large near-shore concentrations between May and September. Megalopae look like little crabs, are strong swimmers, and seek out favourable habitat to settle on where they metamorphose into the first post-larval instar.

Dungeness crab grow by moulting, a process whereby the old shell is shed. The new shell underneath absorbs water and swells to a new size 15-30% larger, and then hardens over a period of several months. Juvenile crabs moult many times throughout the year. It takes about two years—and more than 10 moults—for a juvenile crab to reach sexual maturity (120 mm carapace width) after which males moult annually. Males do not effectively breed much below about 140 mm carapace width, and breeding success improves with size. It takes 12 to 16 moults and 3 to 4 years from time of settlement for a crab to reach legal size after which crabs usually moult only once more. Larger males frequently “skip-moult”; that is, not moult for 2 years. Females grow more slowly than males because most of their energy is devoted to egg-production rather than growth and often “skip-moult” once they become sexually mature (100 mm carapace width). Dungeness crabs live about six to nine years. Males generally do not grow larger than 215 mm, and females 165 mm carapace width.

## **2.2. Ecosystem Interactions for Dungeness Crab**

Dungeness crab occupy ecological niches in both marine and estuarine waters and are ecologically important as both prey and predator at all life stages. The planktonic zoea and megalopa larval stages are preyed upon by many fish, including Coho and Chinook salmon, whales, and other predators. Juvenile crabs are consumed by demersal fish, such as flatfish like the starry flounder, English sole, and rock sole. Crabs and birds also eat juvenile Dungeness crabs. Adults are consumed by octopi, lingcod, cabezon, wolf-eels, rockfish, halibut, dogfish, sculpin, sturgeon, crabs, and sea otters.

Dungeness crab zoea larvae are believed to feed offshore in the water column on zooplankton and phytoplankton. Juvenile crabs actively forage in littoral habitats where they consume bivalves (clams and mussels), small fish, molluscs, shrimp, and other crabs. Adult crabs are often found in sandy/silty substrates in bays and estuaries where they prey on bivalves, crustaceans, worms, and fish. Dungeness crabs often remain buried during the day and become more active at night.

Climate change may affect Dungeness crab populations in several ways. One such consequence of climate change is warmer ocean temperatures which may influence egg development and mortality. Eggs generally develop faster in warmer water, but experience higher mortality. Warm currents, such as those produced from El Niño events, bring non-native predators like mackerel to BC, which feed on zooplankton that includes crab larvae. A warmer ocean is also likely to alter the timing of moulting periods. Ocean acidification, through the burning of fossil fuels, also poses a significant threat to crustaceans. Ocean acidification occurs through seawater absorption of atmospheric carbon dioxide and results in a significant reduction in Dungeness crab larval survival, delays development in early life stages, and may impede the ability of crustaceans to produce calcareous structures.

Warmer ocean temperatures can lead to an increased frequency of algal blooms. Domoic acid contamination in Dungeness and Red Rock crab has been detected in British Columbia in recent years. Domoic acid is a neurotoxin caused by a marine diatom (*Pseudo-nitzschia*) and can cause seizures, coma, and death if consumed by humans or animals.

## **2.3. Indigenous Traditional Knowledge / Traditional Ecological Knowledge**

Both Indigenous Traditional Knowledge (ITK) and Traditional Ecological Knowledge (TEK) are cumulative knowledge gathered over generations and encompass regional, local and spiritual connections to ecosystems and all forms of plant and animal life. ITK is knowledge held by Indigenous peoples and communities, while TEK is local knowledge held by non-Indigenous communities, including industry, academia, and public sectors. While qualitatively different, both are cumulative knowledge that may be gathered over generations and are regionally and locally specific and can often be utilized to improve the management process. The growing awareness of the value of ITK and TEK is reflected in the increasing requirements for them to be included in environmental assessments, co-management arrangements, species at risk recovery plans, and coastal management decision-making processes. Government and the scientific community acknowledge the need to access and consider ITK and TEK in meaningful and respectful ways. However, the challenge for resource managers is how to engage knowledge holders and how to ensure that the information can be accessed and considered in a mutually acceptable manner, by

both knowledge holders, and the broader community of First Nations, stakeholders, resource managers, and policy makers involved in fisheries.

## **2.4. Stock Assessment & Research**

Dungeness crab stock assessment is done by DFO, Service Providers hired by Industry, the Area A Crab Association, and several First Nation groups. Commercial style traps with closed escape ports are set on ground lines or floated singly at depths ranging between 5 and 100 m. Biological data collected from crabs caught in traps include: sex, shell condition, injuries, mating marks, and size. The catch per unit effort (CPUE) can be determined when standardized fishing gear are used.

DFO conducts Dungeness Crab stock assessment surveys in Areas I and J on the Fraser River delta during spring and fall months before and after the commercial fishery takes place to improve our understanding about stock composition and abundance, moult timing, injury rates, and diseases. Such survey work has been conducted regularly since the early 1990s. This unique long-term data time series, from one of BC's most important Dungeness crab fishing grounds, provides valuable insights into crab population dynamics. Historically, DFO also conducted research surveys during the 1990s out of Tofino and on an ad hoc basis in other remote locations. In other areas of the coast the commercial biosampling program is the primary method used to collect crab data.

Service providers hired by the commercial fleet collect fishery dependent biological sampling data from Areas I and J and fisheries dependent and independent data from Areas A, B, E, G, and H.

Biological data is also collected by harvesters in Area A during years of an established soft-shell sampling program. Upon approved request, harvesters, in cooperation with the Department and their service provider, collect data between February 15 and August 1st to determine the timing of the male moult and the corresponding soft shell period. This sampling program maximises harvesting opportunity while protecting vulnerable soft crab. The Area A Association, DFO Stock Assessment, and Fisheries Management staff have been involved with developing this program and interpreting the information collected. More recently, the Area A sampling program has utilised designated observers to verify crab shell hardness.

Several First Nations conduct their own crab stock assessment surveys in their traditional territories in conjunction with FSC fishing. Current studies include addressing conservation concerns, understanding impacts of commercial and recreational fishing, and determining the timing of soft-shell periods.

The Department remains interested in co-developing research priorities and interests with First Nations, Recreational, and Commercial representatives.

For more information on anything covered in this section please contact DFO Science and Fisheries Management Staff, (see Appendix 8).

## **2.5. Stock Scenarios**

Individual Dungeness crab populations are sustained by larvae originating over a large geographical area. A stock/recruitment relationship is difficult to demonstrate considering the wide range of potential donors to the larval pool. Crab populations and recruitment are generally controlled by marine environmental conditions and therefore naturally experience year-to-year fluctuations, but are generally cyclical over time with periods of higher abundance followed by periods of lower abundance.

## 2.6. Precautionary Approach

The Department follows the Sustainable Fisheries Framework (SFF), which is a toolbox of policies for DFO and other interests to sustainably manage Canadian fisheries in order to conserve fish stocks and support prosperous fisheries. The SFF includes a decision-making framework incorporating a precautionary approach to commercial, recreational, and food-social-ceremonial fishing:

<http://www.dfo-mpo.gc.ca/reports-rapports/regs/sff-cpd/precaution-eng.htm>

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

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

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

Work is currently underway to determine biological reference points for CMAs I and J, with the intention to investigate the applicability of these reference points on a coast-wide basis.

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

More information on the Sustainable Fisheries Framework is also available on the Internet at:

<http://www.dfo-mpo.gc.ca/reports-rapports/regs/sff-cpd/overview-cadre-eng.htm>

## 3. ECONOMICS OF THE FISHERY

The intent of this section is to provide a socio-economic context of the crab by trap fisheries in BC. An overview of commercial, recreational, and Indigenous sectors of the fishery is provided.

### 3.1 Commercial

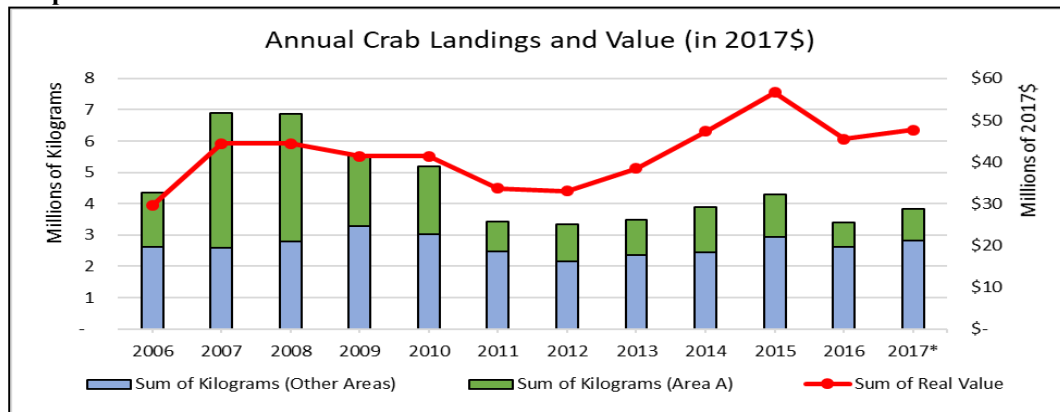
British Columbia's commercial crab fishery is among its most important, accounting for 37% of the wholesale value of the province's wild shellfish products in 2017 (BC Seafood Industry Year in Review,

2017) and supporting a sizeable share of the province’s wild shellfish processing employment (see below).

Between 2011 and 2015, the trend was generally one of increasing volume and prices resulting in increasing landed values year-over-year. This has likely been caused by high demand from China and has created optimism in the industry which has perpetuated strong participation and low diversification into other fisheries by licence holders. However, in more recent years (2016-2017), these upwards trends in harvests and values have levelled off (Graph 1).

Catch and landed value for the last 12 years are shown in Graph 1 below. Landed values have been adjusted for inflation and are reported in 2017 constant Canadian dollars. The preliminary estimate of the 2017 coast-wide commercial landed value (in constant 2017\$) is \$47.6M. This puts landed value closer to past returns, following a peak in 2015 which occurred due to both a year-over-year increase in volume (10%) and value (20%). In the years 2012-2017, landed values have been partially buoyed by general increases in the average price. Between 2013 and 2017, the average price increased by about 23%. The average price in 2017 decreased by about 2.5% (when compared to the average price in 2016) from about \$6.01 to \$5.86 per pound. However, this 2.5% decrease in average price in 2017 was offset by an approximately 12% increase in total landed volume. Overall, there was an increase in total landed value from 2016 to 2017. The graph also indicates the general downwards trend in crab catch – especially for crab Area A.

**Graph 1**



Source: Harvester logbook and sales slip data for years 2006-2017\*.

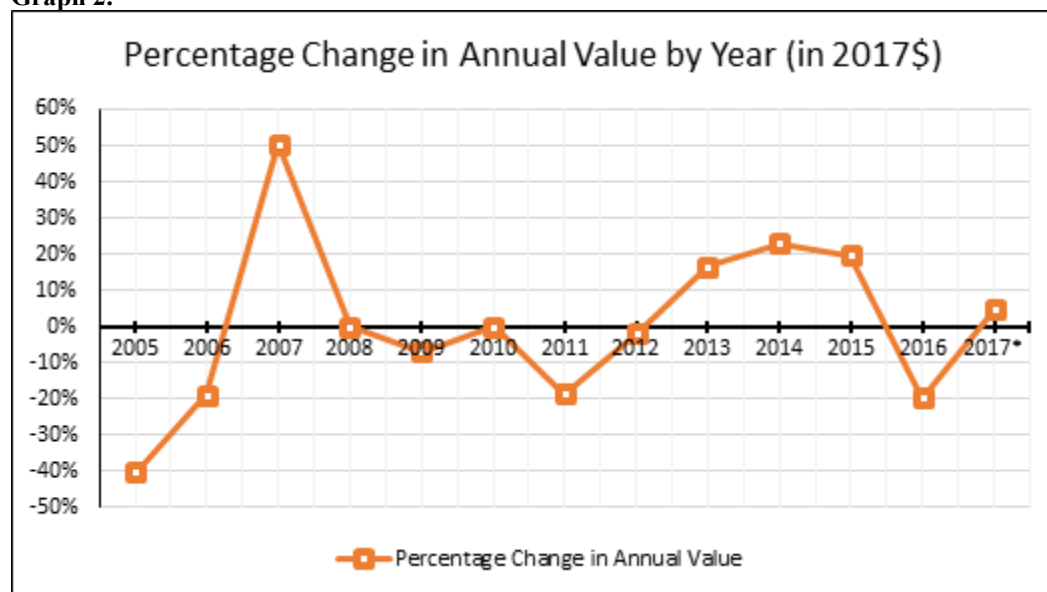
\*Estimates for 2017 are to be treated as preliminary.

Note: Total landed value is an estimate calculated from harvester logbook and sales slip data.

In terms of geographical distribution of crab landings, Area A has historically dominated crab landings in BC, with an average of approximately 49% of the total coast-wide crab landings attributable to this area between 2006 and 2010. However, this has not been the case in recent years as effort has shifted to other areas. In 2017, around 26% of the total coast-wide crab landings were attributed to Area A (Graph 1).

The annual percentage change in the total value of landings of Dungeness Crab over the last 13 years is presented in Graph 2 below. The graph indicates a high level of variability in the annual value of total coast-wide crab landings.

Graph 2.



Source: Harvester logbook and sales slip data for years 2005-2017\*.

\*Estimates for 2017 are to be treated as preliminary.

Note: Total landed value is an estimate calculated from harvester logbook and sales slip data.

There is a high level of participation by the crab fleet, with approximately 99% of licenced vessels participating in 2017 (216 out of 218 licensed vessels). It has been found that most crab vessels hold only crab licences.<sup>1</sup>

Between 2011 and 2017, the commercial crab fleet landed value averaged approximately \$43.2M per year (in constant 2017 dollars).

Graphs 3 and 4 below present the average trends by monthly average landings (by area) and coast-wide average monthly price between 2006 and 2011, and between 2012 and 2017, respectively. Although average monthly landings vary year-to-year, in years 2006-2011 the majority of the catch was landed from June to August. Typically, the average price starts higher in the early part of the year, and then sees a significant reduction in early summer as large quantities of crab hit the market. The price often recovers in late summer (August-September) and dips again as harvest declines. In recent years there has been an observable shift in harvest patterns to earlier and later in the year, which may allow a larger proportion of landed crab to be sold in months when prices are higher.

Between the two time periods, the 6-year-average monthly price increased by at least 30% for each month. This leap in real prices is most notable in the month of August, where the average monthly price between 2012-2017 is over 71% higher than that between 2006-2011. As previously noted, this higher

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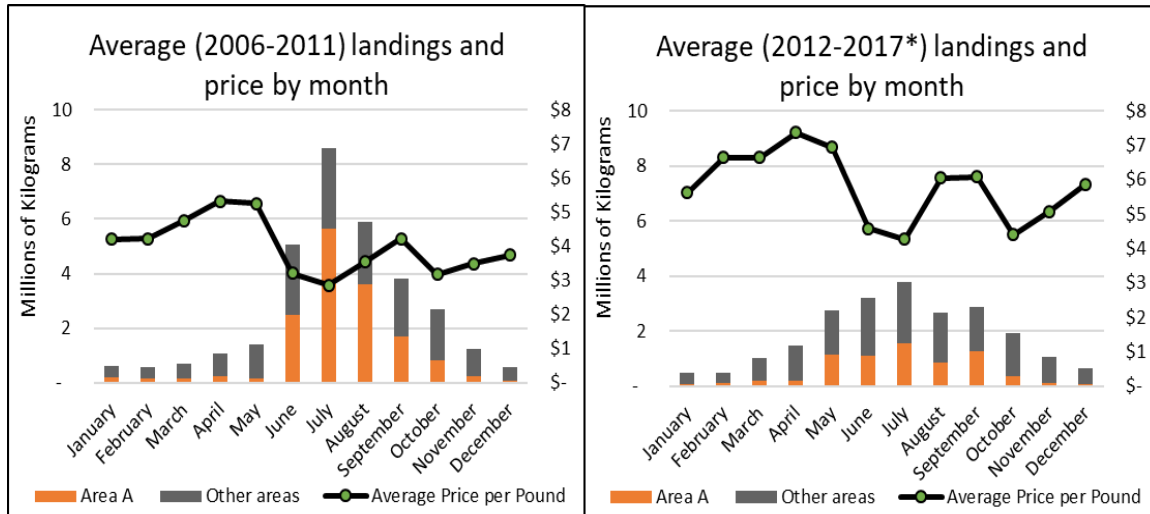
<sup>1</sup>Nelson, Stuart (2011). Fleet financial profile for the 2009 Crab fleet shows that 167 of 200 vessels (84%) held only crab licences in that year.

price seems to be buoying the landed value of the fishery, especially when considering the lower harvest volumes in recent years (Graph 4).

In the years 2012-2017 the proportion of total crab catch attributable to Area A in the months of June, July and August has decreased when compared to the 2006-2011 average.

Graph 3.

Graph 4.



Source: Harvester logbook and sales slip data, years 2006-2017\*.

\*Estimates for 2017 are to be treated as preliminary.

A 2010 study of the economics of BC’s crab fishery estimates that 43% of wild shellfish processing employment is related to crab.<sup>2</sup> Applying this percentage to the results of the 2016 Processor Employment Survey yields an estimated 226 processing sector jobs (both full- and part-time) which are related to the processing of crab.<sup>3</sup> This constitutes approximately 5% of the total seafood processing sector employment in BC in 2016. Furthermore, using estimates based on GSGislason and Associates (2017), this processing labour would result in approximately \$1.7M in wages.<sup>4</sup>

In addition to supporting commercial fisheries and seafood processing employment, the crab fishery in British Columbia also contributes greatly to provincial exports.

In 2017, the value of exports of crab accounted for roughly 10% of all BC seafood exports<sup>5</sup> which constitutes a 1% decreased share when compared to value of crab exports in 2016. In 2017, crab exports from British Columbia had a value of \$131.0m, which is a 9.5% decrease from 2016, but is 51% higher than the previous 10-year-average (\$86.4m). Graph 5 below illustrates crab export volume and average price of all crab exports from BC in 2007-2017 (in constant 2017\$).

<sup>2</sup>Yonis (2010), p. 13

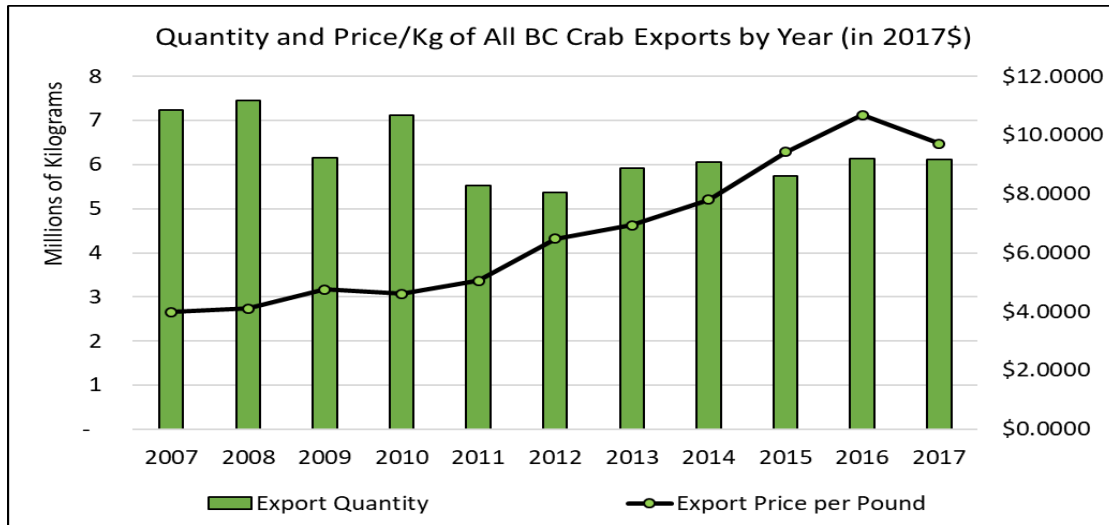
<sup>3</sup> BC Ministry of Agriculture (2016) estimates that 526 processing jobs are attributable to Wild Shellfish processing.

<sup>4</sup> GSGislason & Associates (2017) estimate that the wages associated with crab processing is around \$0.45 per kilogram. Applying this to the estimate for 2017 landings yields about \$1.7M in processing wages.

<sup>5</sup> BC Ministry of Agriculture - Agriculture, Seafood & Agrifood Snapshot 2016, 2017: <https://www2.gov.bc.ca/gov/content/industry/agriculture-seafood/statistics/industry-and-sector-profiles>

In 2017 there was a 9% decrease in real prices for crab exports when compared to 2016. Between 2007 and 2012, the average real price of crab exports was \$4.83 per pound. However, there has been a marked increase in price, as the average real price of crab exports between 2013 and 2017 was \$8.91 per pound – an 85% increase over the previous 6-year-average. While the quantity of crab exports has increased by 14% from 2012 to 2017, the real price of crab exports has increased by over 71% during the same period.

**Graph 5.**

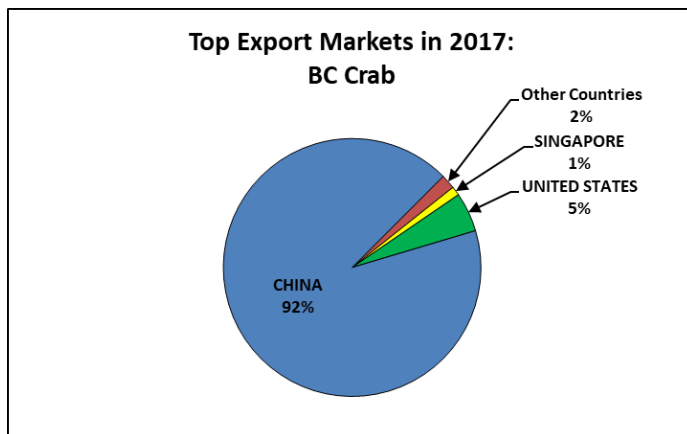


Source:

Statistics Canada (EXIM) data.

Graph 6 below shows the distribution of crab exports from BC to its biggest export markets. The top markets for BC crab exports in 2017 were China, United States, and Singapore. These markets accounted for 98% of all crab exports from BC to the world market.

**Graph 6.**

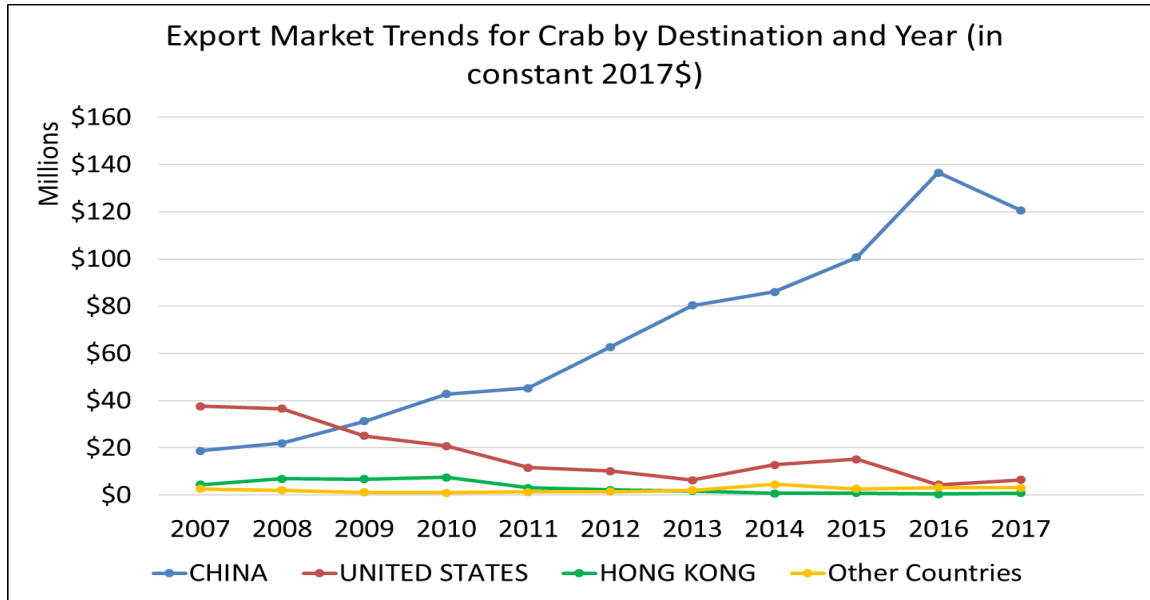


Source: Statistics Canada (EXIM) data.

The China export market for crab has been steadily rising over the past 10 years. Graph 7 below outlines export market trends for crab from BC in years 2007-2017. Historically, most exported crab went to the USA, but in 2009 China overtook the USA as the biggest importer of crab from BC (Graph 7). Additionally, with the introduction of certain tariffs between China and the United States in 2018, 2019/20 Crab Integrated Fisheries Management Plan

Canadian crab exports to China may potentially become more competitive in the future. Upon initial investigation, there does not seem to be any significant evidence of this around the time these tariffs were implemented.

Graph 7.



Source: Statistics Canada (EXIM) data.

### 3.2 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. Of the anglers fishing in BC’s tidal waters, the vast majority (84%) are Canadian residents, with the remainder being visitors to Canada (16%). These activities provide a range of social, cultural, and health benefits to the participants as well as contribute directly and indirectly to economic activity.

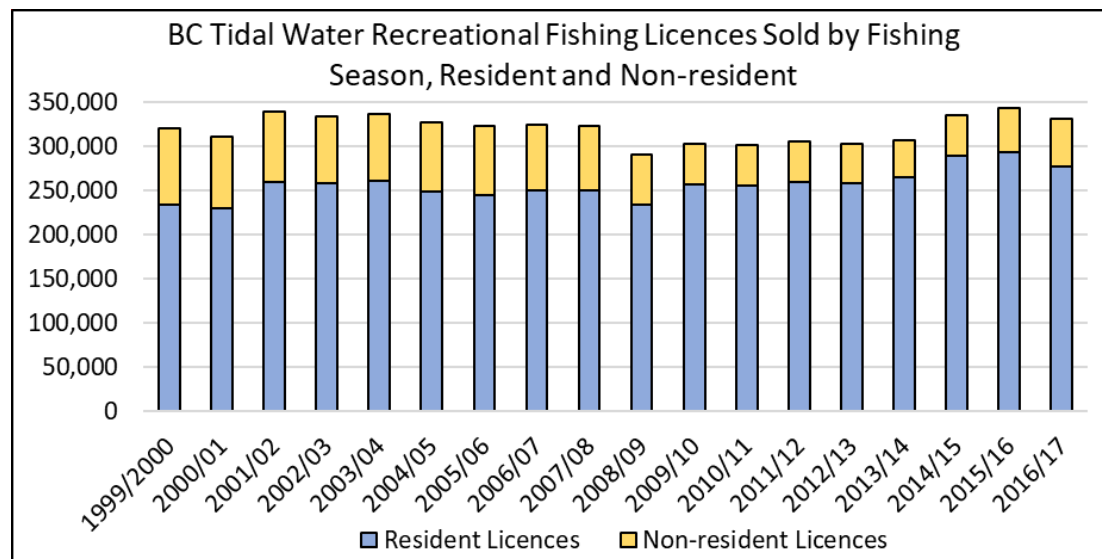
The national Survey of Recreational Fishing in Canada<sup>6</sup>, conducted every five years, provides an estimate of individual expenditures and major purchases for recreational fishing. According to the survey, BC’s tidal water recreational fishery has typically been the third largest recreational fishery in Canada in terms of direct expenditures and major purchases. Resident anglers, who make up the majority of anglers in BC’s tidal waters, had the largest expenditures, at \$562.8 million in 2010 with non-resident direct expenditures (including fishing packages) and major purchases totalling \$143 million. Of the total direct expenditures (residents and non-residents), approximately 20% can be attributed to recreational shellfish

<sup>6</sup> Fisheries & Oceans Canada, multiple years.

harvesting. Expenditures by non-residents add money to the provincial economy, beyond the \$143 million directly attributable to their fishing experience<sup>7</sup>.

While opportunities for recreational fishing in BC’s tidal waters attract international anglers<sup>8</sup>, they are coming in smaller numbers (Graph 8), even as the number of resident anglers is slightly increasing. Recreational fishing continues to be important to the BC economy, but the rate of growth is slowing. In real terms, total direct expenditures and major purchases grew by nearly 15% from 2000 to 2005, but by only 1.82% from 2005 to 2010<sup>9</sup>. This slowdown is due mainly to a drop in expenditures by international anglers of 47% between 2005 and 2010. Expenditures by resident anglers, on the other hand, increased by 18% over that same period.

Graph 8.



Source: DFO. [www.pac.dfo-mpo.gc.ca/fm-gp/rec/licence-permis/stat-eng.htm](http://www.pac.dfo-mpo.gc.ca/fm-gp/rec/licence-permis/stat-eng.htm)

Most of the direct expenditures, major purchases, and package expenditures were attributable to salmon fishing but interest in crab is sizeable, with 18% of resident anglers indicating crabs as one of their top three preferred species<sup>10</sup> (Fisheries & Oceans Canada, 2010).

<sup>7</sup> British Columbia’s Fisheries and Aquaculture Sector (2012) reports that non-resident participants in recreational tidal water fishing also spend money on, for example, shopping, cultural events and attractions (such as museums and the theatre), and sightseeing at locations other than where they go fishing.

<sup>8</sup> For example, 47% of international anglers reported that had there not been tidal water fishing opportunities they would not have chosen British Columbia as their travel destination (Survey of Recreational Fishing in Canada, 2010).

<sup>9</sup> These growth rates were calculated using real expenditures adjusted to account for inflation, measured in 2010 constant dollars.

<sup>10</sup> Based on analysis of 2010 data. Survey respondents were asked to list their top three preferred species. This means that while 18% reported that crabs are a preferred species, they may also fish recreationally for other finfish or shellfish species.

### **3.3 First Nations**

First Nations are interested in fisheries related economic opportunities. There are 29 communal commercial crab by trap licence eligibilities to provide economic opportunity to First Nations through participation in the commercial fishery. The Allocation Transfer Program (ATP) retires existing commercial licence eligibilities from fish harvesters on a voluntary basis and re-issues these to eligible First Nation organizations as communal commercial licences. The Pacific Integrated Commercial Fisheries Initiative (PICFI) is aimed at achieving environmentally sustainable and economically viable commercial fisheries, where conservation is the first priority and First Nations' aspirations to be more involved are supported. PICFI builds on fisheries reform work began in response to the 2004 reports of the First Nations Panel on Fisheries and the Joint Task Group on Post-treaty Fisheries, as well as subsequent discussions in a wide variety of forums that have confirmed the need for PICFI.

For more information on the Aboriginal Fisheries Strategy (AFS) ATP, contact resource manager listed in Appendix 8 or see the Internet at:

<http://www.pac.dfo-mpo.gc.ca/abor-autoc/index-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>

## **3.4 Indigenous Fisheries Programs**

### **3.4.1 Pacific Integrated Commercial Fisheries Initiative (PICFI)**

The Pacific Integrated Commercial Fisheries Initiative (PICFI) was announced in 2007 and is aimed at achieving environmentally sustainable and economically viable commercial fisheries, where conservation is the first priority and Indigenous aspirations are supported. The Government of Canada committed \$175 million over five years to implement the initiative. PICFI builds on fisheries reform work begun in response to the 2004 reports of the First Nations Panel on Fisheries and the Joint Task Group on Post-treaty Fisheries, as well as subsequent discussions in a wide variety of forums that have confirmed the need for PICFI. In 2017, it was announced that the Integrated Commercial Fisheries Initiative will receive permanent funding to expand Pacific and Atlantic programs. PICFI currently receives an ongoing \$22.05M annually. Commercial Fisheries Enterprises (CFE) receive a notional funding of up to \$375K under the Business Development Source (BDS) funding envelope and a notional funding of up to \$130K under Operational Support. Beginning 2018/2019, a \$600K Aquaculture Development Source (ADS) funding envelope was launched to support aquaculture projects under PICFI.

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

### **3.4.2 Allocation Transfer Program (ATP)**

The Allocation Transfer Program (ATP) was created in 1994 under the Aboriginal Fisheries Strategy (AFS). Its purpose is to support fisheries-based economic development for First Nations groups in coastal communities by providing opportunities to get more involved in the commercial fishing industry. The program can provide eligible Indigenous groups access to commercial fisheries through a voluntary relinquishment process, where commercial license holders are offered the opportunity to permanently relinquish licenses in exchange for payment. The equivalent commercial fishing capacity is then re-issued

to Indigenous groups, so the ATP does not add to the existing effort on the resource. As of 2011, no further federal funding has been budgeted for ATP in the Pacific Region. With the renewal of the PICFI, DFO is focused on supporting Indigenous Commercial Fishing Enterprises (CFEs). ATP will continue as a source of distribution of communal commercial licenses. The ATP is considered fully allocated with the exception of some licenses that are generally low value, low interest, and/or not economically viable. The Department works on allocation plans to allocate available licenses on a temporary or ongoing basis. Once a plan has been approved, eligible groups are informed of the opportunities through a call out process.

More information on ATP is available at: <http://www.pac.dfo-mpo.gc.ca/abor-autoc/atp-ptaa-eng.html>

## **4 MANAGEMENT ISSUES**

The following section identifies emerging issues which may impact the management measures in place for the crab by trap fishery.

### **4.1 Conservation and Sustainability**

Improved understanding of the biology related to crab recruitment, growth, moulting, and migration is required to better understand and manage the impacts of crab fishing. Biological sampling by the commercial fisheries sector will continue in all crab areas. For more information please refer to the Biosampling annex in Appendix 9.

There is a concern that undersized, female and soft-shell crab are being removed through either illegal harvests or incidental mortality due to intensive fishing. Due to increased injury and mortality, the capture and handling of undersized, female, and soft-shell crab raises conservation and sustainability concerns. Illegal crab trap gear continues to be a concern. Crab traps having undersized, missing, or closed escape rings contribute to higher undersized, female, and soft-shell mortalities. If lost, these traps can continue to fish until the rot cord or the structure deteriorates or becomes buried in the substrate. Fishing in excess of trap allocations also threatens the sustainability of the resource and creates access issues for other harvesters.

Managers are concerned that discrepancies in the application of conservation management measures between different user groups (Commercial, Recreational, and First Nations Food, Social, and Ceremonial) may result in localized impacts to stock productivity. Therefore, in 2018 the Department sought input from all users on specific conservation issues and possible initiatives to support a more effectively managed fishery for conservation and sustainability. It is anticipated the results of the First Nation and recreational consultation will be available and incorporated into First Nation fishing plans and recreational regulations. For more information, please see Appendix 1 and 2 for changes in 2019/2020.

#### **4.1.1 Sea Otters**

For more than a decade there have been reports of sea otter impacting crab and other invertebrate populations, particularly along the west coast of Vancouver Island. In 2009, Sea Otters were down listed from threatened to a species of special concern. For more information on their status and management please visit the Species at Risk public registry

[www.sararegistry.gc.ca](http://www.sararegistry.gc.ca)

### **4.1.2 Aquatic Invasive Species**

Green crab may pose a serious threat to estuarine and marine ecosystems on the West Coast of North America as they are voracious predators feeding on a variety of intertidal animals, including oysters, mussels, clams and juvenile crabs. Green crabs are such efficient predators that they out-compete native crab species for food. For more information go to:

<http://www.dfo-mpo.gc.ca/species-especies/ais-eae/index-eng.html>

## **4.2 Social, Cultural and Economic Issues**

### **4.2.1 First Nations**

The Department continues to receive requests from First Nations to improve food, social, and ceremonial (FSC) access, using management measures such as non-commercial and FSC-exclusive harvest areas. However, some First Nations have limited catch and effort information on FSC fishing, which remains an issue when assessing these requests. Some information on FSC harvesting is provided to the Department through various catch monitoring programs.

The Department is concerned about unreported and unauthorized fishing and selling activities, which contradict conditions set out in FSC licences, and is concerned about the impact this may have on the resource, particularly in Areas I and J.

In 2018, the Department requested input from First Nations about the implementation of a number of conservation management measures across all fisheries, including mandatory escape rings, release of females, marking of holding cages, rot cord and the banning of night setting and hauling in the southern Strait of Georgia and Fraser River areas.

First Nations are concerned about the implementation of regulatory changes that may impact their FSC fishing opportunities, such as trap limits and rules around the use of commercial fishing gear. Accommodations may include the partial implementation of the conservation measures in 2019/20 in the Central Coast and development of a supplemental license to authorize activities such as nighttime fishing when requested.

### **4.2.2 Recreational**

The Department has received a number of requests from the Sport Fishing Advisory Board (SFAB) for non-commercial harvest areas. The stated goal of these proposed closures is to improve First Nation FSC and recreational access to crabs in those areas where crab resources are highly utilized by all stakeholders. However, limited catch and effort information on recreational crab harvest remains an issue when assessing these requests and the Department is exploring other options such as voluntary commercial change and/or reduction in harvesting (best management practises) for improving recreational crab harvest catch information in some areas. Some information on recreational crab harvesting is acquired through iREC, (a mandatory on-line survey for all licenced recreational harvesters). However, estimates from iREC are provided at a large scale and can be highly variable. In less remote areas, some crab information is gathered during dockside creel surveys; however these surveys are more commonly designed to gather salmon, halibut, and rockfish information and, due to lack of funds, focus less on shellfish harvesting activities. Recreational estimates are also acquired by a national survey of recreational fishing conducted every five years.

From 2009 to 2012 buoy count surveys were conducted in key areas of the south coast. However, it was proven difficult to use the buoy count survey data in estimating catch due to variability between seasons, weekends versus weekdays, and weather.

In 2014, recreational boaters raised safety concerns with commercial harvesters fishing among anchored pleasure boats. In 2015 the SFAB requested that the Department review and consider the implementation of a larger legal crab size limit for the commercial fleet. In 2018, at the Crab Sectoral Committee (CSC), a working group of commercial and recreational representatives was formed to increase understanding of the implications.

In 2015, the Department implemented a number of voluntary seasonal commercial exclusion zones to improve First Nation and recreational access to crab. The Department continues to inform commercial harvesters of the existence of these closures. More information on Best Management Practices can be found in Section 2.17 of Appendix 3: Commercial Harvest Plan.

Floating line continues to be a navigational risk and a hazard to marine mammals. Household plastic jugs, bottles, and Styrofoam can be hard to see, difficult to print on, and can also deteriorate and sink. Absence of buoys marked with a phone number makes it difficult for the Conservation and Protection (C&P) staff to contact the owner or for harvesters to return lost gear.

In 2019, the Department, after consulting with the SFAB, will be implementing a number of conservation management measures in the recreational crab fishery, including mandatory escape rings, non-retention of female king crab and the banning of night setting and hauling of gear in the southern Strait of Georgia and Fraser River areas.

#### **4.2.3 Commercial**

The Department and commercial harvesters remain concerned about unauthorized fishing activities, particularly in Areas I and J. This includes the selling of illegal crab that is either undersized, female and/or having a soft-shell. These activities affect the sustainability of the resource, and impacts market access and prices.

Illegal sales that involve crab harvested from dioxin closure areas, (particularly Howe Sound) also remain a concern as the selling and consumption of contaminated crab is both an economic and public health issue. A request for Health Canada advice has been sent to determine if consumption guidelines can be changed in Howe Sound. A request to review the crab closure in Wainwright Basin due to dioxin concerns has been received. Crabs from the basin have been collected and Health Canada advice will be requested for that area as well in 2019.

The commercial sector is concerned about the implementation of regulatory changes without extensive consultation and/or scientific study. This includes the implementation of additional measures to support conservation concerns such as hanging bait bans and soft-shell closures, and measures such as increasing the legal commercial size limit of crab or commercial fishery closures to improve FSC and Recreational access.

The Department and many harvesters remain concerned about vessel and crew safety.

The Department and many harvesters also remain concerned about high commercial competition amongst active licence holders. Area re-selection changes were significant for the 2016 to 2019 period and have

resulted in an unprecedented number of commercial vessels fishing in Areas B, E-Tofino and Area H. These changes are largely due to reductions in commercial catch success in Areas A and I.

The Department has, and will, continue to conduct educational outreach to improve harvester compliance with commercial crab fishery monitoring programs. For 2019/20, the Department is focusing on reducing data gaps, improve radio frequency identification (RFID) chip scanning and logbook accuracy. Improved compliance with all of these components of the monitoring programs is needed for the proper assessment, management, and control of the crab fishery. If compliance is not improved, the Department may implement alternative measures, such as video monitoring for all licence areas or reduced fishing opportunities.

#### **4.2.4 International**

The US share of the Canadian crab export market has rapidly declined over the past few years and the exporting of crab to China has significantly increased. This change is likely to do with increased Chinese demand offering higher prices for Dungeness crab. Historically, when crab destined for the United States dominated the export market, concerns were raised that legal Canadian crab, considered undersized by US domestic fishing regulations, could affect US market demand for Canadian crab.

### **4.3 Compliance**

The Departments C&P branch is concerned about the following enforcement issues:

- The increasing use of commercial vessels and gear outside of the commercial fishing season;
- Illegal crab sales and monitoring of non-daylight fishing activities, particularly in Areas I and J;
- The effectiveness of electronic monitoring (EM) in commercial licence areas B through J, (see Appendix 9) to monitor fishing in closed areas, trap allocations, and trap haul restrictions. EM effectiveness has been compromised by data gaps, trap retrieval without scanning radio frequency identification (RFID) chips, and utilization of RFID chips in excess of allowed number of chips.
- For other enforcement issues please refer to the Compliance Plan, (Section 9).

### **4.4 Fishery Monitoring and Catch Reporting**

DFO finalized the “Strategic Framework for Fisheries Monitoring and Catch Reporting in the Pacific Fisheries” (the Framework) in 2012. The Framework directs that an ecological risk assessment be undertaken for all fisheries to determine the level of monitoring required to provide information necessary to manage for the ecosystem risks posed by a fishery, while allowing for final monitoring and reporting programs to reflect the fishery’s unique characteristics.

Risk assessments are performed using an excel-based tool that provides for a consistent approach to a structured conversation regarding ecological risk and other resource management considerations. Draft risk assessments will be initially completed by DFO, then presented to harvesters for review, comment, and revision through existing advisory processes established for fisheries management purposes. Where no advisory process exists, engagement will occur through alternative means.

Should the risk assessment indicate a gap between the current level and target level of monitoring identified through the risk assessment, options to address the monitoring gap are to be identified through discussion between DFO and harvesters. The feasibility of these options (e.g. cost, technical

considerations, etc.) is also to be considered through these discussions. The Strategic Framework directs that monitoring and reporting programs be cost-effective and tailor-made for a fishery; as such, a collaborative approach is required.

Where monitoring options are determined to be feasible, the current monitoring and reporting program is to be revised to incorporate these options so the program provides sufficient information to resource managers to manage the ecological risk of the fishery effectively. Where monitoring options are not feasible, alternative management approaches are required to reduce the ecological risk posed by the fishery. If there is no gap between the current and target level of monitoring, then the management approach would not require any change.

As of November 2018, the Department is in the process of gathering feedback on and will subsequently be finalizing a draft national Fishery Monitoring Policy. That national Policy—an evolution of the existing Strategic Framework—looks to bring consistency in the development, delivery and evaluation of monitoring programs for all federally-managed wild fisheries in Canada, and will ultimately supersede the existing Pacific Framework.

More information on the Framework and risk assessment is available on the internet at:

[http://www.pac.dfo-mpo.gc.ca/fm-gp/docs/framework\\_monitoring-cadre\\_surveillance/page-1-eng.html](http://www.pac.dfo-mpo.gc.ca/fm-gp/docs/framework_monitoring-cadre_surveillance/page-1-eng.html)

## 5 OBJECTIVES

Sections 5.1 to 5.3 outline the “longer term” objectives for this and other invertebrate fisheries in the Pacific Region. Section 5.4 describes the species-specific “shorter-term” objectives for the crab by trap fisheries.

### 5.1 National Objectives

Fisheries and Oceans Canada aims to:

- Meet conservation objectives and ensure healthy and productive fisheries and ecosystems
- Base management decisions on the best available scientific information
- Manage First Nations fisheries for FSC purposes in a manner consistent with the Sparrow Decision (SCC 1990) and other relevant court decisions (*R v. Gladstone 1996 and Ahousaht*) and treaty obligations
- Work collaboratively with commercial and recreational sectors to provide fishing opportunities in a manner that ensures the long term sustainability of the resource
- Provide stability and predictability in fisheries management and improved governance through an open and transparent consultation process
- Foster shared stewardship
- Manage commercial fisheries to improve economic performance, provide certainty for participants and to optimize harvest opportunities

### 5.2 Pacific Region Objectives

The overall goal of Fisheries Management in the Pacific Region is the conservation of Canada’s fisheries resources and sustainable resource utilization to ensure priority (after conservation) FSC access for First

Nations and generate economic prosperity. This is accomplished through close collaboration with resource users and stakeholders based on shared stewardship consistent with treaty and Indigenous rights. Fisheries Management is responsible for management of the Indigenous, commercial, and recreational fishing in the Pacific Ocean and creating the conditions for a vibrant and innovative aquaculture industry.

Fisheries Management will continue to develop and implement the Sustainable Fisheries Framework by integrating the precautionary and ecosystem approach frameworks into IFMPs with the goal of protecting vulnerable marine and freshwater ecosystems and vulnerable stocks from significant adverse impacts, and to help ensure long term sustainable management and support economic prosperity.

## **5.3 Invertebrate Resource Management Objectives**

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

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

## **5.4 Crab by Trap Objectives**

### **5.4.1 Conservation and Sustainability Objectives**

5.4.1.1. To maintain crab productivity in areas and times where high levels of handling result in mortality of female, undersized and soft-shell crab.

Natural fluctuations in Dungeness crab populations do not allow for a steady state equilibrium harvest. Consequently fisheries are not currently managed to a total allowable catch (TAC). Conservation objectives have been met partially through maintenance of the reproductive potential of crab stocks using the fundamental goals of protecting female crab and only harvesting male crab after they have had the opportunity to breed. The Department will continue to evaluate and consider the effectiveness of

management rules such as seasonal closures, haul restrictions, and hanging bait bans that have been implemented in some crab management areas and excluded from other areas.

#### 5.4.1.2. To maintain sustainability of the fishery through trap allocations.

Increased effort by the commercial fishery is a concern that is partially addressed through trap limits and vessel length restrictions. The intensive nature of the fishery may have significant negative impacts on stock productivity due to mortality associated with handling and releasing of female, undersize, and soft-shell crab. Increased effort in the commercial fishery led to questions around the sustainability and viability of commercial crab fishing. Trap limits came into effect May 1, 2000 to help address this problem. The objectives of trap limits are to reduce trap inventories, to reduce the abandonment, loss, and neglect of traps, to reduce congestion of the grounds, and to reduce overall effort. The Department will continue to consider trap reductions and haul restrictions in areas where effort and hauling frequency has increased.

The Department will continue to evaluate and consider further refinements to vessel and area trap allocations. Please refer to the commercial harvest plan in Appendix 3 for the most recent and proposed changes to commercial harvesting.

#### 5.4.1.3. To obtain accurate catch records

Lack of compliance with catch log submission or inaccurate and fraudulent catch reporting creates problems with the analysis of catch data from the commercial crab fishery.

Fish slips and harvest log program standards will be maintained. The Department will also accept data submitted to the Department, (providing data delivery formats are maintained) from e-log technologies developed with their service provider.

#### 5.4.1.4. To maintain fishery monitoring and catch reporting

The commercial crab fisheries occur in accordance to Fishery monitoring and catch reporting program standards, (see Appendix 9 for rationale and standards).

### **5.4.2 Social, Cultural and Economic Objectives**

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

#### 5.4.2.1 First Nations Objectives

DFO's objective is to continue to provide opportunities for First Nations to harvest fish for food, social and ceremonial purposes, in a manner consistent with the decision of the Supreme Court of Canada in 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: <http://www.dfo-mpo.gc.ca/fm-gp/aboriginal-autochtones/aarom-pagrao/index-eng.htm>

The Nisga'a, Tsawwassen, Maa-nulth and Tla'amin First Nation Treaties came into effect in 2000, 2009, 2011 and 2016 respectively. Under these Treaties, Fisheries Operation Guidelines (FOGs) set out the 2019/20 Crab Integrated Fisheries Management Plan

operational principles, procedures and guidelines needed to assist Canada, BC, and First Nations in implementing Fisheries Chapters of their respective treaties and managing Treaty fisheries on an annual basis. The FOGs provide guidance on how management decisions, with respect to treaty fisheries, will be made via the Joint Fisheries Committee (JFC), how abundance is estimated, biological and harvesting considerations, fisheries monitoring and catch reporting requirements, etc. Each year the JFC, established under each treaty, make recommendations to the Minister on the issuance of specific 'Harvest Documents' to licence the fisheries for Domestic (food, social and ceremonial) harvests.

More information on the Treaties can be found at: <http://www.BCtreaty.net/>

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 of fish within their Fishing Territories and to sell that fish, with the exception of geoduck. DFO is working with the Five Nations to implement a Fishery Management Plan ("FMP") for their fishing, by April 1, 2019. The FMP could lead to in-season management changes. DFO will make every effort to advise stakeholders of any such changes in advance of changes being implemented.

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 ATP and PICFI.

Options to resolve FSC crab harvest access requests will continue to be developed including recommendations for potential management change approval. For the period of this plan, the Department will continue to review and share details associated with First Nation and recreational requests to increase the commercial size limit of Dungeness crab, as well as other management options.

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

The Department will continue:

- To discuss conservation, proper management and control, reasonable FSC needs, and options to meet shared interests;
- To discuss the addition of trap limits to licence conditions as a measure to address concerns about commercial style vessels and gear being used to harvest crab for FSC purposes.
- To encourage First Nation representatives to share any issues or needs pertaining to FSC Crab fishing 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.

#### 5.4.2.2 Recreational Objectives

DFO's objective is to affirm the social and economic importance of the recreational fishery, provide sustainable recreational harvesting opportunities as part of integrated management plans consistent with DFO's policies, to create an environment within the advisory process in which recreational fishing

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 document “Recreational Fisheries in Canada, An Operational Policy Framework” is available on the internet at: <http://www.dfo-mpo.gc.ca/reports-rapports/regs/op-pc-eng.htm>

Recreational fisheries in the Pacific Region are also guided by “A Vision for Recreational Fisheries in British Columbia 2009-2013” developed cooperatively by DFO, the Province of BC and the SFAB. The recreational fisheries Vision is available at:

[https://sportfishing.bc.ca/wp-content/uploads/2016/12/recreational\\_fisheries\\_vision.pdf](https://sportfishing.bc.ca/wp-content/uploads/2016/12/recreational_fisheries_vision.pdf)

To improve recreational fishery monitoring and to potentially assess crab access requests, some information on recreational crab harvesting is gathered during dockside creel surveys. Recreational estimates are also acquired by a national survey of recreational fishing conducted every five years.

To improve recreational fishery monitoring and catch reporting, the Internet recreational catch and effort survey (iREC) was made mandatory in April of 2013. In 2019, iREC will continue to randomly request, (via email) licence holder activity and catch information.

Use of non-floating line, and unique floats, and including a phone number or unique ID # on floats are voluntary practices that may soon be included in recreational regulations. Rot cord is mandatory on crab traps and new regulations may further specify rot cord requirements on round stainless steel crab traps. These amendments have been posted in the Canada Gazette I publication for fiscal 2016-17 and may get approved once the consultation phase is complete.

In 2015, the Department gained commercial support for a number of voluntary seasonal commercial exclusion zones to improve First Nation and recreational access to crab in a number of south coast high use areas, (for more information please refer to the Best Practices section of Appendix 3: Commercial Harvest Plan.

For the period of this plan the Department will continue evaluate the effectiveness of voluntary commercial closures in Silva Bay, Lang Bay-Brew Bay, Savary Island, Tofino (southern Millar channel), and Sooke (Otter Point).

For the period of this plan the Department will continue to review and share details associated with the First Nations and Recreational requests to increase the commercial size limit of Dungeness crab.

#### 5.4.2.3 Commercial Objectives

DFO’s objective is to continue to work collaboratively with the commercial industry on sustainable resource use and long-term economic viability of the crab seafood industry recognizing that commercial fisheries play a vital role in Canada's economy. This will include adapting to changing resource and market conditions and extracting optimal value from world markets.

Vessel safety is an objective shared between DFO, Transport Canada, Transportation Safety Board, and WorkSafe BC (Appendix 4). All parties acknowledge the role of vessel masters and crew in being responsible for their own decisions regarding fishing vessel operations. DFO’s objective, in conjunction with other responsible agencies, is to adopt an affirmative action profile in respect of vessel safety considerations.

To reduce commercial effort and competition, which may have an impact on the resource, the Department will continue to consider licence and vessel trap stacking options. This opportunity will be available to licence areas H and E-Sooke as a pilot in 2019/20.

For the period of this plan, management change requests from Area A, I and J will continue to be reviewed and consulted upon in order to improve commercial access to legal hard-shelled crab and to optimise the economic value of the fishery while maintaining sustainable resource use and reasonable First Nation FSC and recreational harvesting access.

## 5.5 Compliance Objectives

For the period of this plan, the Department's crab enforcement priorities will continue to be illegal sales investigations and the illegal use of commercial gear.

DFO's crab enforcement objectives, in conjunction with the monitoring and enforcement priorities in the Pacific Region, include:

- 1.) Enforcement of Licence Conditions, Regulations, and Orders
- 2.) Fairness and civility on grounds
- 3.) Timeliness of access to information for court
- 4.) Enforce / monitor US boundary & area closures
- 5.) Monitoring / enforcement of health and safety (i.e. Area closures)
- 6.) Support outside agency investigation (CRA, RCMP, HRDC, etc.)

## 5.6 Ecosystem Objectives

DFO's objective is to use the Ecological Risk Assessment Framework drafted under the Policy for Managing the Impacts of Fishing on Sensitive Benthic Areas to determine the level of risk in these fisheries and whether mitigation measures are required in any areas. Ecosystem objectives may also arise with initiatives under the *Oceans Act*. In the interim, it is a shared objective with the commercial fishery to avoid sponge reefs and cloud sponges in areas identified in the Commercial Harvest Plan (Appendix 3), including the Hecate Strait / Queen Charlotte Sound Glass Sponge Reefs (Appendix 3: Section 5.2.2.4).

In addition to the above shared objective, the Department is also requiring all harvesters targeting crab, or utilizing other bottom contact fishing gear, to avoid the glass sponge reefs identified in the Strait of Georgia. Following an ecological risk assessment process in 2015, which included consultation with First Nations, industry and other stakeholders, these Strait of Georgia glass sponge reef areas are now closed to bottom contact fishing activity (see Appendix 7 for location coordinates).

### **Policy for Managing the 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 follows a five (5) step process. Following these steps, ongoing fishing activities in historically fished areas will be managed to address impacts of fishing on sensitive benthic areas through existing processes, including the advisory processes in place for the given fishery, following these steps. The management of proposed new fishing activities in frontier areas will be addressed through a separate procedure, also using these steps. For more information on this Policy, please visit the following web site: <http://www.dfo-mpo.gc.ca/reports-rapports/regs/sff-cpd/benthi-eng.htm>.

## 5.7 Other Species Concerns

### 5.7.1 Species at Risk Act

The *Species at Risk Act* (SARA) came into force in 2003. The purposes of the *Act* are “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.”

In addition to the existing prohibitions under the *Fisheries Act*, under the SARA it is illegal 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 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.

To view the list of endangered, threatened, and special concern species currently listed under Schedule 1 of SARA, please visit: [http://www.sararegistry.gc.ca/species/schedules\\_e.cfm](http://www.sararegistry.gc.ca/species/schedules_e.cfm)

The formal SARA legal listing process begins when the Minister of Environment issues a response statement, detailing how he intends to proceed with the COSEWIC species designations. Response statements can be found at:

[http://www.sararegistry.gc.ca/sar/listing/response\\_e.cfm](http://www.sararegistry.gc.ca/sar/listing/response_e.cfm)

### 5.7.2 Committee on the Status of Endangered Wildlife Species (COSEWIC)

COSEWIC was formed in 1977 to provide Canadians with a single, scientifically sound classification of wildlife species at risk of extinction. COSEWIC began its assessments in 1978 and has met each year since then to assess wildlife species.

With the implementation of SARA, COSEWIC has been established as an independent body of experts responsible for identifying and assessing wildlife species considered to be at risk. This is the first step towards protecting wildlife species at risk. Subsequent steps include COSEWIC reporting its results to the Canadian government and the public, and the Minister of the Environment's official response to the assessment results. Wildlife species that have been designated by COSEWIC may then qualify for legal protection and recovery under SARA.

For a full list of species identified and assessed by COSEWIC, please visit:

<https://www.canada.ca/en/environment-climate-change/services/committee-status-endangered-wildlife.html>

### **5.7.3 Shark Codes of Conduct**

Out of the fourteen shark species in Canadian Pacific waters, three species are listed under SARA. The Basking Shark (*Cetorhinus maximus*) is listed as Endangered, and the Bluntnose Sixgill Shark (*Hexanchus griseus*) and Tope Shark (*Galeorhinus galeus*) are listed as species of Special Concern. The primary threats to shark species have been identified as bycatch and entanglement. In order to address the conservation concerns with shark species, it is important that measures are taken to reduce the mortality of sharks resulting from these primary threats. As such, commercial fishing licences have been amended to include a Condition of Licence for Basking Sharks that specify mitigation measures in accordance with SARA permit requirements. Additionally, two 'Code of Conduct for Shark Encounters' documents have been developed to reduce the mortality of Basking Shark, as well as other Canadian Pacific shark species such as Bluntnose Sixgill and Tope Shark resulting from entanglement and bycatch in commercial, aquaculture, and recreational fisheries. These guidelines include boat handling procedures during visual encounters with Basking Sharks, as well as best practices for handling Canadian Pacific shark species during entanglement encounters.

These documents have been posted online and can be found at the following URL links.

Code of conduct for sharks: [http://www.pac.dfo-mpo.gc.ca/fm-gp/species-especies/shark-requin/conduct\\_shark-conduite\\_requin-eng.html](http://www.pac.dfo-mpo.gc.ca/fm-gp/species-especies/shark-requin/conduct_shark-conduite_requin-eng.html)

Code of conduct for Basking Sharks: [http://www.pac.dfo-mpo.gc.ca/fm-gp/species-especies/shark-requin/conduct\\_basking-conduite\\_pelerin-eng.html](http://www.pac.dfo-mpo.gc.ca/fm-gp/species-especies/shark-requin/conduct_basking-conduite_pelerin-eng.html)

### **5.7.4 Whale and Leatherback Turtle Sightings**

DFO welcomes assistance in the reporting of any whale or leatherback turtle sightings or entanglement. Sightings for leatherback turtles and many whale species are infrequent in Pacific Canadian waters, and the collection of sightings data is very useful to scientists in determining population size and distribution. Establishing this information can in turn help in the recovery planning under SARA.

To report a whale sighting, contact the BC Cetacean Sighting Network. More information on how to report can be found here: <http://wildwhales.org/sightings/>

To report a sea turtle contact the BC Sea Turtle Sighting Network. More information on how to report can be found here: <https://seaturtle.ca/turtle-sighting/>

### **5.7.5 Resident Killer Whale**

Southern Resident Killer Whales (SRKW) were listed as Endangered under the Species at Risk Act (SARA) in 2003. In May 2018, the Minister of Fisheries, Oceans and the Canadian Coast Guard, and the Minister of Environment and Climate Change Canada determined that the SRKW is facing imminent threats to its survival and recovery. Given the status of the population and ongoing threats to SRKW recovery, DFO implemented a number of measures in 2018, including measures aimed at increasing prey availability and accessibility for SRKW—particularly Chinook salmon—and reducing threats related to physical and acoustic disturbance in key foraging areas.

DFO is reviewing the 2018 measures, in consultation with First Nations and stakeholders, with a view to determining whether different and/or additional measures may be required in 2019—these may include fishery closures or other area-based measures implemented pre-season or (in some cases) in-season. Where possible, DFO will continue to consult with First Nations and stakeholders through established consultation and advisory processes, including the Integrated Fisheries Management Planning (IFMP) process.

Further information regarding SRKW and DFO recovery measures can be obtained by contacting your Regional Fisheries Coordinator or the DFO Marine Mammal Unit (MMU) (Contact: Corey Jackson, Regional Manager, Marine Mammals; [Corey.Jackson@dfo-mpo.gc.ca](mailto:Corey.Jackson@dfo-mpo.gc.ca)).

### **5.7.6 Marine Mammal Protection Act**

In 2016, the US published new regulations (80 FR 54390) implementing the Marine Mammal Protection Act (MMPA) import provisions pertaining to the reduction of marine mammal bycatch in foreign commercial fishing operations. Every four years, the US publishes information on all fisheries that export to the US in the List of Foreign Fisheries (LFF). A harvesting nation intending to export fish and fish products to the US after January 1, 2022, must apply to the US National Oceanic and Atmospheric Administration (NOAA) for a comparability finding for each of its commercial fisheries listed in the LFF.

To receive a comparability finding for a fishery, the US MMPA import provisions mandate that the harvesting nation demonstrate: 1) the prohibition of intentional mortality or serious injury of marine mammals in the course of commercial fishing operations; and 2) the implementation of a regulatory program comparable in effectiveness to the US, including bycatch estimates from at-sea observer programs and management/mitigation measures.

DFO will be working closely with the commercial fishing industry and other stakeholders to facilitate the process under these new regulatory requirements in the US. Further information regarding the US-MMPA import provisions can be obtained by contacting your Regional Fisheries Coordinator or the DFO Marine Mammal Unit (MMU) (Contact: Lee Harber, Marine Mammal Advisor; [Lee.Harber@dfo-mpo.gc.ca](mailto:Lee.Harber@dfo-mpo.gc.ca)).

### **5.7.7 Amended Marine Mammal Regulations**

On June 22, 2018 the amended *Marine Mammal Regulations* came into force. These amendments include requirements for boats to maintain a minimum approach distance of 200m from all Killer Whales. The amended regulations also provide clarification on what it means to disturb a marine mammal, including feeding, swimming or interacting with them; moving it (or enticing/causing it to move); separating a marine mammal from its group or going between it and a calf; trapping marine mammals between a vessel and the shore, or between boats; as well as tagging or marking it.

Further information regarding the Marine Mammal Regulations can be obtained by contacting your Regional Fisheries Coordinator or the DFO Marine Mammal Unit (MMU) (Contact: Paul Cottrell, Marine Mammal Coordinator; [Paul.Cottrell@dfo-mpo.gc.ca](mailto:Paul.Cottrell@dfo-mpo.gc.ca)).

## **5.8 Oceans and Habitat Considerations**

In October 2017, the Government of Canada announced that it has reached its first milestone of protecting 5% of marine and coastal areas. The federal government remains committed to protecting 10% of Canada's marine and coastal areas by 2020. The 2020 target is both a domestic target (Canada's Biodiversity Target 1) and an international target as reflected in the Convention on Biological Diversity's

Aichi Target 11 and the United Nations General Assembly's 2030 Agenda for Sustainable Development under Goal 14. The 2017 and 2020 targets are collectively referred to as Canada's marine conservation targets. More information on the background and drivers for Canada's marine conservation targets is available on the internet at: <http://www.dfo-mpo.gc.ca/oceans/conservation/index-eng.html>.

To meet this target, Canada is establishing Marine Protected Areas (MPAs) and "other effective area-based conservation measures" ("Other Measures"), in consultation with industry, non-governmental organizations, and other interested parties. An overview of these tools, including a description of the role of fisheries management measures that qualify as "Other Measures" is available online at <http://www.dfo-mpo.gc.ca/oceans/mpa-zpm-aoi-si-eng.html>.

On the Pacific coast, between now and 2020, Canada will be:

- advancing the work already underway in areas progressing towards establishment including the Scott Islands marine National Wildlife Area;
- exploring opportunities for establishing new, large *Oceans Act* MPAs in pristine offshore areas;
- exploring opportunities to establish additional *Oceans Act* MPAs in areas under pressure from human activities through advancing MPA network development in the Northern Shelf Bioregion;
- identifying existing and establishing new "other effective area-based conservation measures" based on advice provided by the Canadian Science Advisory Secretariat (such as fisheries closures), particularly to protect sensitive sponge and coral concentrations; and,
- examining how to facilitate the designation process for *Oceans Act* MPAs, without sacrificing science or the public's opportunity to provide input.

### **5.8.1 International Commitments**

Recent commitments to International Agreements such as the Food and Agriculture Organization (FAO) Code of Conduct for Responsible Fishing (FAO 1995), the United Nations Fish Stock Agreement (UN 1996) and the Johannesburg Agreement (UN 2002) have shaped the development of a national Sustainable Fisheries Framework (SFF, DFO 2009) to guide Canada's domestic and international commitments for implementing a precautionary approach into its decision-making framework for fisheries.

### **5.8.2 Oceans Act**

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

On June 15, 2017, Bill C-55 was proposed to amend the *Oceans Act*, to facilitate the Marine Protected Area designation process, without impacting sound science or public opportunity for input. The changes would allow for interim ocean protection during the 7-10 year MPA designation process, require the application of the precautionary principle in decision making, and strengthen enforcement powers and fines to align with current provisions in other legislation, such as the Environmental Enforcement Act.

For more information on the *Oceans Act* and Canada's Ocean Strategy, please visit: <http://www.dfo-mpo.gc.ca/oceans/index-eng.html>

For information on the proposed amendments to the *Ocean's Act*, please visit:  
<http://www.dfo-mpo.gc.ca/oceans/conservation/act-loi-eng.html>

### **5.8.3 Sustainable Fisheries Framework**

The Sustainable Fisheries Framework is a toolbox of policies for DFO to sustainably manage Canadian fisheries by conserving fish stocks while supporting the industries that rely on healthy fish populations. The Sustainable Fisheries Framework provides planning and operational tools that allow these goals to be achieved in a clear, predictable, transparent, and inclusive manner, and provides the foundation for new conservation policies to implement the ecosystem and precautionary approaches to fisheries management. These policies include:

- *A Fishery Decision-Making Framework Incorporating the Precautionary Approach;*
- *The Policy for Managing Impacts of Fishing on Sensitive Benthic Habitat;*
- *The Policy on New Fisheries for Forage Species;*
- *The Guidance for the Development of Rebuilding Plans under the Precautionary Approach Framework: Growing Stocks out of the Critical Zone;*
- *The Guidance on Implementation of the Policy on Managing Bycatch;*
- *A Strategic Framework for Fishery Monitoring and Catch Reporting in the Pacific Fisheries;* and,
- *An Ecological Risk Assessment Framework (ERAF) for Coldwater Corals and Sponge Dominated Communities.*

For more information on the Sustainable Fisheries Framework and its policies, please visit:  
<http://www.dfo-mpo.gc.ca/fm-gp/sustainable-durable/fisheries-peches/framework-eng.htm>

Work is progressing on aligning the management of Pacific Crab with the Sustainable Fisheries Framework.

### **5.8.4 Rockfish Conservation Areas**

Between 2003 and 2007, DFO established 164 Rockfish Conservation Areas (RCAs) in the Pacific Region for the long-term protection and conservation of a portion of inshore rockfish populations and their habitat.

DFO is currently undertaking a multi-year review of the conservation effectiveness of RCAs. A review of RCAs is timely as it has been more than ten years since they were established. In addition, some RCAs potentially could qualify as Other Effective Area Based Conservation Measures (OEABCMs) and contribute to Canada's Marine Conservation Target of protecting ten percent of marine waters by 2020.

The RCA Review has three areas of focus:

1. RCA Boundary/Location Review – an assessment of ecological attributes in RCAs to help prioritize those RCAs that may have lower conservation benefit to rockfish;
2. Risk assessment of permitted human activities in RCAs;

These two reports will be published through the Canadian Science Advisory Secretariat (CSAS) and will subsequently inform the Review.

3. Engagement with First Nations and stakeholders. The conservation effectiveness of RCAs might be improved by adjusting boundaries or through relocation, changing management measures, conducting more research, and increasing monitoring and compliance. RCAs in the Northern

Shelf Bioregion had been selected for the first phase of engagement starting in the fall of 2018. Engagement in other bioregions will occur in subsequent years.

Information on Rockfish Conservation Areas is available online at: <http://dfo-mpo.gc.ca/rockfish-conservation>

### **5.8.5 Strategic Framework for Fishery Monitoring and Catch Reporting in Pacific Fisheries**

DFO finalized the “Strategic Framework for Fishery Monitoring and Catch Reporting in the Pacific Fisheries” (the Framework) in 2012. The Framework directs that an ecological risk assessment be undertaken for all fisheries to determine the level of monitoring required to provide information necessary to manage for the ecosystem risks posed by a fishery, while allowing for final monitoring and reporting programs to reflect the fishery’s unique characteristics.

Risk assessments are performed using an Excel-based tool that provides for a consistent approach to a structured conversation regarding ecological risk and other resource management considerations. Draft risk assessments will be initially completed by DFO, then presented to harvesters for review, comment, and revision through existing advisory processes established for fisheries management purposes. Where no advisory process exists, engagement will occur through alternative means.

Should the risk assessment indicate a gap between the current level and target level of monitoring identified through the risk assessment, options to address the monitoring gap are to be identified through discussion between DFO and harvesters. The feasibility of these options (e.g. cost, technical considerations, etc.) is also to be considered through these discussions. The Strategic Framework directs that monitoring and reporting programs are both cost-effective and tailor-made for a fishery. As such, a collaborative approach is required.

Where monitoring options are determined to be feasible, the current monitoring and reporting program is to be revised to incorporate these options so the program provides sufficient information to resource managers to manage the ecological risk of the fishery effectively. Where monitoring options are not feasible, alternative management approaches are required to reduce the ecological risk posed by the fishery. If there is no gap between the current and target level of monitoring, then the management approach would not require any change.

More information on the Framework and risk assessment is available on the internet at:

[www.pac.dfo-mpo.gc.ca/fm-gp/docs/framework\\_monitoring-cadre\\_surveillance/page-1-eng.html](http://www.pac.dfo-mpo.gc.ca/fm-gp/docs/framework_monitoring-cadre_surveillance/page-1-eng.html)

In the case of the crab fishery, the risk assessment tools are to assess monitoring levels required for all fisheries. FSC and Recreational fisheries assessments are under development. The risk assessments will initially be drafted by the Department but will be reviewed with harvesters. Comments on the findings from all resource users are welcome and the risk assessments for the FSC and Recreational fisheries are available on request. Comments and requests for the full risk assessments can be made to Dillon Buerk ([Dillon.Buerk@dfo-mpo.gc.ca](mailto:Dillon.Buerk@dfo-mpo.gc.ca)). Comments on the draft risk assessments will be incorporated where possible.

The Department is in the process of developing a National Fishery Monitoring Policy, an evolution of the Strategic Framework for Fishery Monitoring and Catch Reporting in the Pacific Fisheries. Until the National Policy is finalized, work to implement the Strategic Framework will continue. The draft National 2019/20 Crab Integrated Fisheries Management Plan

Policy, expected to be finalized in 2019, can be obtained by visiting <http://www.dfo-mpo.gc.ca/fm-gp/peches-fisheries/comm/consultation-nat-fsh-eng.htm> or emailing [jonathan.thar@dfo-mpo.gc.ca](mailto:jonathan.thar@dfo-mpo.gc.ca). The consultation on the national policy is open from October 11, 2018 to January 25, 2019.

### **5.8.6 Pacific North Coast Integrated Management Area**

Endorsed in February 2017, the Pacific North Coast Integrated Management Area (PNCIMA) Plan was developed, in collaboration with the Province of BC, First Nations and stakeholders to help coordinate various ocean management processes and to complement existing processes and tools, including IFMPs. High level and strategic, the plan provides direction on integrated, ecosystem-based and adaptive management of marine activities and resources in the planning area as opposed to detailed operational direction for management. The plan outlines an ecosystem-based management framework for PNCIMA that has been developed to be broadly applicable to decision-makers, regulators, community members and resource users alike, as federal, provincial and First Nations governments, along with stakeholders, move together towards a more holistic and integrated approach to ocean use in the planning area.

The endorsement of the PNCIMA plan supports the Government of Canada's commitment to collaborative oceans management for the Pacific North Coast and provides a joint federal-provincial-First Nations planning framework for conservation and the management of human activities in the Pacific North Coast. The plan includes MPA network development as a planning priority. It is anticipated that the network development will support the Government of Canada's commitment to protecting 10% of Canada's marine and coastal areas by 2020. (Section 4.4.2.1).

The PNCIMA Plan is available online at:

<http://www.pncima.org/>

The full PDF of the PNCIMA plan can be found here:

<http://www.pncima.org/media/documents/2016-plan/2316-dfo-pncima-report-v17-optimized.pdf>

### **5.8.7 Marine Protected Areas Network Planning**

The Oceans Act mandates DFO's Minister with leading and coordinating the development and implementation of a national network of marine protected areas (MPAs). Nationally, MPA Network planning is proceeding in four priority bioregions under the National Framework for Canada's Network of Marine Protected Areas, including the Northern Shelf Bioregion (NSB). The NSB extends from the top of Vancouver Island (Quadra Island/ Bute Inlet) and reaches north to the Canada - Alaska border. This bioregion has the same footprint as PNCIMA.

In the Pacific Region, the Department and other federal agencies are collaborating with the Government of B.C. and Pacific North Coast First Nations to develop a MPA network for the NSB. The planning process in the NSB is guided by the Canada-BC MPA Network Strategy (2014) and the National Framework for Canada's Network of Marine Protected Areas. Stakeholders and local governments are participating in the planning process through advisory committees at regional and sub-regional scales, workshops, and sector meetings.

Through the Network Action Plan, the MPA Network planning process will identify areas for protection. These areas will be established and implemented on a priority basis through a variety of legislative or regulatory tools.

More information on MPA Network Planning can be found at: <http://mpanetwork.ca>

### 5.8.8 Marine Protected Areas

DFO is also responsible for designating Marine Protected Areas (MPAs) under Canada's *Oceans Act*. Under this authority, DFO has designated three MPAs in the Pacific Region.

MPA regulations and management plans articulate any restrictions on activities taking place within the MPA, where applicable. More information on MPAs can be found at: <http://dfo-mpo.gc.ca/oceans/mpa-zpm/index-eng.html>.

#### *Endeavour Hydrothermal Vents (EHV) MPA*

The EHV MPA was designated in 2003. The hydrothermal vents lie in waters 2,250 m deep 250 km southeast of Vancouver Island. There is occasional commercial fishing in the MPA, and pelagic fishing is not considered to be in conflict with the objectives of the MPA. Any licenced fishing in the MPA takes place very near the ocean surface and will continue as it does not significantly impact the hydrothermal vents ecosystem. More information can be found online at: <http://www.dfo-mpo.gc.ca/oceans/mpa-zpm/endeavour-eng.html>. All commercial groundfish fisheries are restricted within the Endeavour MPA.

#### *SGaan Kinghlas-Bowie Seamount (SK-B) MPA*

The SK-B MPA, designated under Canada's *Oceans Act* in 2008, is 180 km west of Haida Gwaii rising from a depth of over 3,000 m to within 24 m of the sea surface, making it one of the shallowest seamounts in the north Pacific, and the shallowest in Canada. The MPA comprises the SGaan Kinghlas – Bowie, Hodgkins and Davidson Seamounts of the Kodiak-Bowie seamount chain and has a total area of approximately 6,131 square kilometres.

The SK-B MPA has been established to conserve and protect the unique biodiversity and biological productivity of the area's marine ecosystem, including and the surrounding waters, seabed, and subsoil.

The MPA is cooperatively managed by DFO and the Council of the Haida Nation (CHN) through the SK-B Management Board (the Board), which was established under a Memorandum of Understanding (MOU), signed in 2007. The Board has equal representation from DFO and the CHN and operates on a consensus basis in developing recommendations to Canada and the Haida Nation on the management and planning of the MPA. Under the MOU, the Board is mandated to develop a management plan for the MPA. To fulfil this mandate, the Board collaborates with stakeholders by requesting and considering advice from the integrated, cross sector SK-B Advisory Committee.

Since 2018, DFO and the CHN, have been co-developing the SK-B MPA Management Plan which is now near completion. The Plan is intended to guide the conservation and protection of the SK-B Seamount ecosystem and support the development of a monitoring plan for the MPA. Key elements of the Plan include: cooperative governance, management framework, conservation and management goals and objectives; and implementation priorities.

Commercial fishing activities within the MPA have been managed through the Integrated Fisheries Management Plan process. In January 2018, the Government of Canada and the Haida Nation agreed to increase the level of protection at the SK-B MPA by closing all bottom-contact fishing. This closure shows a precautionary management approach to protection of sensitive benthic habitats in support of the MPA objectives. This decision has resulted in the MPA being closed to all commercial fishing activities. The decision also applies to bottom-contact recreational and Indigenous fisheries. This decision also

aligns with the DFO recent decision to close bottom contact fishing on all seamounts in the Offshore Pacific Area of Interest (AOI) and manage impacts to coral and sponges in the Hecate Strait and Queen and Charlotte Sound Glass Sponge Reefs Marine Protected Areas.

#### *Hecate Strait and Queen Charlotte Sound Glass Sponge Reefs (HS/QCS) MPA*

The HS/QCS MPA, designated under the *Oceans Act* in February 2017, is located in the Northern Shelf Bioregion of the Pacific Region, southeast of Haida Gwaii, North and South of the entrance to the Douglas Channel. The reefs are made up of large colonies of glass sponges and are estimated to be 9,000 years old. They are located at depths of 140 m to 240 m below the surface. The MPA is comprised of three individual areas known as the Northern Reef, the two Central Reefs, and the Southern Reef. Together these three areas cover approximately 2,410 km<sup>2</sup>.

The HS/QCS MPA has been established to conserve the biological diversity, structural habitat, and ecosystem function of the glass sponge reefs. The slow growth and fragility of these sponges make the reefs particularly vulnerable to damage and disturbance since recovery may take tens to several hundreds of years. Due to the highly sensitive nature and structure of the reefs, human activities in and around the reefs could pose a risk to the structural habitat, biological diversity and ecosystem function of the reefs. Each glass sponge reef has a Core Protection Zone (CPZ) (two CPZ in the Central Reef), a Vertical Adaptive Management Zone (VAMZ), and an Adaptive Management Zone (AMZ).

The CPZ contain the sponge reefs and are designed to provide the highest level of protection to the reefs. The Core Protection Zone consists of the seabed, the subsoil to a depth of 20m and the water column above the seabed to a depth of 100 m below the sea surface for the Northern Reef, 120 m for the Central Reef (Zones A and B), and 146 m for the Southern Reef. The VAMZ consist of the water column that extends above the Core Protection Zones to the sea surface. The AMZ consist of the seabed, subsoil and waters of the Marine Protected Areas (i.e., Northern, Central, and Southern Reefs) that are not part of the CPZ or the VAMZ.

In accordance with the HS/QCS MPA Regulations, the following is prohibited:

Carrying out any activity that disturbs, damages, destroys or removes any living marine organism or any part of its habitat or is likely to do so; or carrying out any scientific research or monitoring, or an educational activity, unless it is part of an activity plan that has been approved by the Minister.

There are exceptions to these prohibitions that identify activities that may be allowed to occur in the MPA in certain zones. The following activities are allowed in the MPA:

- Certain fishing activities in the AMZ and VAMZ. Fishing activities will be managed in accordance with integrated fisheries management plans, annual variation orders, regulations and license conditions in a manner consistent with the conservation objective of the MPA. In order to protect the sponge reefs, additional fisheries management measures for bottom contact and midwater trawl fisheries are currently required throughout the MPA;
- Navigation activities throughout the MPA; however, anchoring is not allowed in the CPZ;
- The laying, maintenance or repair of cables in the AMZ;
- Activities carried out for public safety, public health, national defense, national security, law enforcement or in response to an emergency; and

- Scientific research, monitoring and educational activities that have been approved by the Minister.

Under the HS/QCS MPA Regulations, the CPZ are closed to all commercial, recreational, and Indigenous fishing. Anchoring and cable installation, maintenance, and repair are also prohibited in the CPZ.

Management measures under the *Fisheries Act* restricting bottom contact and mid water trawl fishing activity in the MPA were implemented as of February 21, 2017. The VAMZ and AMZ are currently closed to all commercial bottom contact fishing activities for prawn, shrimp, crab, and groundfish (including halibut), as well as for midwater trawl for hake. These closures will be in effect until further notice. For more detail on the fishery closure within the Hecate Strait and Queen Charlotte Sound Glass Sponge Reef MPA, please review the FN0198 Fishery Notice.

A management plan will be developed for the MPA and will seek to align the plan with relevant IFMPs. The management plan will be developed in collaboration with First Nations and in consideration of advice from an advisory committee, stakeholders through existing processes, and the public. This management plan will elaborate on the conservation and management objectives for the MPA and will address matters such as monitoring, enforcement and compliance.

Further details on the locations of these areas can be found in the relevant harvest plan appendices to this IFMP and at: <http://dfo-mpo.gc.ca/oceans/mpa-zpm/hecate-eng.html>.

#### *Offshore Pacific Area of Interest*

In May 2017, DFO announced a new Area of Interest (AOI) within the Offshore Pacific Bioregion off the coast of British Columbia, with the intention of making it one of Canada's largest Marine Protected Areas by 2020. This Offshore Pacific AOI is an important part of DFO's national approach to achieve the Government of Canada's Marine Conservation Target to increase Canada's marine and coastal protected areas from 0.9% to 10% by 2020.

The Offshore Pacific AOI is located in the southern portion of the Offshore Pacific Bioregion extending from the continental shelf break, west of Vancouver Island, to the Exclusive Economic Zone (EEZ) boundary with an area of approximately 140,000 km<sup>2</sup>. At its closest point, the AOI is approximately 80 km from the west coast of Vancouver Island, but on average is 100-150 km off the coast and extends south to the Canada-US border. The Offshore Pacific AOI will protect ecologically and biologically significant areas (EBSAs), including seamounts and hydrothermal vents.

An Offshore Pacific AOI Advisory Committee has been established to provide a forum for engagement for the AOI and provide feedback on the proposed design of the potential MPA and the associated management approach. The interim conservation objective of the AOI is to contribute to the protection and conservation of the unique seafloor features and the ecosystems they support in Canada's Offshore Pacific Bioregion, and was established based on discussions with DFO Science. This interim conservation objective will be finalized after consultations are complete. The conservation objective will guide the development of regulations and future management actions within the potential MPA.

#### *Offshore Pacific Seamounts and Vents Closure*

In advance of potential MPA designation, fishery closures to restrict commercial and recreational bottom-contact fishing activities within the Offshore Pacific AOI were announced in October 2017. At approximately 83,000 km<sup>2</sup> in size, the closure serves to protect and conserve unique seafloor features, including seamounts and hydrothermal vents, identified through a Canadian Science Advisory Secretariat

process as well as a number of species of regional importance, including corals, sponges, and other endemic or rare species.

The closure boundary was informed by available science and input received during consultations with First Nations, federal and provincial government agencies, industry and conservation organizations, and supports the AOI's interim conservation objective of contributing to the protection and conservation of the unique seafloor features and the ecosystems they support in Canada's Offshore Pacific Bioregion. Specific details of the closure can be found in the Variation Order. Visit the following site to see the details of the closure:

[https://notices.dfo-mpo.gc.ca/fns-sap/index-eng.cfm?pg=view\\_notice&DOC\\_ID=203516&ID=all](https://notices.dfo-mpo.gc.ca/fns-sap/index-eng.cfm?pg=view_notice&DOC_ID=203516&ID=all)

More information on the Offshore Pacific AOI can be found on the internet here: <http://www.dfo-mpo.gc.ca/oceans/aoi-si/offshore-hauturiere-eng.html>

#### *Race Rocks Area of Interest*

Work is ongoing to consider MPA designation for the Race Rocks area off Rocky Point south of Victoria (currently designated as a Provincial Ecological Reserve).

### **National Marine Conservation Area Reserves (NMCARs)**

#### **Gwaii Haanas**

A new management plan for the Gwaii Haanas National Park Reserve, National Marine Conservation Area Reserve and Haida Heritage Site was approved by Canada and the Haida Nation in November 2018, following an extensive consultation process. The final zoning plan includes several areas of strict protection, where commercial and recreational fishing will be prohibited. The implementation of these closures may take some time. However, steps are being taken to undertake this work and each closure will be communicated via Fishery Notice as it is implemented.

Users of the Gwaii Haanas marine area should be aware that adjacent land is managed under the authority of the Canada National Parks Act and its regulations and, as specified in the Gwaii Haanas Agreement (1993), 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). There are specific requirements for visiting the terrestrial portion of Gwaii Haanas, and advanced planning is necessary. Please contact the Gwaii Haanas administration office at 1-877-559-8818 for further information or see IFMP section 5.8.

The Gwaii Haanas Gina 'Waadluxan KilGuhlGa Land-Sea-People Management Plan is available here: <https://www.pc.gc.ca/en/pn-np/bc/gwaiihaanas/info/consultations>.

Until the new zoning plan is implemented and communicated through subsequent Fishery Notices, the existing commercial and recreational closures remain in effect. Please see Section 5.2.1.3 of Appendix 3 for details on these closures.

#### **Southern Strait of Georgia**

Parks Canada, in partnership with the Government of British Columbia, launched a feasibility assessment for an NMCAR in the southern Strait of Georgia in 2004. Since then, consultations with First Nations, key stakeholders, communities and the public have occurred. Informed by those discussions, a proposed boundary for consultation was announced by the provincial and federal Ministers of Environment in 2011.

Since 2011, the two governments have been consulting with First Nations, local governments and industry. A preliminary concept is currently being developed to help advance consultations on the feasibility assessment. If the results of the feasibility assessment indicate that establishment of an NMCAR is practical and feasible, an establishment agreement between the Governments of Canada and British Columbia will be negotiated and an interim management plan developed. If the NMCAR is determined to be feasible, further consultations related to establishment agreements and Indigenous rights will also take place with First Nations. Commercial and recreational fishing sectors, communities, landowners, recreation and environmental organizations and other stakeholders will also have opportunities to provide input to the development of the interim management plan.

Parks Canada information on the proposed NMCAR in the southern Strait of Georgia is available on the internet at: <https://www.pc.gc.ca/en/amnc-nmca/cnamnc-cnnmca/dgs-ssg>

### **5.8.9 Strait of Georgia and Howe Sound Glass Sponge Reef Conservation Areas**

Effective June 12, 2015 all commercial and recreational bottom contact fishing activities for prawn, shrimp, crab and groundfish (including halibut) were prohibited within 150 metres of nine glass sponge reefs in the Strait of Georgia and the entrance of Howe Sound near Horseshoe Bay. On April 1, 2016 bottom-contact First Nations' Food, Social and Ceremonial (FSC) fisheries for prawn, shrimp, crab and groundfish were also prohibited within these conservation areas.

The nine glass sponge reefs protected under the Strait of Georgia and Howe Sound Glass Sponge Reef Conservation Initiative are included as an "Other Effective Area Based Conservation Measure" under Canada's Marine Conservation Target contributing <0.01% to the National target, or approximately 29 km<sup>2</sup> of sensitive benthic areas.

In 2017, DFO Science in collaboration with Natural Resources Canada (NRCan) analyzed data from Citizen Scientists at the Marine Life Sanctuary Society, NRCan, as well as visual survey data collected by DFO Science, to get a complete assessment of glass sponge reefs' spatial extent and status throughout Howe Sound and in doing so produced a report called Glass Sponge Aggregations in Howe Sound: Locations, Reef Status, and Ecological Significance Assessment.

In that study, DFO Science identified a total of 18 new glass sponge sites in Howe Sound, nine of those sites were deemed to be ecologically significant while nine others require further ground-truthing to confirm their status and ecological significance. DFO is undergoing consultations to protect the nine new sites deemed to be ecologically significant in Howe Sound, and will be conducting future research to ground-truth the last nine sites.

More information is available at <http://www.dfo-mpo.gc.ca/oceans/ceccsr-cerceef/closures-fermetures-eng.html>

### **New Howe Sound - Glass Sponge Reefs Conservation Areas**

Effective April 1<sup>st</sup>, 2019 all commercial, recreational and First Nations food, social and ceremonial (FSC) bottom-contact fishing activities for prawn, shrimp, crab and groundfish, and the use of downrigger gear, are prohibited within portions of Subareas 28-2 and 28-4 to protect nine Howe Sound glass sponge reefs. Details of these new closure areas are provided in Section 5.7.2.1 of Appendix 3 and an overview map is provided in Appendix 7.

**Scott Islands Marine National Wildlife Area** The Scott Islands Marine National Wildlife Area (NWA) is the first protected marine area established by Environment and Climate Change Canada (ECCC) under the Canada Wildlife Act. Established in 2018, the marine NWA covers 11 546 km<sup>2</sup> around the Scott Islands located off the northwestern tip of Vancouver Island. The five Scott Islands, which are already protected by the Province of British Columbia (BC), and surrounding marine environment make up one of the most productive and biologically diverse ecosystems on the Canadian Pacific coast, particularly for seabirds. The conservation objective of the marine NWA is to conserve migratory seabirds and species at risk as well as the habitats, ecosystems, and marine resources that support them.

ECCC leads the Scott Islands marine NWA planning and management and works with other federal departments with responsibilities in the marine environment including DFO, Transport Canada (TC) and Natural Resources Canada. Fishing and shipping within the marine NWA will continue to be managed by DFO and TC respectively. The Scott Islands Protected Marine Area Regulations, in conjunction with additional measures by DFO and TC to address fishing and shipping related concerns in the area, will provide the regulatory framework for the management of human activities within the marine NWA.

The Quatsino First Nation, the Tlatlasikwala First Nation, and the Province of BC have expressed interest in participating in the collaborative management of the marine NWA, and discussions are ongoing to develop a management agreement for the area. ECCC and management partners will collaboratively develop a management plan for the area. A final management plan is expected in 2019, which will consider advice and input from an advisory committee with technical and scientific working groups, stakeholders through existing processes, and the public.

ECCC will continue to work collaboratively with DFO to implement voluntary and regulatory measures under the marine NWA management plan as well as the Integrated Fisheries Management Plans to mitigate fishing impacts. This will include measures to improve information on seabird prey habitat impacts and measures to mitigate seabird by-catch as well as initiatives by the existing ECCC-DFO-Pacific Seabird By-catch Working Group.

In support of the conservation objectives of the Scott Islands mNWA, DFO is consulting on new regulations under the Fisheries Act to restrict certain fisheries that pose a risk to seabirds. The proposed regulations would prohibit fishing for three key forage fish species that serve as a key food source for seabirds—Pacific sand lance, Pacific saury, and North Pacific krill—as well as prohibit groundfish bottom trawling in portions of the marine NWA, consistent with existing fisheries closures. The regulations could also restrict fishing activities that may be deemed to pose a risk to the conservation objectives of the area, based on the best available science, such as salmon gill net and seine. For further information on this, please contact Aleria Ladwig at [Aleria.ladwig@dfo-mpo.gc.ca](mailto:Aleria.ladwig@dfo-mpo.gc.ca).

More information on the Scott Islands marine NWA can be found at:

<https://www.canada.ca/en/environment-climate-change/services/national-wildlife-areas/locations/scott-islands-marine.html>

The Scott Islands Protected Marine Area Regulations can be found at: <https://laws-lois.justice.gc.ca/eng/regulations/SOR-2018-119/index.html>

## **6 ACCESS AND ALLOCATION**

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

### **6.1 First Nations Access**

First Nations FSC fisheries have a minimum harvestable size limit, gear restrictions, and participants are requested to release females with the least possible harm. To date, no species retention or trap limits have been implemented.

The Department will continue to provide FSC opportunities for First Nations to harvest crab, in a manner consistent with the decision of the Supreme Court of Canada in *Sparrow*, and other decisions.

From time to time, DFO receives requests from First Nations to improve access to shellfish for FSC purposes. First Nations interested in bilateral discussion with DFO regarding FSC access issues should contact the resource manager for their area (Appendix 8 Contacts).

Please refer to Appendix 1 for the First Nation Harvest Plan.

### **6.2 Recreational Access**

The Recreational fishery has gear restrictions, a minimum harvestable size limit, and non-retention of females. See Appendix 2 for the Recreational Harvest Plan.

The Department will continue to explore ways of improving recreational access. If any changes are approved after the IFMP is finalized they may be implemented in season.

Requests for improved recreational access are directed to DFO through the Sport Fishing Advisory Board (SFAB) process and the representatives to the Crab Sectoral Committee (Appendix 8). The SFAB usually meets twice a year (in the late spring and mid-winter) to discuss and advise DFO on recreational fishing plans, recreational fishery regulations, and any areas of concern to the recreational fishing community. Information on the SFAB is available at:

<http://www.pac.dfo-mpo.gc.ca/consultation/smon/sfab-ccps/index-eng.html>

### **6.3 Commercial Access**

The commercial fishery has a minimum harvestable size limit, limited commercial licensing, area licensing, area and vessel trap limits, soak limits, sex restrictions, soft-shell restrictions, gear restrictions, and permanent and seasonal closure areas. See Appendix 3 for the Commercial Harvest Plan.

### **6.4 Experimental, Scientific, Educational or Public Display**

DFO supports and facilitates scientific investigations related to crab. 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 *Larocque* court decision apply.

Co-operative scientific assessment programs of mutual interest and agreement between DFO and industry may be established with a commercial harvesters association named as the scientific licence holder. Industry representatives will undertake vessel selection and provide advice to DFO on aspects of the assessment program.

## **7 MANAGEMENT MEASURES FOR THE DURATION OF THE PLAN**

See the First Nations, Recreational, and Commercial Harvest Plans, Appendices 1 to 3, for detail on Fishing Seasons and Areas, Control and Monitoring of Removals, Decision Rules, and Licensing.

## **8 SHARED STEWARDSHIP ARRANGEMENTS**

### **8.1 Commercial**

Vessel owners/licence eligibility holders are required to make arrangements with an industry-funded service provider for the delivery of in-season information to DFO as required by conditions of licence regarding electronic monitoring, biological sampling, and catch reporting. The approved 2019/20 service providers are Ecotrust Canada for all Area A programs and Pacific Coast Fishery Services for all other Crab Management, (Areas B through J inclusive). Please refer to Appendix 8 for contact information.

### **8.2 Fisheries and Oceans Canada**

Contributions to the IFMP are provided by Fisheries Management in the areas and regional headquarters, Science Branch, the Shellfish Data Unit, Conservation and Protection, the Treaty and Indigenous Policy Directorate, the Pacific Fishery Licence Unit, the Recreational Fisheries Division, the Oceans Directorate and numerous administrative personnel.

## **9 COMPLIANCE PLAN**

### **9.1 Overview**

At the start of each fiscal year an operational work plan for the Conservation and Protection (C&P) Program, which is the program that conducts enforcement for the Department of Fisheries and Oceans, is developed. In developing operational priorities, factors to be considered include:

- Direction from regional or national headquarters;
- Whether the fishery contains a stock of concern (identified with input from managers of respective disciplines such as Resource Management, Fisheries Protection Program, etc.);
- Timing: Do C&P have staff available and is it a year-round activity or periodic (e.g. habitat versus early timed Fraser Chinook); and

- Funding availability.

Enforcement activities can be conducted either on an opportunistic basis or through dedicated enforcement patrols depending on the operational priority assigned to this fishery.

The level of enforcement effort expended in ensuring compliance in the crab fishery will depend on the level of the priority set for this fishery in the seasonal priority setting as identified above. The commercial crab fishery is Region-wide and enforcement effort may vary depending on fishing pressure identified in particular areas. In-season consultation with the fishery managers may identify areas of concern that can elevate the priority level for enforcement staff. Where enforcement activities are undertaken, the scope and deployment of resources will encompass those areas outlined in the sections below (see Sections 9.2 to 9.5).

## **9.2 Main Program Activities**

### **9.2.1 Priorities**

Where enforcement is conducted in the crab fishery, the priorities for the term of this plan will be to:

- investigate landings of undersize, female and soft-shell crab,
- survey closed areas for illegal activity,
- check compliance with escape rings and rot cord requirements,
- work with fishery managers to investigate fraudulent reporting of crab landings in fish slips and harvest logs, and
- Investigate irregularities reported by observers and service providers.

### **9.2.2 Dockside Monitoring**

Fishery officers will conduct dockside monitoring checks for size limit, soft-shell crab, female crab, and prompt completion of harvest logs as per the Conditions of Licence (*Fisheries [General] Regulations* Section 22).

### **9.2.3 Vehicle Inspections**

Transportation vehicles will be checked en route from off-loading sites to processors. Fishery officers will also conduct checks at processing facilities.

### **9.2.4 Fishery Patrol Vessels**

Fishery officers and marine enforcement officers will conduct monitoring and compliance patrols at-sea using program vessels and Canadian Coast Guard (CCG) vessels. Vessel boarding will be conducted to ensure compliance with both vessel and individual licence requirements. Both open and closed area patrols will be conducted.

Fishery officers will respond in support of the service providers and any at-sea observers that may be used. Fishery officers may also co-ordinate patrols with First Nations guardians and fishery managers when available.

### 9.2.5 Air Surveillance

Fishery officers and marine enforcement officers will conduct monitoring and compliance patrols at-sea using program vessels, Canadian Coast Guard (CCG) vessels and air surveillance from charter aircraft.

## 9.3 Enforcement Issues and Strategies

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

<p>Licensing Verification</p> <ul style="list-style-type: none"> <li>- Vessel licensed</li> <li>- Experimental licence</li> <li>- No Harvesters Registration Card (FRC).</li> <li>- Fail to produce FRC.</li> </ul>	<p>PFR S.22 F(G)R S.52 F(G)R S.68(1) PFR S.25 F(G)R S.11</p>	<p>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.</p>
<p>Fish during closed time/area</p>	<p>PFR S.63</p>	<p>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.</p>
<p>Size limit.</p>	<p>PFR S. 66</p>	<p>At sea and dockside inspections will be pursued when opportunities exist.</p>
<p>Fail to provide proper landing and hail information, lack of notification for change of area, cancellation of trip, or incorrect reporting of area fished</p>	<p>F(G)R S.22(7)</p>	<p>At sea and dockside inspections will occur when opportunities exist. Investigations will occur on an opportunistic basis after C&amp;P has 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.</p>
<p>Fail to have an operational Electronic Monitoring System</p>	<p>F(G)S. 22(7)</p>	<p>At sea and dockside inspections will occur to measure compliance with this provision.</p>

Fail to maintain “Validation and 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 has been notified by Fisheries Management that a violation has occurred. The investigation will be pursued when larger priorities permit.
Exceed allowable trap limits	F(G)R S.22(7)	At sea inspections to determine compliance with this provision.
Fail to use appropriate biodegradable escape mechanisms.	F(G)R S.22(7)	At sea and dockside inspections will occur when opportunities exist.
Fail to use appropriate escape rings.	F(G)R S.22(7)	At sea and dockside inspections will occur when opportunities exist.
Fail to report crab exports.	F(G)R S.22(7)	Dockside and transporting inspections will occur when opportunities exist.

Enforcement action took place during the 2017/18 season relating to the Conditions of Licence. It was focused on compliance with trap construction, buoy marking, the harvesting of soft-shell and undersize crab, logbook records, and fishing in areas closed to harvest. Canadian and United States enforcement staff conducted patrols along the International boundaries to ensure compliance with that boundary.

Enforcement action was also conducted on the recreational crab fishery. Violations consisted mainly of undersize, over limits, retention of females, lack of biodegradable escapement mechanisms and unmarked gear.

Problems that remain a concern in all areas of crab fishing are the amount of unmarked, sunken traps with no biodegradable escapement mechanisms that are routinely recovered by dragging. As well, buoys are often unreadable due to names being washed off or covered by organic material.

There needs to be increased compliance with accurate and timely completion and submission of harvest logs, as well as completing the annual Fishing Activity Location Reports (Hails).

There appears to be an increasing concern with respect to Canadian product entering the United States that is not compliant with United States size restrictions. While this issue is not an enforcement concern in Canada it may have long term implications that may affect market share for United States destined product.

Enforcement staff will pursue opportunities to enforce the regulations and conditions of licence applicable to this fishery while engaged in enforcement activities directed to other fisheries in the Pacific Region.

Fishery managers, resource management biologists, and shellfish assessment biologists have prepared impact statements for use in court cases. These have been useful in allowing the courts to understand the implications of the offence and for increasing the resultant fines clearly. Recently, impact statements

pertaining to crab have included a section that suggests the Judge direct fines to a special purpose account, held by the Department, to fund research, education, equipment, and investigations pertaining to crab biology and management of the fishery.

## **10 POST-SEASON REVIEW**

To obtain Crab sectoral meeting records or an update on any of the issues mentioned in this plan please contact your local fishery manager, (see Contacts in Appendix 8).

In 2019, commercial service provider performance evaluations and subsequent reviews of Electronic Monitoring, Biosampling, and Harvest Log programs will be conducted to improve regulations and compliance. Please contact your local area crab manager, (Appendix 8) for further information.

### **10.1.1 Conservation and Sustainability**

Concerns with increased mortality from handling soft-shell crab and, from the industry perspective, with the marketing of inferior product, led to the non-retention of soft-shell crab. In 2001, a soft-shell crab was defined as a crab having a durometer measurement of 65 units or less. Shortly after implementation, commercial harvesters, crab buyers, and DFO staff re-assessed shell condition, meat content, injuries and mortalities on hundreds of crab during several offloads to come up with a legal definition of 70 units for licence conditions. Feedback has indicated that this value is better and more representative of a hard crab available to the fishery. These values have not been peer reviewed. For biological sampling, soft-crabs are defined as being springy soft, crackly soft, plastic soft, or moulting and durometers are not used.

To address some of these concerns, electronic monitoring (EM) or 100 percent at-sea observer coverage was required on all commercial crab vessels commencing April 1, 2006. To date, all vessels have selected the electronic monitoring option over the more costly observer monitoring approach. However, in cases where EM hardware requirements are not being met, observers have been deployed as an interim measure to fulfill monitoring requirements and enable further fishing activity. Since the spring of 2013 the electronic monitoring service provider for all areas, excluding Area A, has monitored commercial vessel trap hauling activity through recording vessel positions every 10 seconds and provided daily vessel position and activity data to the Department.

Several commercial management changes were made in 2008 to reduce handling mortality. These included a ban on hanging bait and the use of bait cups in some areas, reduced trap limits and seasonally reduced trap limits. In 2009 there was a requirement for an additional escape ring and larger escape rings. In 2010, additional haul restrictions during portions of the year in certain areas of the commercial fishery were introduced. Introduced in 2012, at least two escape rings of 105 mm or greater in diameter are now required on all crab traps fished. For 2013, biological sampling targets were amended in all areas to better assess population characteristics and soft-shell timing.

Maximum trap allowances occur for all commercial areas and for all commercial vessels. The final number of traps permitted to be fished per vessel is dependent on the number of vessels that have chosen to fish within each crab management area. For more information please refer to section 2.5 of the Commercial Harvest Plan (Appendix 3). In 2013, a new cap was established for both Sooke Harbour and Sooke Basin and in 2016, a new cap was established for Area E Sooke vessels fishing the outside common areas of Area E. In 2017, a new cap was established for Area E Tofino vessels fishing the

outside common areas of Area E. In future, additional trap limits for select areas or portions may also be implemented.

For more details please refer to Appendix 3: The Commercial Harvest Plan, Section 1: Commercial Changes and Highlights.

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## 12 INTERNET SITES

Fisheries & Oceans Canada Pacific Region Crab page, and links to the Crab by trap fishing plan:

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

Crab Fisheries Consultation Webpage:

<http://www.pac.dfo-mpo.gc.ca/consultation/index-eng.html>

Pacific Region Area and Subarea maps:

<http://www.pac.dfo-mpo.gc.ca/fm-gp/maps-cartes/areas-secteurs/index-eng.htm>

Pacific Region, Fisheries Management, Commercial Openings and Closures notices:

[www-ops2.pac.dfo-mpo.gc.ca/xnet/content/fns/index.cfm](http://www-ops2.pac.dfo-mpo.gc.ca/xnet/content/fns/index.cfm)

Pacific Region, Fisheries Management, Recreational Openings and Closures notices:

[www-ops2.pac.dfo-mpo.gc.ca/xnet/content/fns/index.cfm](http://www-ops2.pac.dfo-mpo.gc.ca/xnet/content/fns/index.cfm)

Pacific Region, Recreational Fisheries information web site:

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

Centre for Scientific Advice - Pacific (formerly, Pacific Scientific Advice and Review Committee (PSARC)) research documents, proceedings and Invertebrate stock status reports, including crab:

<http://www.pac.dfo-mpo.gc.ca/science/index-eng.html>

Pacific Region, Science, Infectious diseases of shellfish:

<http://www.dfo-mpo.gc.ca/science/aah-saa/diseases-maladies/index-eng.html>

# 13 GLOSSARY

AAROM	Aboriginal Aquatic Resources and Oceans Management (AAROM) program - DFO's AAROM funds aggregations of First Nation groups to build the capacity required to coordinate fishery planning and program initiatives and is focused on developing affiliations between First Nations to work together at a broad watershed or ecosystem level where there are common interests and where decisions and solutions can be based on integrated knowledge of several Indigenous communities.
Aboriginal Traditional Knowledge (ATK)	Knowledge that is held by, and unique to Indigenous peoples. It is a living body of knowledge that is cumulative and dynamic and adapted over time to reflect changes in the social, economic, environmental, spiritual, and political spheres of the Indigenous knowledge holders. It often includes knowledge about the land and its resources, spiritual beliefs, language, mythology, culture, laws, customs and medicines.
AFS	Aboriginal Fisheries Strategy - DFO's AFS was implemented in 1992 to address several objectives related to First Nations and their access to the resource and continues to be the principal mechanism that supports the development of relationships with First Nations including consultation, planning and implementation of fisheries, and development of capacity to undertake fisheries management, stock assessment, enhancement and habitat protection programs.
abundance	Number of individuals in a stock or a population.
aquaculture	As defined by the United Nations Food and Agriculture Organization (FAO), aquaculture is the culture of aquatic organisms, including fish, molluscs, crustaceans and aquatic plants. Aquaculture implies some form of intervention in the rearing process to increase production, such as regular stocking, feeding, protection from predators, etc. It also implies individual or corporate ownership of the cultivated stock.
Area and Subarea	Defined in Section 2 of the <i>Pacific Fishery Management Area Regulations</i> . A map of Pacific Fishery Management Areas is available on the DFO internet site at: <a href="http://www.pac.dfo-mpo.gc.ca/ops/fm/Areas/areamap_e.htm">www.pac.dfo-mpo.gc.ca/ops/fm/Areas/areamap_e.htm</a>
ATP	Allocation Transfer Program - DFO's ATP facilitates the voluntary relinquishment of commercial licence eligibilities and the designation of the equivalent commercial fishing capacity to eligible Indigenous groups as communal commercial licence eligibilities.
By-catch	The unintentional catch of one species when the target is another.
C&P	Fisheries & Oceans Canada, Conservation and Protection Branch.

carapace	The exoskeleton that covers the head and thorax, upon which fishing size limits are based.
communal commercial licence	Issued to First Nation organizations pursuant to the <i>Aboriginal Communal Fishing Licences Regulations</i> for participation in the commercial fishery.
communal licence	Issued to First Nation’s organizations pursuant to the <i>Aboriginal Communal Fishing Licences Regulations</i> to carry on fishing and related activities for food, social and ceremonial (FSC) purposes.
COSEWIC	The Committee on the Status of Endangered Wildlife in Canada.
crustaceans	A biologically related group of the class Crustacea that includes crabs, lobsters and shrimps.
Centre for Scientific Advice - Pacific (CSAP)	Centre for Scientific Advice - Pacific (formerly, Pacific Scientific Advice Review Committee), 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.
DFO	Fisheries & Oceans Canada. On behalf of the Government of Canada, DFO is responsible for developing and implementing policies and programs in support of Canada’s scientific, ecological, social and economic interests in oceans and fresh waters.
electronic monitoring	Equipment to digitally record: individual trap hauls; fishing activity; and fishing location, date, and time while the vessel is fishing. A licensed vessel is considered to be fishing while it has traps in the water.
Food, Social and Ceremonial (FSC)	A fishery conducted by First Nations for food, social and ceremonial purposes.
ghost fishing	A situation where fishing gear continues to cause mortalities after it has been lost, abandoned, or discarded. This commonly occurs in trap fisheries when the trap is lost and animals in the trap die and thereby bait the trap with their bodies attracting more animals.
Harvest document	Issued to a First Nation pursuant to the <i>Aboriginal Communal Fishing Licences Regulations</i> in respect of a First Nation’s fishing right defined under treaty to carry on fishing and related activities for food, social and ceremonial (FSC) purposes.
IFMP	Integrated Fishery Management Plan
inshore	Coastal waters landward of the “surflines”.

invertebrate	An animal without a backbone.
landed or off-loaded	The transfer of crab from a vessel in water to land.
landed value	Value of the product when landed by a licensed fishing vessel.
landings	Quantity of a species caught and landed.
Observer	An individual who has been designated as an Observer by the Regional Director General for the Pacific Region of Fisheries & Oceans Canada pursuant to Section 39 of the <i>Fishery (General) Regulations</i> .
offshore	Coastal waters seaward of the “surflines”.
pelagic	Belonging to the upper layers of the open sea.
PICFI	Pacific Integrated Commercial Fisheries Initiative - DFO’s PICFI is an initiative aimed at achieving environmentally sustainable and economically viable commercial fisheries, where conservation is the first priority and First Nations’ aspirations to be more involved are supported.
population	Group of individuals of the same species, forming a breeding unit, and sharing a habitat.
Precautionary Approach (PA)	In resource management, the PA is, in general, about being cautious when scientific information is uncertain, unreliable or inadequate and not using the absence of adequate scientific information as a reason to postpone or fail to take action to avoid serious harm to the resource. Information on the adoption of a PA framework for fisheries management in Canada is available at:  <a href="http://www.dfo-mpo.gc.ca/reports-rapports/regs/sff-cpd/precaution-eng.htm">http://www.dfo-mpo.gc.ca/reports-rapports/regs/sff-cpd/precaution-eng.htm</a>
PSARC	See CSAP.
recruitment event	A large survival of crab from a single spawning or year class or group of year classes that enter and dominate a population.
sampling program	A program in which representative samples of animals are collected for the calculation of parameter estimates that describe such things as weight, length or age within the general population.
service provider	An agency contracted by vessel owners or their harvesters association to coordinate notification, fishery monitoring, biological sampling, and data submission requirements. The service provider may train and recommend candidates for certification by Fisheries and Oceans Canada as observers.
SFAB	Sport Fishing Advisory Board, which provides advice to DFO on matters of recreational (sport) fishing.
single trap gear	Crab fishing gear where each trap is equipped with a buoy line and buoy and is not connected by line to other traps.

shellfish	Any species of invertebrate that may be harvested in commercial, recreational or First Nations fisheries.
soft-shell management areas	Sixteen smaller management units within Crab Management Area A from which biological data are collected. These areas open and close independently of one another.
<i>Species at Risk Act (SARA)</i>	A federal Act to prevent wildlife species from being extirpated or becoming extinct and to provide for their recovery. It provides the legal protection of wildlife species and the conservation of their biological diversity.
stakeholders	Individuals or groups with an interest in a particular fishery or activity.
stock	Describes a population of individuals of one species found in a particular area, and is used as a unit for fisheries management.
stock assessments	Results of analyses of fisheries and research data used to evaluate the effects of fishing on a stock or population and to predict the reactions of populations to alternative management choices.
Subarea	A subdivision of an Area, as described in the Pacific Fishery Management Area Regulations. (See maps at Area or Subarea internet link above).
substrate	The ground (often the ocean bottom) and its composition, in or on which animals live.
tonne (t)	Metric tonne, which is 1000 kg or 2204.6 lbs.
Traditional Ecological Knowledge (TEK)	A cumulative body of knowledge and beliefs handed down through generations by cultural transmission, about the relationship of living beings (including humans) with one another and with their environment.

## **APPENDIX 1: FIRST NATIONS HARVEST PLAN**

### **1 OVERVIEW OF THE FISHERY**

The Department's policy on the management of First Nations' fishing identifies First Nations harvests for food, social and ceremonial (FSC) purposes as the first priority after conservation. The Department 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. The agreements also outline First Nation involvement in a range of co-management activities and economic development opportunities which may include, but not be limited to, habitat enhancement, catch monitoring and enforcement, fish management and community research.

First Nations' harvest for FSC purposes may occur where authorized by an Aboriginal communal licence or, under treaty, a harvest document. Communal licences and harvest documents can be amended in-season for resource conservation purposes.

For First Nations issues please refer to section 4.2.1 of the 2019/20 Crab by Trap Integrated Fisheries Management Plan (IFMP).

For an update on the Pacific North Coast Integrated Management Area, Marine Protected Areas, National Marine Conservation Areas, (i.e. Gwaii Haanas), and National Marine Wildlife Areas, please refer to Section 5.8 of the 2019/20 Crab IFMP.

### **2 LICENSING**

First Nations' harvest for FSC purposes may occur where authorized by an Aboriginal communal licence or, under treaty, a harvest document which can permit the harvest of crabs. These licences are issued under authority of the *Aboriginal Communal Fishing Licences Regulations*.

### **3 MANAGEMENT MEASURES FOR THE FIRST NATIONS FSC FISHERY**

#### **3.1 Changes for 2019**

Fisheries and Oceans Canada (DFO) is continually evaluating existing and emergent management measures to ensure the long term sustainability of the crab fishery in the Pacific Region. Since 2017 DFO has been consulting on conservation measures for the FSC fishery including conservation of female crab, marking of gear (including holding cages), use of escape rings and rot cord on gear and restricting night setting and hauling in the Strait of Georgia and Vancouver Area. Many First Nations have adopted these conservation measures as a best practice and some already have these communal licence conditions. It is the intention to standardize conservation management measures across all fisheries and make changes to align all fisheries as an important component of crab management. This consultation will continue to determine the current use, cost, size and appropriate phase-in period.

Effective April 1<sup>st</sup>, 2019 all commercial, recreational and First Nations food, social and ceremonial (FSC) bottom-contact fishing activities for prawn, shrimp, crab and groundfish, and the use of downrigger gear, are prohibited within portions of Subareas 28-2 and 28-4 to protect nine Howe Sound glass sponge reefs.

Details of these new closure areas are provided in Section 5.7.2.1 of Appendix 3 and an overview map is provided in Appendix 7.

### **3.2 Size Limits**

First Nation harvesters shall not harvest any Dungeness Crab that measures less than 165 mm or any Red Rock Crab that measures less than 115 mm.

Crabs are measured in a straight line through the greatest breadth of the carapace. Undersized crabs must be returned to the water immediately, in a manner that causes the least harm possible.

### **3.3 Non Retention of Female Crabs**

Retention of female crab or their roe (eggs or larvae) represents a threat to conservation of crab stocks. In 2019, the Department will be engaging First Nations to implement harvesting practices to protect female crab.

### **3.4 Gear**

All traps used to harvest crabs must be equipped with a biological escape mechanism to allow crab to escape and prevent ghost fishing in the event that a trap is lost. Biological escape mechanisms (rot cord) for hinged lid traps are further described in Appendix 6.

Rot cord specifications may be different on different communal licence conditions and First Nations harvest plan documents. It is our intention standardize conservation management measures across all fisheries and make changes to align all fisheries as an important component of crab management.

In 2019, the Department will be engaging with First Nations to ensure gear use is meeting conservation objectives. This will include, restricting night time setting and hauling in some areas and requirements around the marking of gear including holding cages.

## **4 MANAGEMENT AND MONITORING OF FIRST NATIONS FISHING ACTIVITIES**

The Department negotiates Aboriginal Fisheries Strategy (AFS) agreements annually with over 70 Aboriginal Organizations that represent 164 of the 200 First Nations in British Columbia and the Yukon. Several of these agreements include provisions for the harvest of crab for FSC purposes. The amount harvested by some First Nations is known; however coast-wide it remains largely unknown. First Nations access to fish for FSC purposes is managed and regulated through the issuance of communal licences to First Nations and/or First Nations Organizations. These licences are issued under the authority of the *Aboriginal Communal Fishing Licences Regulations*.

Communal licences and Fisheries Agreements may contain provisions for the designation of individuals by the First Nation, or First Nations organizations, 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. As a condition of the communal licenses, First Nations are required to provide the number of pounds of shellfish harvested by species to the Fisheries and Oceans Canada Resource Manager on a quarterly basis. First Nations will typically designate harvesters from their communities under their communal licence.

First Nations communal licences specify the locations permitted for use by First Nations for FSC harvests. Harvest areas are generally located within claimed First Nation traditional territories and catch monitoring and harvest reporting requirements are in accordance with communal licence conditions.

The Department has observed an increase in the number of commercial vessels using commercial gear to harvest FSC crab and is concerned about the impact this may have on the resource due to a lack of catch reporting, which impairs the ability for the Department to manage the fishery effectively. The Department will continue to have discussions with First Nations on this topic, (particularly in Areas I and J) to develop a management approach to address the issue.

#### **4.1 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 is comprised of 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'atł First Nation on the west coast of Vancouver Island.

More information on the Maa-nulth Treaty can be found at:

[http://www.maanulth.ca/downloads/treaty/2010\\_maa-nulth\\_final\\_agreement\\_english.pdf](http://www.maanulth.ca/downloads/treaty/2010_maa-nulth_final_agreement_english.pdf)

#### **4.2 Sliammon Domestic Fishing**

The Sliammon fishery for domestic (FSC) purposes under the Tla'amin (Sliammon) 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 Tla'amin (Sliammon) Treaty can be found at:

<https://www.aadnc-aandc.gc.ca/eng/1100100022694/1100100022695>

#### **4.3 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 Tsawwassen Treaty can be found at:

<http://www.aadnc-aandc.gc.ca/eng/1100100022703/1100100022704>

#### **4.4 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 British Columbia. More information on the Treaty and the Nisga'a annual fishing plan can be found at:

<http://www.nkn.ca/files/u28/nis-eng.pdf>

#### **4.5 T'aaq-wiihak Fishing**

The Initial 2019 Five Nations Multi-species Fishery Management Plan (FMP) for the Ahousaht, Ehattesaht, Hesquiaht, Mowachaht/Muchalaht, and Tla-o-qui-aht First Nations has been developed pursuant to the

reasons of the British Columbia Supreme Court of April 19th, 2018, and the Court Order entered on November 1st, 2018 in *Ahousaht Indian Band and Nation v Canada (Attorney General)*, 2018 BCSC 633.

The objective of the FMP is to outline a draft for consultation purposes of fishing opportunities that DFO will provide the Five Nations in 2019 to exercise their rights to harvest salmon, groundfish, crab, and prawn in the Court Defined Area (CDA). This initial draft identifies a plan for the Five Nations to exercise their Aboriginal rights to fish and sell fish. DFO may adjust the contents of this initial FMP further to consultations. As per the court order, the FMP must be implemented by April 1, 2019.

For further information please contact Tara Sawatsky (604-666-6907).

#### **4.6 Marine Protected Areas and National Marine Conservation Areas**

For information on Marine Protected Areas and Marine Conservation Areas, including harvesting restrictions and area coordinates, please see Sections 5.8.8 and 5.8.9 of the main IFMP.

#### **4.7 Crab Consumption Advisories**

There are some areas that are either closed to crab harvest or have consumption advisories because of contamination from heavy metals or dioxins and furans. These closures and advisories are listed below, but may change during the year. Please refer to Appendix 8 for local area contact information.

#### **4.8 Area 4**

The harvesting of crab is prohibited in those waters of Porpoise Harbour and Wainwright Basin, (Subarea 4-11) inside a line from the southernmost point of Kaien Island to the northwesternmost point of Ridley Island, thence southerly along the eastern shoreline to the southernmost point of Ridley Island, thence to the westernmost point of Lelu Island, thence northerly along the shoreline to the northernmost point of Lelu Island, thence to a boundary sign on the shore of Tsimpsean Peninsula opposite and bounded to the north by the Hwy 16 Bridge at Galloway Rapids. (Dioxin contamination).

#### **4.9 Area 13**

Consumption of **crab hepatopancreas** harvested in Discovery Passage should not exceed **100 g/week**. This area includes those waters north of a line from the Cape Mudge Lighthouse on Quadra Island true west to the shore of Vancouver Island and south of a line from Separation Head (Quadra Island) true west to Vancouver Island.

Consumption of **crab hepatopancreas** harvested in Deepwater Bay should not exceed **100 g/week**. This area includes those waters southeast of a line from Separation Head on Quadra Island 50° true to the opposite shore.

**No consumption** of **crab hepatopancreas** harvested in the waters bounded by the eastern shore of Quadra Island from Francisco Point, thence 5 km north along the shore, thence east from the shoreline to the 200 m contour.

Consumption of **crab hepatopancreas** harvested in the waters east of a line on Quadra Island from Chonat Point south to the opposite bay (Chonat Bay) and from Kanish Bay, Quadra Island, east of a line from Granite Point to Bodega Point **should not exceed 135 g/week**.

Consumption of **crab hepatopancreas** harvested in the waters north of a line extending from Walters Point on Sonora Island true east to a point on the opposite shore (Owen Bay) **should not exceed 135 g/week.**

#### 4.10 Area 17

Consumption of **crab hepatopancreas** harvested in a portion of Stuart Channel **should not exceed 40 g/week.** This area of Stuart Channel is bounded on the north by a line from Donckele Point on Kuper Island to the point at the southeastern entrance to Preedy Harbour on Thetis Island, thence to the most southern point of Dayman Island, thence to the most southern point of Scott Island, westerly to Sharpe Point on Vancouver Island, thence southwesterly across Ladysmith Harbour to a point on the shore 230° true from Sharpe Point; thence southerly along the shore of Vancouver Island to Grave Point; thence north of a line to Erskine Point on Saltspring Island; thence northerly along the shore to Parminter Point, thence west of a line to Josling Point on Kuper Island, thence northerly along the shore to the point of commencement at Donckele Point.

Consumption of **crab hepatopancreas** harvested in the waters west of a line from Reynolds Point to Miami Islet to a point at the entrance to Kulleet Bay true south of Deer Point **should not exceed 105 g/week.**

#### 4.11 Area 18

Consumption of **crab hepatopancreas** harvested in Burgoyne Bay, Saltspring Island **should not exceed 60 g/week.**

Consumption of **crab hepatopancreas** harvested in Maple Bay **should not exceed 125 g/week.**

#### 4.12 Area 19

Victoria Harbour: Consumption of **crab hepatopancreas** harvested in those waters of Victoria Harbour north of a line from Macaulay Point to the navigation light at the western end of the Ogden Point breakwater to a line from Chapman Point southwesterly to the opposite shore **should not exceed 135 g/week.**

Esquimalt Harbour (19-2): PLEASE NOTE: As a precautionary measure, Esquimalt Harbour (Subarea 19-2) was closed on May 10<sup>th</sup>, 2016 to all fishing due to a fuel spill (see Fisheries Notices FN0393 & FN0700). This closure will remain in place until testing can be done to determine that all species are safe for human consumption. In the case that the closure is lifted during the duration of this plan, the following consumption advisory will remain in place:

For those waters north of a line connecting Fisgard Light House, Scroggs Rocks, and Duntze Head, the recommended maximum weekly intakes for a variety of invertebrate species are listed below:

Table 1: Recommended maximum weekly consumption

<u>Seafood</u>	<u>Toddlers</u> <u>(1 to 4 years old)</u> Recommended maximum consumption: <b>(grams per week)</b>	<u>Adults</u> Recommended maximum consumption: <b>(grams per week)</b>
Dungeness crab hepatopancreas	<b>24 g</b>	<b>109 g</b>

<u>Seafood</u>	<u>Toddlers</u> <u>(1 to 4 years old)</u> Recommended maximum consumption: <b>(grams per week)</b>	<u>Adults</u> Recommended maximum consumption: <b>(grams per week)</b>
Dungeness crab muscle	<b>200 g</b>	<b>905 g</b>
Red rock crab hepatopancreas	<b>22 g</b>	<b>102 g</b>
Red rock crab muscle	<b>416 g</b>	<b>1,879 g</b>
Sea urchin roe	<b>288 g</b>	<b>1,302 g</b>
Rockfish muscle	<b>182 g</b>	<b>825 g</b>

NOTE: The recommended maximum amounts that could be consumed per week of a specific seafood assumes that none of the other seafood types would be consumed in the same week.

#### 4.13 Area 25

Consumption of **crab hepatopancreas** harvested from Muchalat Inlet **should not exceed 70 g/week**. This area includes those waters of Muchalat Inlet lying east of the Gold River Harbour limit, and in those waters of Muchalat Inlet lying east of a line between Anderson Point and Atrévída Point.

#### 4.14 Area 28 & Area 29

##### Area 28

Consumption of **crab hepatopancreas** harvested in Howe Sound in subarea 28-3 and portions of subarea 28-1, in the waters of Thornbrough Channel, bounded on the north by a line from McNab Point on the mainland southwest to Ekins Point on Gambier Island, and on the south by a line from Gower Point to the southern tip of Home Island, thence north to Keats Island and along the western and northern shore to Cotton Point, thence west of a line to the government wharf at Gambier Harbour on Gambier Island, **should not exceed 55 g/week**.

Consumption of **crab hepatopancreas** harvested **should not exceed 130 g/ week** in the following areas:

##### Area 28 & 29

Consumption of **crab hepatopancreas** harvested in Howe Sound and the Strait of Georgia in subareas 28-2 and 29-1 and portions of subareas 28-1, 29-2 and 29-3, in the waters bounded:

- on the north by a line from Brunswick Point west to Irby Point on Anvil Island and along the shoreline to Domett Point on Anvil Island, west to McNab Point on the mainland,
- on the west by a line from McNab Point to Ekins Point on Gambier Island that follows the eastern and southern shoreline to the government wharf at Gambier Harbour, then proceeds south to Cotton Point on Keats Island and along the eastern and southern shoreline, south to Home Island and continues from southern tip of Home Island west to Gower Point, then follows the shoreline north and west to Reception Point,
- then on the south by a line that goes from Reception Point east to a point 1.5 km true south of Cape Roger Curtis on Bowen Island, and finally east to Point Atkinson  
**should not exceed 130 g/week**.

## **APPENDIX 2: RECREATIONAL HARVEST PLAN**

### **1. INTRODUCTION**

Recreational fisheries in Canada are guided by principles which are outlined in “An Operational Policy Framework”, Fisheries and Oceans Canada, 2001”, available on the Internet at:

<http://www.dfo-mpo.gc.ca/reports-rapports/regs/op-pc-eng.htm>

“A *Vision for Recreational Fisheries in British Columbia 2009-2013* developed cooperatively by DFO, the Province of BC and the Sport Fishery Advisory Board (SFAB) serves as a framework for developing initiatives and actions to support achievement of a collective vision for the recreational fishery in B.C.” The recreational fisheries Vision is available at:

[https://sportfishing.bc.ca/wp-content/uploads/2016/12/recreational\\_fisheries\\_vision.pdf](https://sportfishing.bc.ca/wp-content/uploads/2016/12/recreational_fisheries_vision.pdf)

BC Recreational regulations are described in the British Columbia Tidal Waters Sport Fishing Guide.

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

### **2. RECREATIONAL HIGHLIGHTS**

For Recreational Issues and Objectives please refer the main body of the Crab by Trap Integrated Fisheries Management Plan (IFMP), sections 4.2.2 and 5.4.2.2, respectively.

### **3. OPEN TIMES AND CLOSURES**

Recreational harvest of crab occurs year-round.

There are some areas that are either closed to crab harvest or have consumption advisories. Please see the Tidal Waters Sport Fishing Guide, the First Nations Harvest Plan (Appendix 1), or visit the DFO website for more details:

<http://www.pac.dfo-mpo.gc.ca/fm-gp/contamination/biotox/index-eng.html>

For an update on the Pacific North Coast Integrated Management Area, Marine Protected Areas, National Marine Conservation Areas, (i.e. Gwaii Haanas), and National Marine Wildlife Areas, please refer to Section 5.8 of the IFMP.

#### **3.1. Marine Protected Areas and National Marine Conservation Areas**

For information on Marine Protected Areas and Marine Conservation Areas, including harvesting restrictions and area coordinates, please see Sections 5.8.8 and 5.8.9 of the main IFMP.

### **3.2. Roberts Bank/Deltaport/Tsawwassen BC Ferries**

To ensure and maintain a safe approach for deep-sea vessels, ferries and berthing tugs transiting in and out of the Roberts Bank/Deltaport and BC Ferries terminal, crab fishing is prohibited within the area described below: The waters inside a line drawn from a point on land at 49°01.567'N and 123°08.787'W to the TB Yellow Marker at 49°01.464'N and 123°08.633'W, thence to the T8 Red Marker at 49°01.214'N and 123°08.578'W, thence to the T6 Red Marker at 49°00.887'N and 123°08.644'W, thence to the T4 Red Marker at 49°00.696'N and 123°08.922'W, thence to the T2 Red Marker at 49°00.489'N and 123°09.201'W, thence southeasterly to the BC Ferry Western docking pylon at 49°00.323'N and 123°08.189'W, thence following the BC Ferry property coastline to 49°00.470'N and 123°07.582'W, thence southeasterly to the most northeasterly point of the Tsawwassen Breakwater at 49°00.230'N and 123°07.440'W, thence to the southwesterly point of the Tsawwassen Breakwater at 49°00.134'N and 123°07.725'W, thence westerly to a point in water at 49°00.133'N and 123°11.270'W, thence due north to a point in water at 49°00.913'N and 123°11.270'W, thence due east to the west end of the Delta Port Dock at 49°00.666'N and 123°10.082'W, thence northeasterly following the Delta Port causeway to 49°00.822'N and 123°09.533'W, thence following the Delta Port property coastline to the point of commencement.

Port Metro Vancouver proposes the construction and operation of a new three-berth marine container terminal located at Roberts Bank in Delta to be located next to the existing Deltaport and Westshore Terminals. This proposed project known as Roberts Bank Terminal 2, is undergoing an environmental assessment by a joint federal and provincial review panel to identify and evaluate potential effects associated with the construction and operation of the Project (e.g. proposed 110ha+ infill and associated vessel exclusion zone) and to develop mitigation measures that will be used to avoid and/or minimize potential negative effects. Should this project proceed, further stakeholder consultation would be required. Parties interested in providing input for consideration by the Review Panel are encouraged to consult the Canadian Environmental Assessment Agencies project-specific web site at <http://www.ceaa-acee.gc.ca/050/details-eng.cfm?evaluation=80054> for information relevant to the status of the project review and to learn more about how you may engage in the process.

Additional information can be found on the Port Metro Vancouver website: [www.robertsbankterminal2.com](http://www.robertsbankterminal2.com)

### **3.3. Gwaii Haanas National Marine Conservation Area Reserve and Haida Heritage Site:**

Portions of the Gwaii Haanas National Marine Conservation Area, identified by the interim management plan as fully protected areas, will remain closed to commercial and recreational harvest in 2019. See Section 5.8.8 in the main IFMP section for detailed coordinates or Appendix 7 for a map.

### **3.4. Hecate Strait Queen Charlotte Sound Glass Sponge Reef Areas:**

The Hecate Strait and Queen Charlotte Sound Glass Sponge Reefs Marine Protected area was implemented in February 2017. Please see Section 5.8.8 in the main IFMP section for more information and Appendix 7 for maps.

### **3.5. Race Rocks Marine Protected Area**

Consultation regarding the boundaries for the Race Rocks Marine Protected Areas (MPA) is ongoing. The description of the Race Rocks MPA is likely to be modified from the description given in this IFMP and may be changed in-season if required, (see section 5.4.1.2. or 5.6.1.16 of the Commercial Harvest Plan for more details).

## **4. LICENSING**

A British Columbia Tidal Waters Sport Fishing Licence is required for the recreational harvest of all species of fish in tidal waters, including shellfish. Tidal Waters Sport Fishing Licences can be obtained at many Independent Access Providers (e.g. tackle stores and marinas) or online at the following website: <https://www-ops2.pac.dfo-mpo.gc.ca/nrls-sndpp/index-eng.cfm>.

For recreational licensing information and frequently asked questions, please visit: <http://www.pac.dfo-mpo.gc.ca/fm-gp/rec/licence-permis/index-eng.html>.

Please plan ahead and get your licence online in advance. To avoid delays, the best time to access the National Recreational Licensing System is outside of peak periods. Peak periods are every day from 12-3pm; every Friday, Saturday, and Sunday; and anytime there is a major fishery opening, such as the Fraser River Sockeye opening. Please also refer to the site for information on scheduled maintenance which could result in system interruptions.

## **5. MANAGEMENT MEASURES FOR THE RECREATIONAL FISHERY**

The regulations are summarized in the BC Sport Fishing Guide which lists closed times, daily and possession limits and some closed areas. A copy of the BC Sport Fishing Guide is available online at:

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

### **5.1. Changes for 2019**

- All recreation crab traps will be required to have at least two unobstructed escape holes or rings, a minimum of 105 mm in diameter for the 2019 fishing season starting April 1st, 2019.
- For the 2019 fishing season starting April 1st, 2019, recreational harvesters will only be permitted to set or haul crab gear from one hour before sunrise to one hour after sunset in Pacific Fishery Management Areas (PFMAs) 14, 16 to 19, 28 and 29. Soaking traps overnight is still permitted.

- For the 2019 fishing season starting April 1st, 2019, recreational harvesters will be prohibited to possess female Alaskan King Crabs.
- Effective April 1<sup>st</sup>, 2019 all commercial, recreational and First Nations food, social and ceremonial (FSC) bottom-contact fishing activities for prawn, shrimp, crab and groundfish, and the use of downrigger gear, are prohibited within portions of Subareas 28-2 and 28-4 to protect nine Howe Sound glass sponge reefs. Details of these new closure areas are provided in Section 5.7.2.1 of Appendix 3 and an overview map is provided in Appendix 7.

## **5.2. Size Limits**

Recreational harvesters may not harvest any Dungeness Crab that measures less than 165 mm or any Red Rock Crab that measures less than 115 mm.

Crabs are measured in a straight line through the greatest breadth of the carapace. Harvesters are advised to measure crab using a calliper device. Harvesters are responsible for ensuring they only harvest crabs that meet minimum size limits. Undersized crabs must be returned to the water immediately, in a manner that causes least harm possible. For retained crab, the carapace must remain attached until consumed or until the crab arrives at your ordinary residence.

## **5.3. Non Retention of Female Crabs**

Recreational harvesters are required to release all female Dungeness, Red Rock Crabs and Alaskan King Crabs immediately, in a manner that causes the least harm possible. The female's abdomen has a wide "beehive" shape; the male's has a narrow "lighthouse" shape.

## **5.4. Gear**

Crab may be harvested using dip nets, ring nets, traps, or handpicking. It is illegal for an individual to use more than two rings, two dip nets or two traps or more than two of these in combination to fish for crabs. It is illegal to use snares, rakes, spears or other pointed instruments to catch or attempt to catch crabs.

All crab traps must have a section in the top or sidewall that has been secured by a single length of untreated cotton twine no greater than No. 120 (approximately 5 mm or 3/16 inch diameter). This twine is often referred to as rot cord. On deterioration this must produce a rectangular opening with a minimum size of 7 cm x 20 cm, or a square opening with a minimum size of 11 cm x 11 cm. This regulation is intended to ensure that if the trap is lost, the section secured by the cord will rot, allowing captive crabs to escape, and preventing the trap from continuing to fish. On traps with a rigid frame and a freely opening hinged lid the trap lid must be secured by a single length of untreated cotton twine no greater than No. 120 so that the trap lid will open freely when the rot cord is broken. No other fastenings may impede the hinged lid of the trap from opening. Rot cord for hinged lid traps are further described in Appendix 6.2.

## 5.5. Daily Limits

- The aggregate daily limit of Dungeness, Red Rock, Box, Puget Sound, and Alaska King Crab in Areas 1-10 and 21-27 is 6; and in Areas 11-20, 28 and 29 is 4.
- The daily limit for Alaska King Crab is two per day.
- The daily limit for box crab and Puget Sound King Crab is one per day coast wide.
- The daily limit for shore crabs is 75 per day, except in Areas 28 and 29 where retention is 0.
- The daily limit for all other species of crab not listed is 4 per day coastwide.

## 5.6. Possession Limits

- Possession limits for all crab species are two times the daily limit.

## 5.7. Crab Consumption Advisories

There are some areas that are either closed to crab harvest or have consumption advisories because of contamination from heavy metals or dioxins and furans. These closures and advisories are listed below, but may change during the year. Please refer to Appendix 8 for local area contact information.

### Area 4

The harvesting of crab is prohibited due to dioxin contamination in that portion of Subarea 4-11 west of the Highway #16 bridge at Galloway Rapids, which includes Wainwright Basin, Porpoise Harbour, and Porpoise Channel.-

### Area 13

Consumption of **crab hepatopancreas** harvested in Discovery Passage should not exceed **100 g/week**. This area includes those waters north of a line from the Cape Mudge Lighthouse on Quadra Island true west to the shore of Vancouver Island and south of a line from Separation Head (Quadra Island) true west to Vancouver Island.

Consumption of **crab hepatopancreas** harvested in Deepwater Bay should not exceed **100 g/week**. This area includes those waters southeast of a line from Separation Head on Quadra Island 50° true to the opposite shore.

**No consumption** of **crab hepatopancreas** harvested in the waters bounded by the eastern shore of Quadra Island from Francisco Point, thence 5 km north along the shore, thence east from the shoreline to the 200 m contour.

Consumption of **crab hepatopancreas** harvested in the waters east of a line on Quadra Island from Chonat Point south to the opposite bay (Chonat Bay) and from Kanish Bay, Quadra Island, east of a line from Granite Point to Bodega Point **should not exceed 135 g/week**.

Consumption of **crab hepatopancreas** harvested in the waters north of a line extending from Walters Point on Sonora Island true east to a point on the opposite shore (Owen Bay) **should not exceed 135 g/week**.

#### **Area 17**

Consumption of **crab hepatopancreas** harvested in a portion of Stuart Channel **should not exceed 40 g/week**. This area of Stuart Channel is bounded on the north by a line from Donckele Point on Kuper Island to the point at the southeastern entrance to Preedy Harbour on Thetis Island, thence to the most southern point of Dayman Island, thence to the most southern point of Scott Island, westerly to Sharpe Point on Vancouver Island, thence southwesterly across Ladysmith Harbour to a point on the shore 230° true from Sharpe Point; thence southerly along the shore of Vancouver Island to Grave Point; thence north of a line to Erskine Point on Saltspring Island; thence northerly along the shore to Parminter Point, thence west of a line to Josling Point on Kuper Island, thence northerly along the shore to the point of commencement at Donckele Point.

Consumption of **crab hepatopancreas** harvested in the waters west of a line from Reynolds Point to Miami Islet to a point at the entrance to Kulleet Bay true south of Deer Point **should not exceed 105 g/week**.

#### **Area 18**

Consumption of **crab hepatopancreas** harvested in Burgoyne Bay, Saltspring Island **should not exceed 60 g/week**.

Consumption of **crab hepatopancreas** harvested in Maple Bay **should not exceed 125 g/week**.

#### **Area 19**

Victoria Harbour: Consumption of **crab hepatopancreas** harvested in those waters of Victoria Harbour north of a line from Macaulay Point to the navigation light at the western end of the Ogden Point breakwater to a line from Chapman Point southwesterly to the opposite shore **should not exceed 135 g/week**.

Esquimalt Harbour (19-2): **PLEASE NOTE: As a precautionary measure, Esquimalt Harbour (Subarea 19-2) was closed on May 10<sup>th</sup>, 2016 to all fishing due to a fuel spill (see Fisheries Notices FN0393 & FN0700)**. This closure will remain in place until testing can be done to determine that all species are safe for human consumption. In the case that the closure is lifted during the duration of this plan, the following consumption advisory will remain in place:

For those waters north of a line connecting Fisgard Light House, Scroggs Rocks, and Duntze Head, the recommended maximum weekly intakes for a variety of invertebrate species are listed below:

Table 1: Recommended maximum weekly consumption

<u>Seafood</u>	<u>Toddlers</u> <u>(1 to 4 years old)</u> Recommended maximum consumption: <b>(grams per week)</b>	<u>Adults</u> Recommended maximum consumption: <b>(grams per week)</b>
Dungeness crab hepatopancreas	<b>24 g</b>	<b>109 g</b>
Dungeness crab muscle	<b>200 g</b>	<b>905 g</b>
Red rock crab hepatopancreas	<b>22 g</b>	<b>102 g</b>
Red rock crab muscle	<b>416 g</b>	<b>1,879 g</b>
Sea urchin roe	<b>288 g</b>	<b>1,302 g</b>
Rockfish muscle	<b>182 g</b>	<b>825 g</b>

NOTE: The recommended maximum amounts that could be consumed per week of a specific seafood assumes that none of the other seafood types would be consumed in the same week.

### Area 25

Consumption of **crab hepatopancreas** harvested from Muchalat Inlet **should not exceed 70 g/week**. This area includes those waters of Muchalat Inlet lying east of the Gold River Harbour limit, and in those waters of Muchalat Inlet lying east of a line between Anderson Point and Atrevida Point.

### Area 28 & Area 29

Area 28:

Consumption of **crab hepatopancreas** harvested in Howe Sound in subarea 28-3 and portions of subarea 28-1, in the waters of Thornbrough Channel, bounded on the north by a line from McNab Point on the mainland southwest to Ekins Point on Gambier Island, and on the south by a line from Gower Point to the southern tip of Home Island, thence north to Keats Island and along the western and northern shore to Cotton Point, thence west of a line to the government wharf at Gambier Harbour on Gambier Island, **should not exceed 55 g/week**.

Consumption of **crab hepatopancreas** harvested **should not exceed 130 g/ week** in the following areas:

Areas 28 and 29:

Consumption of **crab hepatopancreas** harvested in Howe Sound and the Strait of Georgia in subareas 28-2 and 29-1 and portions of subareas 28-1, 29-2 and 29-3, in the waters bounded:

- on the north by a line from Brunswick Point west to Irby Point on Anvil Island and along the shoreline to Domett Point on Anvil Island, west to McNab Point on the mainland,
- on the west by a line from McNab Point to Ekins Point on Gambier Island that follows the eastern and southern shoreline to the government wharf at Gambier Harbour, then proceeds south to Cotton Point on Keats Island and along the eastern and southern shoreline, south to Home Island and continues from southern tip of Home Island west to Gower Point, then follows the shoreline north and west to Reception Point,
- then on the south by a line that goes from Reception Point east to a point 1.5 km true south of Cape Roger Curtis on Bowen Island, and finally east to Point Atkinson **should not exceed 130 g/week**.

## 6. BEST MANAGEMENT PRACTICES

For the benefit of managing and protecting the long-term sustainability of the resource, recreational Crab harvesters are being advised by the Department to undertake the following activities when recreationally fishing for Crab:

1. Review the Fishing for Shellfish section of your British Columbia Sport Fishing Guide.
2. Ensure all buoys are marked in accordance with licence conditions.
3. Ensure your buoy line does not float. Utilise sinking line as an alternative to line weights for all crab traps fished.
4. Ensure compliant rot cord type and check that your trap has escape rings.
5. Immediately release females and undersized crab back to their place of origin with the least possible harm.
6. Fish away from navigation channels.
7. Ensure your shellfish harvesting details are included in iREC or dockside creel survey requests.
8. Crab can be known to contain industrial and biological toxins within their viscera. To avoid ingestion of potentially harmful toxins remove the gills and organs from crab prior to cooking. For more information go to: <http://www.hc-sc.gc.ca/hl-vs/iyh-vsv/environ/dioxin-eng.php>.
9. A seasonal gear conflict between the Food Social and Ceremonial (FSC) salmon gillnet and recreational crab fisheries has been identified in the Selma Park/Davis Bay area near Sechelt (Subarea 29-1). The Department will continue to work with local First Nation representatives and the SFAB to help facilitate discussions and work towards a solution.

# APPENDIX 3: COMMERCIAL HARVEST PLAN (APRIL 1, 2019 – MAR 31, 2020)

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## **1. COMMERCIAL CHANGES AND HIGHLIGHTS (APRIL 1, 2019 - MARCH 31, 2020)**

### **1.1. Management Updates:**

- All Licence holders must make arrangements with an approved service provider in order to fulfil fishery monitoring and catch reporting requirements as specified in Appendix 9.
- Commercial Service Provider program evaluations have been conducted for 2018 and will continue in 2019/20.
- Valid plastic trap tags are required in Areas B, E, G, H, I, and J. A requirement for vessel masters to contact their local area crab manager to request replacement tags if more tags are needed above their allotted spare tag allowance was implemented in 2017 and will continue in 2019/20. When a new set of replacement tags is issued, all old tags must now be returned to the nearest DFO office (Section 4.3.3).
- Since 2018, valid plastic float tags will no longer be required in Area J. Plastic tags are still required on the traps and RFID chips on floats are still required.
- For Area J, the 2-day bait ban requirement at the start of the fishery will again be removed in 2019/20.
- Reminder to mark gear properly with floats (see Sections 4.4 to 4.6) as there is a concern regarding unmarked, abandoned and lost gear in the crab fisheries, notably in Boundary Bay (Area J). Reporting of suspected violations or unmarked, abandoned and lost can be made to the to ORR: Observe, Record, Report line: 1-800-465-4336 or <http://www.pac.dfo-mpo.gc.ca/fm-gp/rec/ORR-ONS-eng.html>
- Conditions of licence will be updated in 2019/20 to clarify the requirements for live storage/holding cages in all areas.
- An interim maximum area limit of 8400 traps was implemented in 2017 for Area E Tofino and continues for 2019/20 (Section 2.7.3).
- Area E Tofino commercial harvesters have expressed concern regarding the large amount of traps in the area outside Tofino and Ucluelet, known as “the Hole”. To address these concerns a 100 trap limit or 3200 maximum traps was implemented on a one-year trial basis for this area. This will continued for the 2019-20 season. A description of this area can be found on page 50 of this appendix. A map can be found in Appendix 7.
- The Sport Fish Advisory Board has requested a larger seasonal closure for commercial crab gear outside the Sooke area. This would be to reduce gear conflicts between the crab gear had the salmon sport fishery. This will be reviewed in the 2019/20 year.
- Licence transferring (“trap stacking”) will be allowed as single-year pilot programs in E-Sooke, E-Tofino, G, H and J for 2019/20. Licences that stack will be allowed to use 66% of the traps from the 2nd licence.
- For vessels in Area E – Tofino, in 2020-21 crab management year an additional option will be implemented in the Tofino Option Area. Vessels will need to choose an inside or outside Tofino option. See Section 2.5.1.

- Area G harvesters have agreed as a Best Management Practice to not set their gear in Stag Bay at Hernando Island from March 15 to September 15.
- 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 of fish within their Fishing Territories and to sell that fish, with the exception of geoduck. DFO is working with the Five Nations to implement a Fishery Management Plan (“FMP”) for salmon, groundfish, crab and prawn by April 1, 2019. The FMP could lead to in-season management changes. DFO will make every effort to advise stakeholders of any such changes in advance of changes being implemented.
- The Department will be evaluating compliance with trap limits, RFID trap marking and scanning, not fishing in closed areas (including over the US border) and logbook accuracy throughout 2019. Improved compliance is required for these monitoring requirements, otherwise additional management measures such as mandatory video monitoring or reduced fishing opportunities, may need to be implemented as early as 2020.
- The Department will be delaying area and industry representative reselection for one year (to 2020). The intent of delaying commercial area selection is to provide an opportunity to address First Nations interests in the commercial crab fishery and ensure this is communicated to commercial harvesters considering a change in fishing areas. Crab harvesters will need to select the area they would like to fish starting in 2020 during the 2019-20 year
- The maximum trap limit/licence of 200 traps will be maintained in Area I. Area I commercial harvesters had requested an increase in the maximum trap limit/licence from 200 to 250 because of the low number of commercial licences in the area. DFO sought input from First Nations, recreational and commercial harvester representatives in Area I on the commercial harvesters’ request as part of last year’s 2018/19 IFMP consultation.
- Area B Commercial Harvesters have proposed that half-trap limits and daily haul restrictions be implemented in Area 3 and Area 6 (Area B) seasonal areas to reduce trap congestion and turnover. Half trap limits and daily haul restrictions are also proposed for the first 14 days after the commercial opening in Kitkatla Inlet. Please see Section 5.3.2.4 for more information.
- The Vancouver Fraser Port Authority proposes to make amendments to the Port Information Guide to further promote safety within the Port of Vancouver: <https://www.portvancouver.com>
- Red and Golden King Crab (*Paralithodes camtschatica* & *Lithodes aequispinus*) in the North and Central coast will only be permitted to be retained by applying and receiving amended crab conditions of licence.

## 1.2. Closure Updates

- The Roberts Bank Terminal 2 proposal is undergoing an environmental assessment. Should this project proceed, further stakeholder consultation would be required prior to an extension to the Roberts Bank/Deltaport/Tsawwassen BC Ferries navigational closure, (Section 5.1.2.3).

- The coordinates of the existing Delta Port Roberts Bank Restricted Area (Navigational Closure) have been corrected after a minor error was identified. Please see Section 5.7.2.2 for more information.
- In 2017, the Vancouver Fraser Port Authority (VFPA) revised its Port Information Guide and introduced new navigation closures in Vancouver Harbour. VFPA implemented additional changes in these areas in 2018. Additional information and maps are available from VFPA's Information Guide at:  
<https://www.portvancouver.com/marine-operations/port-information-guide/>
- Formal fishing closures to protect nine glass sponge reefs in the Strait of Georgia and Howe Sound have been implemented. All commercial and recreational and Indigenous bottom contact fishing activities for prawn, shrimp, crab and groundfish are prohibited within the areas order to protect known Strait of Georgia and Howe Sound Glass Sponge Reefs. These closures will be in effect until further notice. More information is available in Section 5.7.2.1. More information is available in Section 5.8.9 of the main IFMP.
- Effective April 1<sup>st</sup>, 2019 all commercial, recreational and First Nations food, social and ceremonial (FSC) bottom-contact fishing activities for prawn, shrimp, crab and groundfish, and the use of downrigger gear, are prohibited within portions of Subareas 28-2 and 28-4 to protect nine Howe Sound glass sponge reefs. Details of these new closure areas are provided in Section 5.7.2.1 and an overview map is provided in Appendix 7.
- The Gwaii-Haanas Land-Sea-People Management Plan has been under development since 2014 and the final plan was signed and approved in November, 2018.
- Consultation regarding the boundaries for the Race Rocks Marine Protected Areas is ongoing. The description of the closure for the Race Rocks MPA is likely to be modified from the description given in this IFMP and may be changed in-season if required, (see section 5.4.2.2. or 5.6.2.16 for more details).

### **1.3. Licensing Updates:**

- Requirements for service provider arrangement and submission of previous year's harvest logs prior to annual licence renewal are required.
- Area E Sooke licence trap transferring (stacking) with a 50% trap reduction was implemented in 2016 and was expanded to Areas G&H as a pilot in 2018/19. Licence transferring will be allowed in E-Sooke, E-Tofino, G, H and J for 2019/20. The success of this program will continue to be evaluated. Licences that stack will be allowed to use 66% of the traps from the 2nd licence. For example, in Area H if you have two licences on a single vessel, you will be allowed to use 346 traps. E Tofino, 423 traps, 80 of which may be in Area 24. Still only 166 may be used in the Outside Tofino trap limit area ("the Hole"). E-Sooke, 583 traps, 100 of which may be used in Sooke Harbour/Basin. Area G: 583 traps.

## **2. MANAGEMENT MEASURES FOR THE COMMERCIAL FISHERY**

### **2.1. Species**

Dungeness Crab (*Cancer magister*)

Red Rock Crab (*Cancer productus*)

Red and Golden King Crab (*Paralithodes camtschatica* & *Lithodes aequispinus* ), permitted to be retained in the North and Central coast only, under amended crab conditions of licence and local area crab manager specifications.

Fish harvesters are authorized to incidentally catch and retain octopus *Enteroctopus dofleini* while crab trap fishing, except in octopus closure areas (Section 5.8). Conditions of Licence require all fish harvesters to accurately complete octopus catch and retention information in the crab trap logbook.

Crab-by-trap licence eligibility holders are also permitted to fish for species described in Schedule II Part 2 of the *Pacific Fishery Regulations*. Conditions of Licence for these species are included with crab-by-trap licences. Schedule II Conditions of Licence apply even if the catch is only intended for bait. For information regarding the harvest of Schedule II, Other Species please refer to the IFMP for lingcod, dogfish, sole and flounder, skate and pacific cod. For information regarding transporting please refer to Part III of the Conditions of Licence.

## **2.2. Size Limits**

Undersized crab must be returned to the water immediately upon capture with the least possible harm in the location from which they were caught. It is the responsibility of each harvester to ensure that their measuring gauge is accurate.

The minimum size limit for Dungeness Crab is 165 mm, measured as the maximum distance in a straight line through the greatest breadth of the shell.

The minimum size limit for Red Rock Crab is 115 mm, measured as the maximum distance in a straight line through the greatest breadth of the shell.

The voluntary minimum size limit for King Crab is 178 mm, measured as the maximum distance in a straight line through the greatest breadth of the shell, including the spine. King Crab is only permitted to be retained in the North and Central coast only, under amended crab conditions of licence and local area crab manager specifications.

## **2.3. Non-retention of Female Crabs**

Every person engaged in commercial crab fishing shall immediately return all female crabs to the water in the location from which they were caught, in a manner that will cause least harm, with the exception below.

No person shall catch and retain or possess any female crab unless the crab is infected by the parasite *Briarosaccus callosus* and is being brought ashore to avoid the further spread of that parasite. Dungeness Crab found with this parasite should be frozen and shipped to Gary Meyer at the Pacific Biological Station. Please call 1-250-756-7034.

*Briarosaccus callosus* is identified by a reddish-brown, 1 to 2 cm diameter capsule(s), which is the egg sac of the parasite, located under the abdomen (i.e. where the crab eggs would normally be carried).

Retention of female crabs or their roe (eggs or larvae) represents a threat to conservation of crab stocks.

## **2.4. Non-retention of Soft-shell Crabs**

Soft-shell crabs may not be retained. A crab is considered soft-shell if the underside of the shell (carapace) yields or flexes under pressure. Crab shell hardness is measured with a durometer, which is a spring driven device specifically designed to measure the shell hardness of Dungeness crab. Durometers are available from PTC Instruments, 2301 Federal Avenue, Los Angeles, CA 90064 (<http://www.ptc1.com/>). The Dungeness crab durometer is model 307LCRB-4. The appropriate place on a crab to determine if the crab shell is soft is on the underside of the carapace between the widest point of the carapace and the attachment of the leg bearing the claw. The durometer should be positioned just anterior to the shell suture line as indicated in Appendix 6. The durometer shall be applied to this location on the crab as per the manufacturer's instructions. The indenter of the durometer should be pressed to the crab shell until the foot of the durometer is flush with the surrounding shell. Soft-shell crabs are those crabs that do not exceed a durometer measurement of 70 units.

Crab harvesters are generally aware of the difference between hard and soft-shell crabs. Crabs can be tested with digital pressure in the same location on the shell as indicated in Appendix 6. The legal hardness standard will be the durometer measurement. If the harvester is unsure whether the crab shell is hard enough the crab shall be returned to the water.

In many areas harvesters have advised the Department that the use of fish frames or "hanging bait" may increase the catch of soft-shell crab. Commercial harvesters should avoid fishing during soft-shell periods in order to minimize damage to crab populations, and to maximize the landed value of harvested product. In-season closures may be implemented in locations where a high incidence of soft-shell is observed. Soft-shell crabs left in traps are subject to increased risk of mortality through cannibalism.

Fisheries and Oceans Canada requires that commercial crab harvesters carefully handle and release soft-shell crab. All undersized crab and soft-shell crab must be removed from the trap and released immediately in the location where they were caught, in a manner that will cause least harm. Harvesters are asked to release soft-shell crab back into the water as close to the surface as possible. Dropping soft-shell crab from any height or throwing them over the side will substantially increase damage and mortality.

## **2.5. Area Licences**

In 2015, crab licence holders selected an area to fish for the three-year period commencing January 1, 2016 and ending December 31, 2018. Provided below are licence area selection details from 2000 to 2018 and a description of the crab areas. A map of these areas has also been provided in Appendix 7.

The next area selection process, (whereby licenced commercial crab vessels choose one crab management area to fish in) was scheduled to commence in the summer of 2018 for implementation on April 1<sup>st</sup>, 2019. However, the Department delayed area selection for one year (to April 1<sup>st</sup>, 2020). The intent of delaying commercial area selection was to provide an opportunity to address First Nations interests in the commercial crab fishery and ensure this is communicated to commercial harvesters considering a change in fishing areas. The area selection process will commence in 2019.

Selection Period	A	B	E Quat	E Sooke	E Tofino	E Total	G	H	I	J	Total
2000	48	19				39	14	47	36	19	222
2001-2002	48	19				39	13	48	36	19	222
2003-2005	41	17				42	13	55	36	18	222
2006	56	11				35	14	43	41	22	222
2007-2008	56	12				35	14	42	41	22	222
2009	52	17	2	6	18	26	19	45	42	21	222
2010-2012	53	13	2	6	18	26	20	40	51	18	221
2013-2015	47	16	2	10	24	36	19	51	32	20	221
2016-2018	32 (3)*	24 (6)	2	7 (1)	32 (2)	41 (3)	17 (6)	62 (8)	21 (5)	24 (1)	221

\* PICFI / ATP FR Licences in brackets

Area	Description	Management Area
A	Queen Charlotte Islands	Areas 1, 2, 101 to 110 inclusive, 130 and 142.
B	North and Central Coast Mainland	Areas 3 to 10 inclusive & a portion of the Nass Estuary.
E_Common	West Coast Vancouver Island	Area 21, 22, 25, 26, 121, 123-1, 125, 126
E_Quatsino Option		Area 27, 127, and E_Common
E_Sooke Option		Area 20 and E_Common
E_Tofino Option		Area 23, 24, 123-2 to 123-9, 124 and E_Common
G	Johnstone Strait	Areas 11, 12, 13, 15 and 111.
H	Strait of Georgia	Areas 14, 16 to 19 inclusive and Subarea 29-5.
I	Fraser River	Areas 28 and 29 excluding Subareas 29-5 and 29-8.
J	Boundary Bay	Subarea 29-8.

### 2.5.1 Area E sub-area licensing

Sub-area licensing within crab management Area E, known as “Options”, has been in place since 2008. Licence holders selecting to fish in Area E are required to choose a Quatsino, Sooke, or

Tofino fishing option. Each Option has exclusive fishing areas, as well as common areas shared among all Area E licence holders, (Please refer to Table 2).

For vessels in Area E – Tofino, in 2020-21 crab management year an additional option will be implemented in the Tofino Option Area. Vessels will need to choose an inside or outside Tofino option. This management change is intended to separate small vessels, which choose to fish less traps in inshore areas from larger vessels that may have the ability to fish more traps in the offshore waters with the goal of making the Tofino Option Area more economically viable for all vessels as well as reducing the amount of vessels fishing on the inside waters.

Vessels that choose the Inside Tofino Option will be allowed to fish in all of the Tofino Option Areas (23, 24, 123-2 to 123-9 and 124) as well as the common areas. Vessels that choose the Outside Tofino Option will not be allowed to fish in Areas 23 or 24.

The Tofino Option area cap trap will be 8400 total traps. Area 24 stays at a trap cap of 1600 total traps. Each vessel will still be limited to 3200 divided but the number of vessels to a maximum of 100 traps per vessel in the area known as the hole (see map). Total traps for any vessel will not exceed 350.

Individual vessel limits are calculated by taking 8400 and dividing by the number of vessels which select the Tofino Option Area. Vessels that choose the outside option will have 30% added to their individual cap number. The remaining trap cap will be divided by the number of inside vessels. In Area 24, the trap cap of 1600 will be split evenly for vessels choosing the Inside Option. See the table below for examples of how the total trap cap would be split depending on how many vessels choose each option.

Below is a table showing the different scenarios based on 32 vessels choosing the area E Tofino option.

Number of Licences to Choose Each Tofino Option				
Inside Option	Outside Option	Total Traps for Inside Vessels	Traps allowed per Vessel in Area 24 (Inside Option Only)	Total Traps for Outside Vessels
32	0	263	50	-
31	1	260	52	341
30	2	257	53	341
29	3	254	55	341
28	4	251	57	341
27	5	248	59	341
26	6	244	62	341
25	7	241	64	341
24	8	236	67	341
23	9	232	70	341
22	10	227	73	341
21	11	222	76	341
20	12	216	80	341
19	13	209	84	341
18	14	202	89	341
17	15	194	94	341
16	16	184	100	341

## 2.6. Service Provider Arrangements & Licensing Requirements

Prior to annual licence issuance, all licence holders must make arrangements with an approved service provider in order to fulfill fishery monitoring and catch reporting program requirements as specified in Appendix 9 on biological sampling, electronic monitoring or observing, harvest logbooks, plastic trap tags, and mid-year and year-end summary reports

## 2.7. Trap Limits

Compliance with trap limits is monitored through several programs including electronic monitoring or at-sea observers, plastic trap tags, and on-grounds compliance checks. Harvesters must take an active role in ensuring compliance with trap limits by meeting their trap tagging, reporting and monitoring requirements. Trap limits have been established in each area coast-wide:

### 2.7.2 Area A Trap Allocations

Vessel Length	Licences	Share	Area Limit/Licences	Area Limit Totals	Vessel Maximum	Vessel Maximum Totals	Final Licence Limit	McIntyre Bay Limit (Apr. 1 – Nov. 1 & Jan. 1 – Mar. 31)	McIntyre Bay Limit (Nov. 2 – Dec. 31)
<13m	16	1	795	12727	600	9600	600	300	600
13-14m	4	1.33	1061	4242	800	3200	800	400	800
14-15.8m	4	1.67	1326	5303	1000	4000	1000	500	1000
>15.8m	8	2	1591	12727	1200	9600	1200	600	1200
Total	32			35000		26400			

### 2.7.3 Area B to J Trap Allocations:

Area	Area portion	Licences	Area Limit	Area Limit / Licence	Vessel Limit	2019/20 Trap Limit per Licence
B		24	7600	316	400	316
	B Seasonal Areas		3800	158	200	158
E					350	
E_Quatsino		2			350	350
	E_Quatsino 27-7 to 27-11, (Jan 1 - Jun 30 & Oct 1-Dec 31)		600	300	200	200
	E_Quatsino 27-7 to 27-11, (July 1 to Sept 30)		75	37	75	37
E_Sooke		7	2800	400	350	350
	E_Sooke 20-6 (Harbour)		420	60	350	60
	E_Sooke 20-7 (Basin)		420	60	350	60
E_Tofino		33	8400*	254	350	339*
	E_Tofino Area 24		1600	48	350	48
		Outside Tofino trap limit area (i.e. “the hole – see below for description)	33		100	350
G		16	5600	350	400	350
H		62	12900	208	300	208
I		21	8400	381	200	200
	I Jun 15 to July 5				100	
J		24	3600	150	200	150

\*The majority of Area E Tofino harvesters are fishing below the permitted 350 trap limit and collectively below the 8400 area limit. This new area limit is an interim limit and the final trap limit will be set prior to the start of the area selection process for fishing activities. Fishing limits and patterns will continue to be evaluated and licence conditions will be re-issued in-season if the overall area trap limit is exceeded.

#### Table Definitions:

Area Limit – The maximum number of traps allowed in that Area or portion of Area.

Area Limit per Licence - The maximum number of traps that are allowed per vessel dependent on the number of licences.

Vessel Limit – The maximum number of traps that are allowed per vessel, regardless of the number of licences.

2019/20 Trap Limit per Licence – The number of traps allowed per vessel for this year given the Area Limit and number of licences. Based on the Area Limit per License and the Vessel Limit, the lesser number is chosen. These trap limits are for a single licence. For stacked licence limits, see Section 1.3.

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## Area E

Each licensed vessel in Area E vessel may fish a maximum of 350 crab traps inclusive of the common areas, with the following exceptions.

### Sooke Option

A maximum of 60 traps per licence eligibility may be fished in Subarea 20-6 (Sooke Harbour) and 60 traps per licence eligibility in Subarea 20-7 (Sooke Basin). These traps form part of the total 350 traps allocated to each vessel in Area E.

Each vessel operator must register one unique buoy colour combination (photo required), at the beginning of each fishing year at the Fisheries and Oceans Canada Licensing office, prior to commencing any fishing. The vessel operator may only fish with buoys of the registered colour combination.

### Tofino Option

No vessel licensed for Area E shall fish more than 48 traps in total in Subareas 24-1 through 24-14 inclusive (all of Area 24). These traps form part of the total 339 traps allocated to each vessel for the Tofino Option in Area E.

Each vessel operator must register one unique buoy colour combination (photo required), at the beginning of each fishing year at the Tofino Fisheries and Oceans Canada office, prior to commencing any fishing. The vessel operator may only fish the above Subareas with buoys of the registered colour combination. A buoy line and buoy must be attached to each trap fished in the Trap Limit Area.

### Quatsino Option

During the period from January 1 to June 30 and October 1 to December 31, a maximum of 200 traps per licence eligibility may be fished within Subareas 27-7 to 27-11 inclusive. During the period of July 1 to September 30 a maximum of 75 trap limit for the Quatsino Trap Limit Area (QTLA) can be fished. Since there are 2 licences eligible to fish in the QTLA, each vessel may fish 37 traps each. The QTLA includes Subareas 27-7 to 27-11.

A combined fleet maximum of 600 traps may be fished by all vessels with Subareas 27-7 to 27-11. In the event that more than three vessels choose to fish in this area, the total number of traps permitted to be fished by each vessel will be reduced.

### Outside Tofino Trap Limit Area (“the Hole”)

Those waters outside Tofino lying within a line that begins at 48°55.268’N 125°32.470’W [Amphitrite Point] then westerly to 48°51.200’N 125°48.000’W then northerly to 49°6.591’N 125°55.377’W [Lennard Island] then southerly to 48°5.680’N 125°53.374’W [Cox Bay] then following the shoreline to the beginning point. A 97 trap limit per vessel to a maximum 3200 trap limit for the Hole will be implemented for 2019/20 to reduce trap congestion in this area. (Trap Limit)

## 2.8. Trap Haul Restrictions & Soak Times

Restrictions on the frequency that traps may be hauled will be in place in Areas E, G, and H. These restrictions are described below. At all other times and areas, traps may be hauled only once per day.

### 2.8.2 Area E

A calendar week is described as 00:01 hours Sunday to 23:59 hours Saturday evening. The following is based on a calendar year;

All Common Areas (Area 21, 22, 25, 26, 121, 123-1, 125 and 126):

- From February 1 to April 30, harvesters may only haul their traps once per calendar week.

Sooke (20-1 to 20-2)

- From February 1 to April 30, harvesters may only haul their traps once per calendar week.
- From January 1 to January 31 and from May 1 to December 31, harvesters may only haul their traps three times per calendar week.

Sooke (Subareas 20-3 to 20-7)

- From February 1 to April 30, harvesters may only haul their traps once per calendar week.
- From January 1 to January 31, and from May 1 to December 31, harvesters may only haul their traps twice per calendar week.
- .

Tofino (All Areas unique to the Tofino option: Areas 23, 24, Subareas 123-2 to 123-9, and Area 124)

- From January 1 to March 31 harvesters may only haul their traps once per calendar week.

Quatsino (Subareas 27-1 to 27-6, and Area 127)

- From March 15 to May 15, harvesters may only haul their traps once per calendar week.

Quatsino (Subareas 27-7 to 27-11, known as the Quatsino Trap Limit Area)

These areas currently do not have a weekly haul restriction.

### 2.8.3 Area A

Area	Dates	Status	Comments	Haul
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				<b>Restrictions</b>
A	Jan 1 – Mar 1 & Aug 1 – Dec 31	Open	All areas excluding McIntyre Bay and Naden Harbour	Not greater than 18 days
	Mar 1 – Aug 1	Potential Closure	Fishery is closed or Soft-Shell Fishing Program	
A_McIntyre Bay	Sept 1 – Mar 1	Open	Half trap vessel limit on all dates <u>EXCEPT</u> Nov. 2 – Dec. 31	
	Mar 1 – May 1	Potential Closure	Fishery is closed or Soft-Shell Fishing Program	
	May 1 – Sept 1	Closed	Conservation, FSC & Rec Harvest Access closure	
A_Naden Harbour	Jan 1 – Mar 1 & Oct 15 – Dec 31	Open	Ring-nets only	
	Mar 1 – Oct 15	Closed	Fishery is closed or Soft-Shell Fishing Program	

#### 2.8.4 Area B

<b>Area</b>	<b>Dates</b>	<b>Status</b>	<b>Comments</b>	<b>Haul Restrictions</b>
B	Jan 1 – Mar 1 & Dec 1 – 31	Winter Closure		Closed

	Mar 1 – Nov 30	Open		Not greater than 18 days
B_Seasonal Areas (see exceptions below)	Oct 1 – Nov 30	Open	Closed Dec 1 to Sept 30	Not to exceed once per day
B_Area 6 Seasonal Areas	Oct 1 – Nov 30	Open	Closed Dec 1 to Sept 30 Half Gear Restriction	
B_Nass Estuary Seasonal	Oct 1 – Nov 8	Open	Closed Nov 9 to Sept 30 Half Gear Restriction	
Khutzeymateen Inlet Seasonal	Oct 1 – Nov 15	Open	Closed Nov 16 to Sept 30 Half Gear Restriction	
B_Kitkatla	March 1 until after Herring Fishery	Closed	Opens after the spring Herring Roe on Kelp Fishery Half Gear Restriction for first 14 days	Not to exceed once per day for the first 14 days of the fishery

### 2.8.5 Area E

Area	Dates	Commercial Haul Restrictions:			
		1 Haul / Day	3 Hauls / Week	2 Hauls / Week	1 Haul / Week
E_Common*	May 1, 2019 - Jan 31, 2020	X			
E_Quatsino option area		X			
E_Sooke 20-1 & 20-2			X		
E_Sooke 20-3 to 20-7				X	
E_Common*	April 1 - April 30, 2019. Feb 1 - March 31, 2020				X
E_Quatsino option area					
E_Sooke 20-1 & 20-2					
E_Sooke 20-3 to 20-7					
E_Tofino option area	Jan 1 - Mar 31				X
	April 1 - Dec 31	X			

\* The March 15 to May 15 once per week haul restriction.

### 2.8.6 Areas G, H, I, J

Area	Dates	Status	Haul Restrictions
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G	Jan 1 – Jan 14 & April 16 – Dec 31	Open	Not to exceed once per day.
	Jan 15 – April 15	Open	Not to exceed once per week
H	Jan 1 – Jan 14 & Apr 16 – Dec 31	Open	Not to exceed once per day.
	Jan 15 – Apr 15	Open	Not to exceed once per week.
H_Seasonal Areas	Please refer to Section 5.6		
I	Jan 1 – Jun 15 & Nov 30 – Dec 31	Closure	N/A
	June 15 – Nov 30	Open	Not to exceed once per day. Daylight only.
J	Jan 1 – July 15 & Nov 30 – Dec 31	Closure	N/A
	July 15 – Nov 30	Open	Not to exceed once per day. Daylight only.

## 2.9 Trap Size Limit

The total volume of traps fished for Dungeness crab will not exceed 400 litres. Harvesters requesting openings to fish for king crab will be permitted to fish traps in excess of 400 litres if desired.

### 2.9.3 Area I and J Trap Size Limit

Trap size will have a diameter no greater than 44 inches (112 cm) and a height no greater than 14 inches (36 cm); this is 355 litres in volume. This new maximum trap size was phased in over a four-year period beginning in 2008 for Areas I and J.

## 2.10 Escape Holes

All traps fished in all areas must have two escape rings of 105 mm or larger in diameter situated not more than 100mm below the top of the frame. This new requirement for escape holes was phased in over a three-year period beginning in 2009.

## 2.11 Biodegradable Escapement Mechanisms

Every trap fished under the authority of a crab licence eligibility must be equipped with a biodegradable escape mechanism in the form of a rot cord, rot panel, or rot panel alternative as described below. These mechanisms are designed to minimize the effects of ghost fishing by lost or abandoned traps. In order to be effective these mechanisms must be under **tension**. These mechanisms do not apply to ring nets.

### 2.11.2 Rot Cord

Rot cords may only be used on traps with a rigid frame, a freely opening hinged lid, and a **volume less than 400 litres**. (400 litres is approximately equal to a circular trap 117 cm in diameter and 36 cm high.) The trap lid must be secured by a loop of no greater than **#120 untreated cotton twine** such that the trap lid will open freely when the rot cord is broken. The rot cord must be attached to the rubber strap by a cow hitch and attached to the hook by a cow hitch (Appendix 6). If the hook is attached permanently to the trap, the trap lid shall close using a single loop of the rot cord from the rubber strap. The rubber strap shall be under tension. No other fastenings may impede the hinged lid of the trap from opening. **The opening area created by the hinged lid must exceed the rot panel area requirement (described below), or exceed the size of the largest trap entrance.**

### 2.11.3 Rot Panel

All traps without hinged lids secured by a rot cord (as described above), must have a biodegradable (rot) panel. The rot panel must consist of a section in a trap side wall that has been laced, sewn, or otherwise secured by a single strand of no greater than **#120 untreated cotton twine**, such that the entire panel remains under **tension** when the panel is intact but on deterioration or parting produces an unrestricted opening. In Areas A and B, the opening must exceed a square 35cm by 35cm to protect king crab. In all other areas the opening must exceed a square 11cm by 11cm.

### 2.11.4 Rot Panel Alternative

Soft-web traps requiring a rot panel may use the following alternative:

A trap side wall must contain a cut in the web greater than 20cm in length. The cut shall be made in a “V” pattern with each leg of the “V” greater than 11 cm in length. A single strand of no greater than **#120 untreated cotton twine**, must be used to lace the cut in the web such that the entire panel remains under tension when the panel is intact but on deterioration or parting produces an unrestricted triangular opening no less than 11 cm on each side.

## 2.12 Hanging Bait

The use of hanging bait is prohibited in Areas B, H, I, J and the portion of Area E Tofino Option known as the Tofino Trap Limit Area.

Hanging bait is permitted in management areas A, G and the portions of Area E outside of the Tofino Trap Limit Area.

All bait in hanging bait prohibited areas must be placed within a hard plastic bait cup with a screw-top lid. The bait cups may have holes drilled in them but holes can be no larger than 8 mm in diameter.

All other bait containers, (i.e. bait cages) are not permitted in the hanging bait prohibited areas. Prohibiting the use of hanging bait in areas where it remains permitted is under consideration. The use of hanging bait is said to increase trap catches of soft, undersized, and female crab, which could pose a conservation concern.

### **2.13 Maximum Soak Time of 18 days**

No person shall set a trap and leave the trap in the water for more than 18 consecutive days without lifting the trap from the water and removing all of the crab from it. For more soak time details please see Section 2.8.

### **2.14 Daylight Fishery - Areas H, I, and J**

The setting and hauling of crab traps is permitted only between one hour before sunrise and one hour after sunset in Areas H, I, and J.

### **2.15 Bait Ban in Area J Removed**

Since 2017, the bait ban for the first 2-day of the Area J fishery has been removed. This program will continue and the impacts of this change will be evaluated.

### **2.16 Packers, Barges and Mother Ships**

All crab taken under authority of a crab licence shall be transported to land by the vessel named in the licence. All crab traps, holding cages, lines and buoys used by the crab licensed vessel, shall be transported by the vessel named in the licence to and from land, with the exception noted below.

In **Area I**, harvesters may use another vessel to bring traps, holding cages, lines, and buoys to the grounds on opening day, June 15, 2019 and/or August 1, 2019 to bring the remainder of the trap limit onto the grounds.

In **Areas J**, harvesters may use another vessel to bring traps, holding cages, lines, and buoys to the grounds on **opening day only**. Opening day will be July 15, 2019 in Area J. **All gear must be fished from the licensed vessel.**

### **2.17 Best Management Practices**

#### General:

1. Release all by-catch species with the least possible harm. Retention of flatfish, finfish, and soft, female, and/or undersized Dungeness crab is prohibited.

2. To improve First Nations FSC access and to reduce conflicts, keep gear away from areas fronting First Nation reserves.
3. Buoy lines should be appropriate for water depth and tide cycles.
4. Keep crab buoys brightly painted and in accordance with licence conditions, (section 4.4).
5. Minimise wake in harbours, particularly at boat launches, marinas and other wharves.
6. Avoid pulling crab traps through beds of eel grass.
7. If commercial harvesters are replacing active crab traps with ones that have been inactive for more than 18 days they must transfer the RFID chip from the active trap to the replacement trap. This RFID replacement activity will help minimise violation errors associated with over-soak and trap allocation calculations.

#### Area A

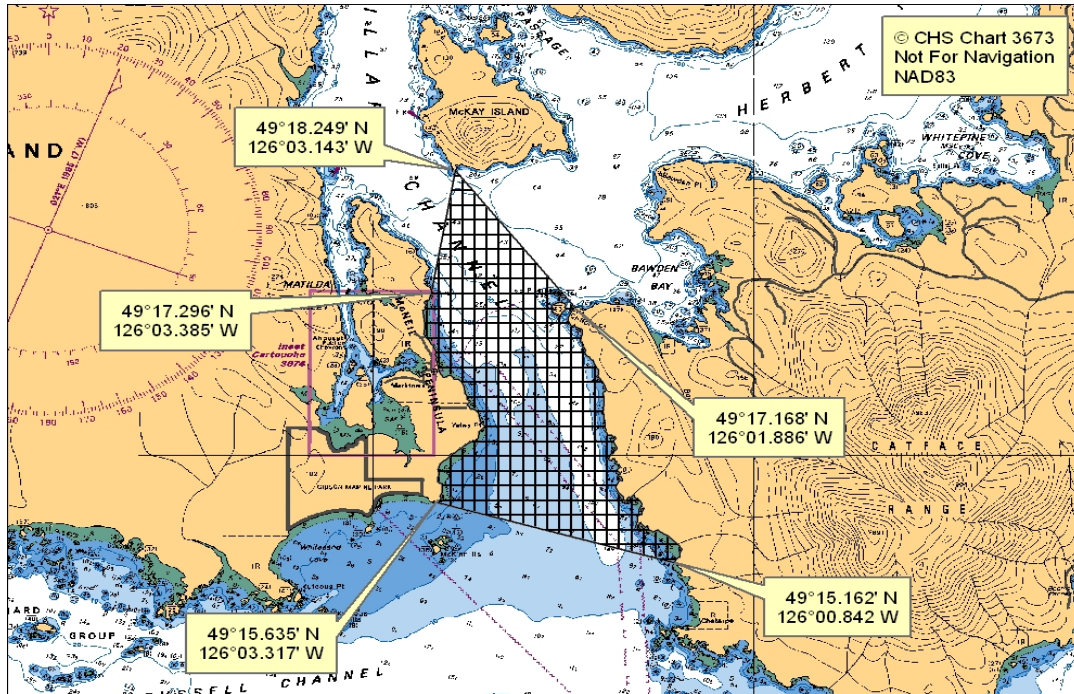
- For several years now, a voluntary ferry lane closure between Prince Rupert and Skidegate has been in effect year-round, (see map in Appendix 7). This closure was developed in cooperation with the Area “A” Crab Association, the B.C. Ferries Corporation and the Department. To ensure continued participation success, Ecotrust Canada (the Area A electronic monitoring service provider) also provides immediate software feedback to harvesters deploying traps within this closure and further notifies them with monthly vessel compliance summary updates.
- To avoid gear conflicts with Mid-water Trawl vessels, harvesters fishing in the vicinity of Goose Bank are being requested to limit the depth to which they fish. The current depth limit is approximately 40 fathoms. For a more current update on this agreement please contact Dan Edwards of the Area “A” Association.
- To further minimise gear conflicts, co-development of best practices with the Area F Troll fleet is anticipated.
- The Hecate Strait Glass Sponge Reef areas were finalised and implemented in February 2017. (See Appendix 7).

#### Area E – Port Renfrew (20-2)

- To minimize noise, harvesters are requested to refrain from fishing near communities between the hours of 10pm and 6am.

#### Area E - Tofino

- Commercial crab gear is to be removed or not set during the months of June, July, and August in the area indicated on the map below. The purpose of this best practice is to minimise gear conflict issues associated with First Nations FSC Salmon fishing.



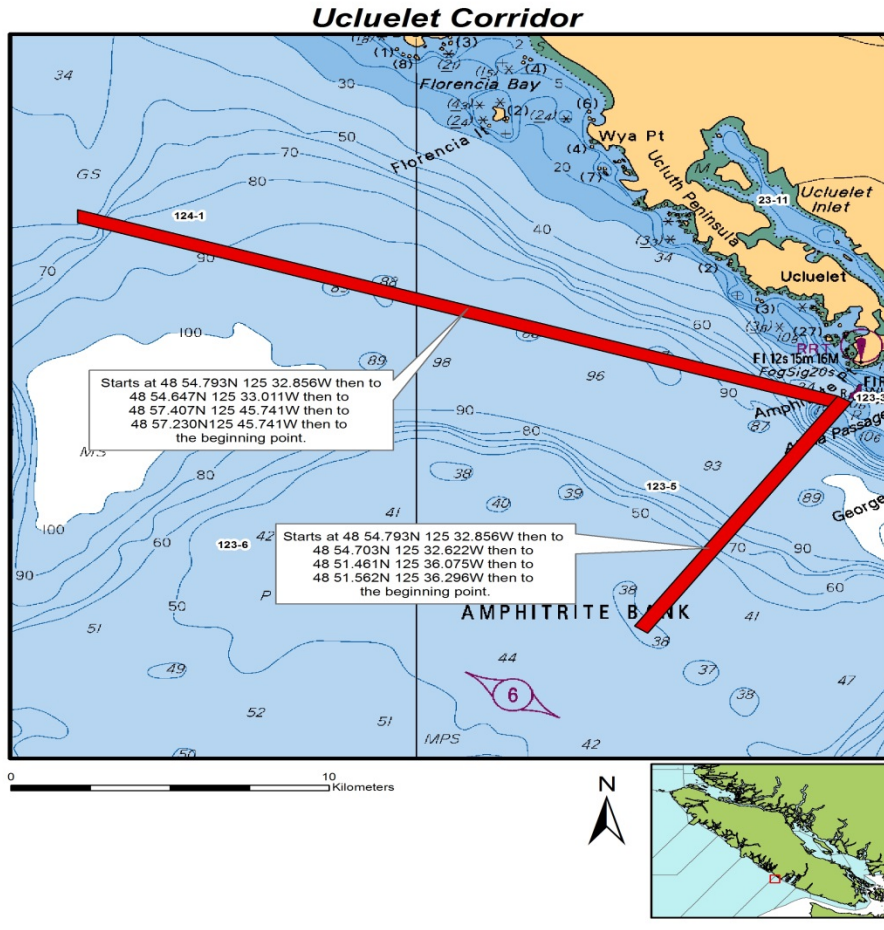
Area E Tofino.

To reduce gear impact for vessels leaving or returning to Ucluelet, the area E crab harvesters have agreed to not place crab floats in the described corridor

- Starts at 48 54.793N 125 32.856W then to 48 54.647N 125 33.011W then to
- 48 57.407N 125 45.741W then to
- 48 57.230N 125 45.741W then to
- The beginning point.

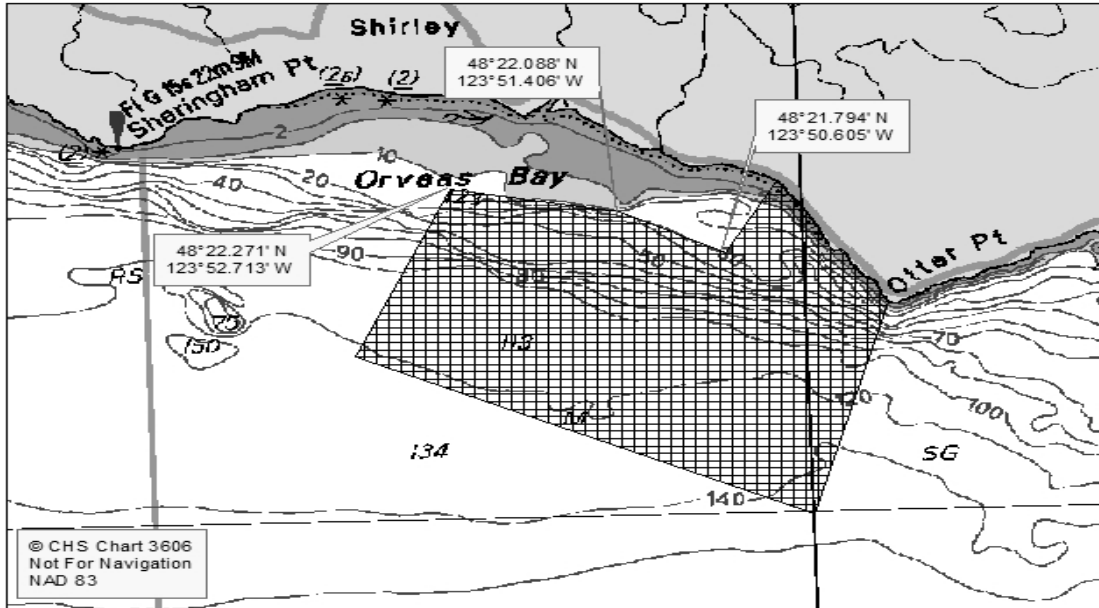
And

- Starts at 48 54.793N 125 32.856W then to
- 48 54.703N 125 32.622W then to
- 48 51.461N 125 36.075W then to
- 48 51.562N 125 36.296W then to
- the beginning point



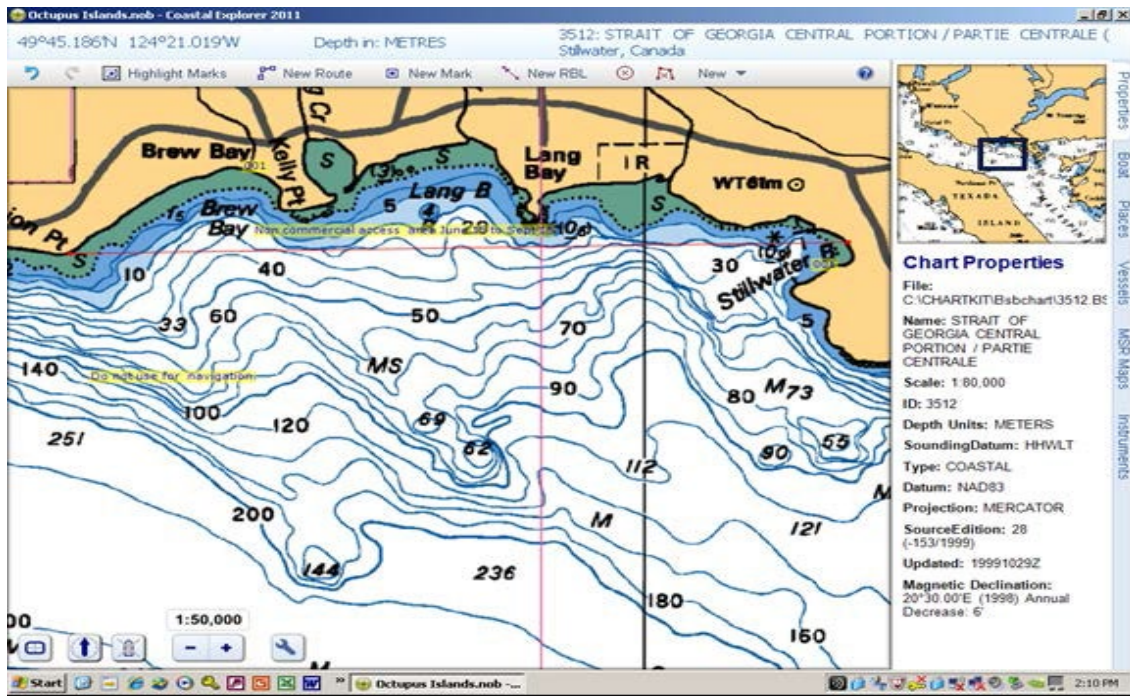
### Area E – Sooke

- Set string gear in an East- West fashion or paralleling gear already set with the shoreline.
- Strings of gear should not converge at the ends
- Mark the West ends of all string gear with trailer corks.
- When fishing in 90 foot depths or less, the distance between ends of strings should not exceed 250 fathoms or 1500 feet.
- Do not exceed the harbour cap of 300 traps for either Pedder Bay or Becher Bay.
- When the following area is open to recreational harvest of salmon, commercial crab fishing is not to occur from June 15 through to September 8 in waters deeper than 90 feet from Otter Point to Sheringham Point described as starting at 48° 21.794'N and 123° 50.605' West, Northerly to a mid-point at 48°22.088' N and 123° 51.406 W and then to 48°22.271 N and 123° 52.713 W as outlined below. The purpose of this best practice is to minimise conflicts with recreational salmon harvesters during the summer Chinook fishery.

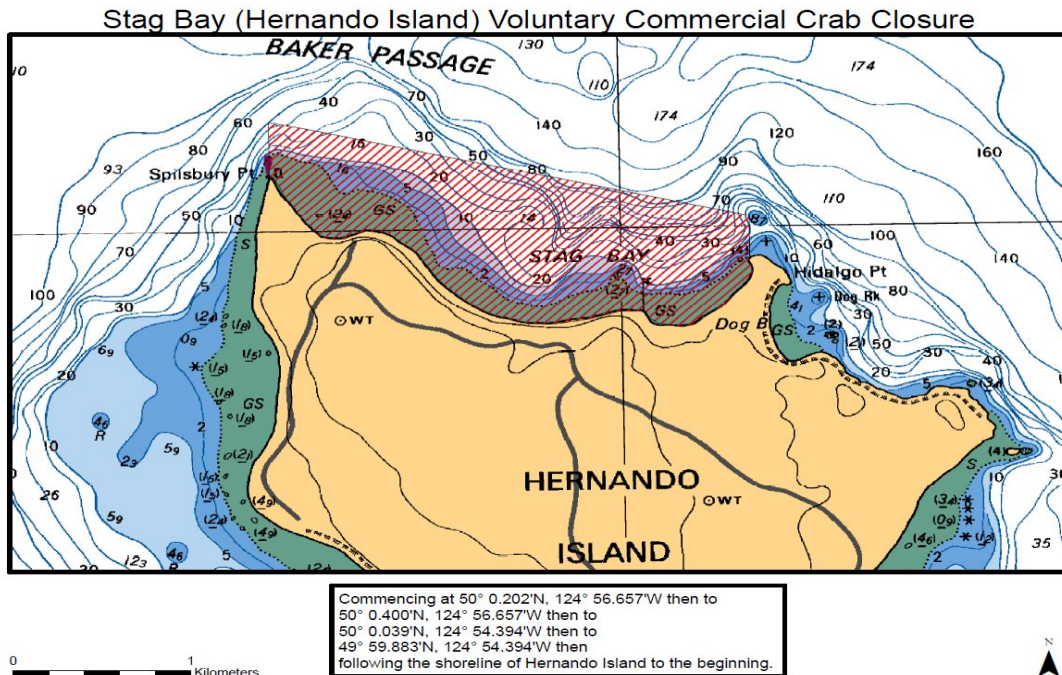


Area G

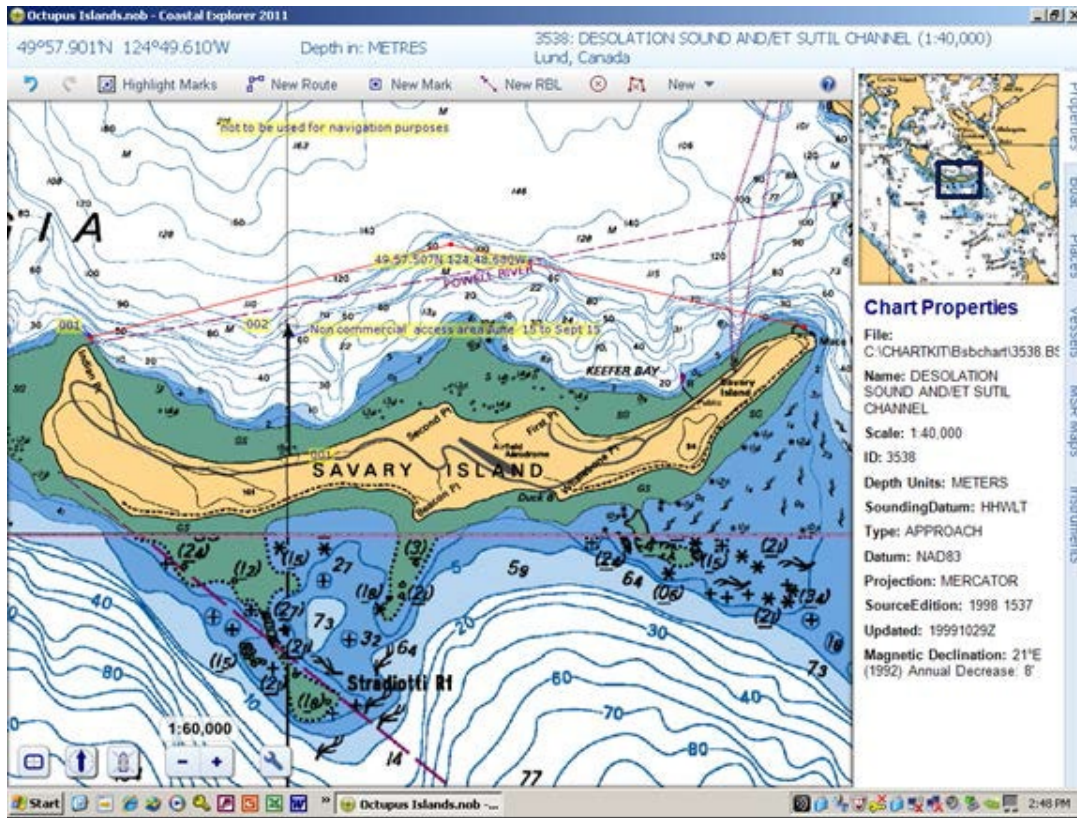
- To improve First Nations FSC access, harvesters are being requested to keep gear away from the areas fronting First Nation reserves.
- To minimize gear tangles, set gear in a straight line or in a way so other harvesters can tell where the gear is set.
- To minimize noise, harvesters are requested to refrain from fishing near communities between the hours of 10pm and 6am.
- Commercial crab gear is to be removed or not set between June 15 and September 15 in Brew Bay and Lang Bay inside of a line drawn from Albion point 49.46.014'N and 124.23.729'W then Southerly to a point in Stillwater Bay at 49.46.054'N and 124.18.687'W (see map below).



- Area G harvesters have agreed as part of their Best Management plans to not set their gear in Stag Bay at Hernando Island at a location starting at the Spilsbury Point Commencing at 50° 0.202'N, 124° 56.657'W then to 50° 0.400'N, 124° 56.657'W then to 50° 0.039'N, 124° 54.394'W then to 49° 59.883'N, 124° 54.394'W then following the shoreline of Hernando Island to the beginning from March 15 to September 15.



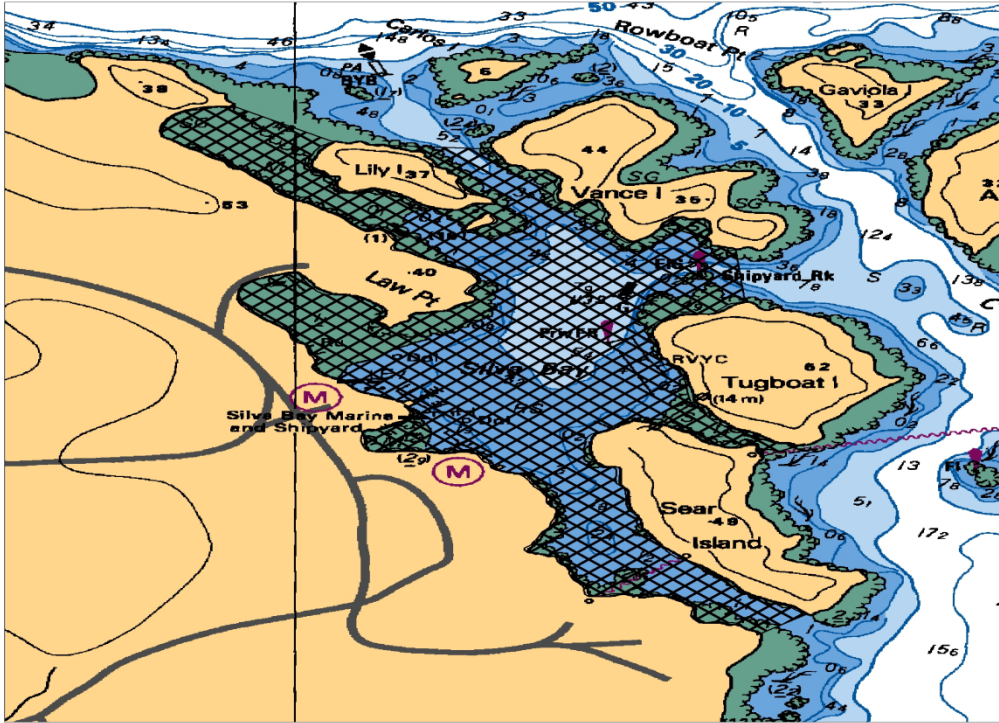
- Commercial crab gear to be removed or not set between June 15 and September 15 near Savary Island inside a line starting at 49.57.022N and 124.51.607'W Easterly to a point at 49.57.508,N and 124.48.680'W then to Mace Point at 49.57.093'N and 124.45.795'W.



## Area H

- Fishers are reminded that in the Sidney Channel area there is a minimum **20LT float size regulation** in place to help prevent entanglement with recreational Salmon Fishers. The area running along the eastern side of James Island and southwards is of particular concern. Within this multi-user area, crab floats must remain on the surface at all times.
- Fishers are also asked to keep crab floats clear of **BC ferries traffic lanes** and docking facilities. There are also regulated **No float zones** in both Ganges and Tsehum Harbour (see Appendix 7) to allow for the safe transit of motor vessels. Failure to respect **traffic lanes** or **no float zones** may result in seizure and or forfeiture of the problem gear.
- Vessel VRN numbers must be of the correct size and contrasting background for the length of the commercial vessel, and must be clearly displayed with an **unobstructed view** as to allow for a clear aerial sighting on both the port and starboard.
- Commercial crab gear to be removed or not set from May 1 to August 31 in the waters of Silva Bay on Gabriola Island described as beginning at 49°09.500'N 123°42.175'W then to 49°09.434'N 123°42.020'W then to 49°09.424'N 123°41.796'W then southerly following the shoreline to 49°09.258'N 123°41.452'W then to 49°09.154'N 123°41.436'W then southerly following the shoreline to 49°08.925'N 123°41.352'W then

to 49°08.900'N 123°41.426'W then southerly following the shoreline to 49°08.640'N 123°41.344'W then to 49°08.600'N 123°41.424'W then northerly following the shoreline to the beginning point.



### 3 OPEN TIMES

With exception of those permanent and seasonal closures noted in Section 5 of this plan, the closed time for the harvest of crab shall be varied to permit fishing from April 1, 2019 to March 31, 2020. Harvesters are advised to check local area charts and public notices for no fishing zones or no access zones for navigational and military purposes.

### 4 CONTROL AND MONITORING OF COMMERCIAL FISHING ACTIVITIES

#### 4.1 Octopus Retention

All harvesters are required to accurately report information about octopus caught and retained in their logbooks. There is no longer a separate octopus logbook. Octopus catch information is now included as part of the Crab by Trap Logbook and all octopus catch must be recorded. This information is required to develop a further understanding of the distribution and population strength of octopus species caught by commercial trap harvesters. Octopus may not be retained if caught in octopus closure areas. All octopus caught in octopus closure areas must be removed from the trap and released immediately in the location where they were caught, in a manner that will cause least harm. See Section 5.8 for further information.

## **4.2 Traps**

All crab traps fished in **Area A** must be marked either by engraving the vessel registration number (VRN) on the escape hole strut, or on the tunnel, or by applying a brightly coloured plastic tag bearing the VRN to the trap. The VRN on the trap shall match the registration number of the vessel fishing the gear. The Crab Sectoral Committee and Fisheries and Oceans Canada suggest that harvesters in all areas mark their traps with their VRN by engraving or stamping the VRN into the tunnel or escape hole strut. Traps recovered without proper identification could be seized or destroyed.

No person shall fish crab with any gear except ring nets in Naden Harbour (Subarea 1-4).

## **4.3 Trap Tags**

Approved trap tags are required on all commercial crab traps fished in B.C. These include RFID chips for all Licence Areas, and plastic tags for Licence Areas B, E, G, H, I, and J

### **4.3.2 Radio Frequency Identification (RFID) Chips:**

For vessels participating in an electronic vessel monitoring program, (see section 4.8.3) radio frequency identification (RFID) chips are required. One RFID chip shall be attached to each trap, or to the buoy, when using single buoyed gear. Vessel operators are required to scan every RFID chip as the trap is hauled on-board, with an RFID chip scanner, to record RFID information from each trap hauled. All aspects of RFID chip procurement, distribution, administration, and data entry are the responsibility of the vessel owner/licence holder to arrange with the service provider.

Vessel operators are required to use and scan only those RFID chips registered in the vessel's inventory. Detailed requirements for RFID chip inventory management are provided in Appendix 9 (Annex 1).

Chips shall be replaced if they become unreadable by the scanner. When a trap is taken out of the water and replaced, the vessel master is responsible for switching the RFID chips so that all traps in the water are fitted with RFID chips in that vessel's inventory for the current year.

When RFID chips are replaced, only the valid chip shall remain on the trap. Old chips must be removed and destroyed and replaced with the replacement chips at the first opportunity the gear is hauled. Only traps tagged with working (readable) RFID chips are permitted to be on-board the licensed vessel utilizing electronic monitoring. For vessels utilizing on-board observers instead of EM, only plastic trap tags are required.

### **4.3.3 Plastic Trap Tags**

In order to help ensure vessel trap limits are adhered to in the commercial crab fishery, new DFO approved plastic trap tags that are unique to each vessel are required in Areas B, E, G, H, I, J for each fishing season.

The vessel master shall arrange to have tag numbers for tags that meet the requirements of the Department entered into a database. Data delivery requirements for plastic tags are further described in Appendix 9.

In Areas B through H, each vessel will be issued a total number of tags equal to their trap limit plus 10% to allow for replacement of lost traps. In Areas I and J, each vessel will be issued a total number of tags equal to their trap limit plus 20%.

If the vessel master requires more replacement tags than the 10% or 20% allotted for lost traps, the vessel master must contact their local area crab manager for instructions on obtaining more tags. The crab manager will then contact the service provider regarding issuing a complete new set of replacement tags. New replacement tags shall be marked with the letters “RP” and be a different colour than the original set issued. New replacement tags shall also indicate the licence year and be unique to each individual vessel. Old tags must be removed and replaced with the replacement tags at the first opportunity the gear is hauled. When trap tags are replaced, only the valid tag shall remain on the trap. All the old tags must be returned to the nearest DFO office within 21 days of the new tags being issued.

Two trap tag colours for Area E Tofino harvesters for traps fished inside and outside of Area 24 are no longer required. In 2019, the trap tag program will be further reviewed.

#### **4.4 Buoys**

Buoys must exceed a minimum diameter of 12 cm and have a volume greater than 2.5 litres. (This is approximately equivalent to a cylinder 12 cm in diameter and 22cm long or a sphere 17cm in diameter.) All buoy lines, trap lines and ground lines shall be non-floating so that the lines remain below the surface of the water in order to minimize navigational hazards. This regulation is in place to avoid potential gear conflict between resource user groups. Utility cans, bleach bottles and other domestic containers are not permitted.

##### **Buoy Registration**

Area A: Licence holders fishing within area “A” must register buoys with a unique colour combination with their service provider.

Area G & E (Sooke): Licence holder fishing within area G and the area E-Sooke trap limit area must register buoys with a unique colour combination with the DFO Area Crab Manager. A colour photograph is required.

Area E (Tofino): Licence holder fishing within area E-Tofino trap limit area must register buoys with a unique colour combination with the local DFO C&P Department. A colour photograph is required.

Other Areas: Discussions will occur with harvesters regarding requiring vessels to register individual buoy colours such that gear belonging to each vessel can be easily identified.

A standards document on Buoy registry programs will be developed sometime in the near future.

## **4.4.2 Special Buoy Requirements**

### **4.4.2.1 Subarea 19-5 - Waters of Sidney and Cordova Channels**

Within the waters of Sidney and Cordova Channels, larger minimum buoy sizes have been adopted to improve gear visibility in these multi-use channels. A minimum buoy size of 10 litres is now required for commercial crab trap gear. This is equivalent to a buoy of 26.7 cm diameter. This minimum size is also recommended to recreational trap harvesters in the area.

The portion of Subarea 19-5 in which this requirement applies has been set to ensure that all channel areas and their approaches will have improved trap gear marking, makes use of landmarks that are distinguishable by commercial and recreational boaters without the need for electronic aids, and are locations which can be located on a chart. The southern boundary extends from Cowichan Head on the east shore of Saanich Peninsula to D'Arcy Shoals to the southernmost point of Sidney Island. The northern boundary extends from a point on Saanich Peninsula true west of the light at the north end of James Island, to the light on the north end of James Island, then to the light on the U2 navigation buoy in Sidney Channel, then true east to Sidney Island.

It should be noted that a poorly marked recreational fishing buoy is just as difficult to see and as dangerous as a poorly marked commercial trap buoy. The overall intent is to work towards improved buoy marking in the commercial crab fishery and in the recreational crab and prawn fisheries.

All trap harvesters are recommended to set gear in such a way that channel areas remain free of buoys and lines in order to provide for safe navigation, while allowing for the continuation of the trap fisheries while minimizing conflicts with other user groups.

No further action with respect to the request for closure of commercial and recreational crab fisheries in Sidney and Cordova Channels will be undertaken until the extent of the mitigation provided by improved buoys can be determined. Discussions with Transport Canada are on-going for possible changes in 2019.

## **4.5 Buoy and Trap Lines**

All **buoy lines** must be of a non-floating material so that the lines remain below the surface of the water while fishing, to minimize navigational hazards. String gear is permitted with the following exceptions:

### **4.5.2 Areas A, J, and E (Tofino Trap Limit Area) – Single Traps and Buoys**

A buoy and buoy line shall be attached to each trap fished in Areas A, J and E Tofino in Areas 24-1 to 24-14. The traps must not be connected with lines.

## **4.6 Standard Buoy Marking**

The VRN must be painted, branded or affixed to each buoy, such that it is visible at all times without raising the gear from the water. The VRN shall be in solid block Arabic numerals, without ornamentation, no less than 75 mm in height and in a colour that contrasts with their

background. The VRN on the buoy shall match the registration number of the vessel licensed to fish the gear for crab.

#### **4.7 Holding Cages**

In 2019, additional language will be included in the Commercial Conditions of Licences clarifying the marking and use requirements of holding cages. Further amendments may be developed throughout the year following consultation with harvesters.

##### **4.7.2 Marking of Holding Cages**

All holding cages must be identified with a buoy with the registration number of the crab licensed vessel which harvested the impounded crabs. Harvesters must maintain holding cages so that crab mortalities are minimized. Holding cages must not be left in the water for more than 18 consecutive days without lifting the trap from the water and removing all of the crab from it. If holding cages are unmarked, or if significant crab mortalities are observed in cages, the crabs may be seized or released by Fishery Officers.

##### **4.7.3 Transportation of Holding Cages**

Each licenced vessel must transport its own holding cages to and from land.

##### **4.7.4 Storage of Holding Cages**

Holding cages containing crab may only be left unattended if the area is open to fishing and within an area that the license holder is eligible to fish unless tied to the licensed vessel or to a dock. Holding cages cannot be stored in dioxin and furan closure areas.

#### **4.8 Fishery Monitoring Programs**

Full fishery monitoring, either through an at-sea observer or an electronic monitoring (EM) system, has been required in this fishery since April 1, 2006. This requirement will continue for the commercial fishery. For the 2019 season, vessel owners/licence eligibility holders in all crab management areas may elect one of the following two options for full (100 percent) fishery monitoring:

- Participation in an at-sea observer monitoring program, ; or
- Participation in an approved EM program.

During 2019, other monitoring programs will provide reports to Fisheries and Oceans Canada on plastic trap tags for all licence areas except A, to monitor compliance with trap limits, and fishing activity (hails) for Area A. In all crab management areas, harvest logbooks and on-grounds biological sampling are also required.

Prior to licence issue, the vessel owner/ licence eligibility holder must sign up with the approved program service provider chosen for each of these programs by the area representative and/or the commercial harvesters for that area.

For more information on these programs, please contact a local area manager or see the 2019/20 Fishery Monitoring and Catch Reporting Program Standards (Appendix 9).

#### **4.8.2 At-sea Fishery Monitoring**

Vessel owners/licence eligibility holders electing to meet the full monitoring requirements by participating in an at-sea fishery monitoring program must ensure the program includes a method to accurately monitor each individual trap haul, to accurately record trap identification, and to accurately record fishing activity, fishing location, date, and time. At-sea observers must participate in a training program specific to crab trap monitoring, and must be designated under Section 39 of the *Fishery (General) Regulations*. If vessels opt to utilize an at-sea observer program instead of an EM program they must contact the Department for a complete list of requirements. Data delivery requirements for an at-sea observer program are provided in Appendix 9 (Annex 2).

#### **4.8.3 Electronic Monitoring**

The requirement for electronic monitoring (EM), or full at-sea-observer coverage, was established in 2006. To date, all licence holders have elected to participate in an EM program, whereas at-sea observers have been used only on a temporary basis where EM systems were not fully functioning. The rationale for establishing an EM program was to improve compliance with trap limits and to improve accuracy of fishing location data. The EM program also monitors compliance with a range of licence conditions including maximum soak time, area closures, and weekly trap haul restrictions.

Vessel owners/licence eligibility holders electing to participate in an EM program must adhere to the standards provided in detail in Appendix 9 (Annex 1), which includes requirements for system equipment, data collection, and data delivery including compliance reporting. EM equipment must accurately monitor the vessel 24 hours per day, seven days per week while it is engaged in fishing, where fishing is defined as the entire period of time that traps are in the water. Specifically, equipment must accurately monitor vessel position and activity through a GPS, identify trap-hauling activity, and identify individual traps using a radio frequency identification (RFID) chip on each trap (or on each buoy, when using single buoyed gear), and an RFID chip scanner to record RFID information. On behalf of the licence holder, a service provider will install and maintain EM equipment, carry out the required data analysis, and deliver both raw data and summary data including reports of non-compliance to the Department. The service provider must be trained in the requirements of category R and FR licensed fishing vessels as outlined in this IFMP and Conditions of Licence, and approved by DFO, and a single service provider is required for each licence area for the EM program.

The vessel master of a vessel participating in an EM program must ensure the EM system on their vessel is installed and fully operational for the entire period when traps are in the water. The Conditions of Licence reflects the option to participate in these programs and vessel masters must ensure that their Conditions of Licence are met. For a complete description of what meets the requirements for EM programs and data delivery requirements including compliance reporting, please see Appendix 9.

Camera electronic monitoring is required in Area A and B and may be implemented in other areas if overall compliance with non-video systems is poor. Specifically, improved compliance with scanning RFID chips on all traps is needed.

Electronic Monitoring data, including vessel position data, hydraulic data, and individual trap haul locations (RFID chip data), are used by the Department in the proper assessment,

management and control of the fishery. Upon receipt by the Department of electronic monitoring data supplied by the fish harvester in accordance with the 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 prejudice the competitive position of the license holder.

The Department can only release EM data to the reported license holder, and only upon written request.

#### **4.9 On-Board Biological Sampling**

The introduction of a biological sampling component to on-grounds inspections was implemented in 2005. On-board monitoring and biological data collection will occur throughout the 2019/20 fishing season, and must be completed by DFO certified At-Sea Observers. Agents of the service provider will report significant violations of Conditions of Licence immediately to the local crab fishery manager or to the O.R.R. line at 1-800-465-4336.

The biological information collected shall be entered into a Fisheries and Oceans Canada approved database and submitted to the Department in electronic form no later than seven (7) days following the end of the month when data were collected.

For area specific biological sampling details please refer to Annex 5 of Appendix 9.

#### **4.10 Fishery Notification Procedures – Hails**

The requirement for Area “A” trip hails will continue in 2019/20. Data delivery requirements for the hail program are detailed in Appendix 9 (Annex 6).

For all areas excluding area A, daily activity reports that include the vessels location meets hail program objectives. As Area A has a camera program in which all data is stored on harddrives, the hail program will continue to support program objectives.

#### **4.11 Catch and Fishing Data**

##### **4.11.2 Harvest Log Data**

The vessel master/license holder 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 Aquatic Resources Research and Assessment Division’s Shellfish Data Unit.

Since 2018, vessel masters are required to print their name and provide a signature and FIN for every line entry. (See Appendix 5 for a draft example of the new Harvest Log).

To fulfil stock assessment objectives, it is imperative that a very fine resolution of fishing location be reported in this fishery. The vessel master/license holder is responsible for reporting latitude/longitude position on harvest logs in the “location” field for each string or group of traps.

Logbooks meeting the requirements of the Department are available from service providers who, for a fee, will provide the logbook coding and data entry service, thus complying with the requirements for a hard (paper) copy and an electronic copy of harvest data.

The original white page copy of the log and the electronic copy must be forwarded within 28 days following the end of each month in which fishing occurred. This information must be sent to:

Fisheries and Oceans Canada  
Shellfish Data Unit  
Pacific Biological Station  
3190 Hammond Bay Road  
Nanaimo, B.C., V9T 6N7  
Phone: (250) 756-7022 or (250) 756-7306

As an alternative to harvest log provision through a service provider, the vessel master/licence holder may provide a hard copy log in the same form and providing the same particulars as shown in the fishing log sample attached as Appendix 5 Example of Crab Fishery Harvest Log. The vessel master/licence holder must also provide an electronic copy of the harvest data, which is required to be a true and accurate transcription of the hard copy data, delivered on a Shellfish Data Unit approved media. The media will remain the property of Fisheries and Oceans Canada. The electronic copy must be a database table of specific design created by Microsoft Access 2010 (or earlier version).

Contact the Shellfish Data Unit at the above address to obtain the full requirements and acceptable data formats that meet the Conditions of Licence. The hard copy and the electronic copy of the harvest log must be forwarded within 28 days following the end of the month in which fishing occurred. This information must be sent to the above address.

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

#### 4.11.2.1 Submission and Release of Harvest Log Data

The license holder of record, as reported to the Pacific Fishery Licence Unit, is responsible to ensure that the vessel master has completed and submitted a copy of the harvest log data. The Department can only release harvest log data to the reported license holder, and only upon written request.

#### 4.11.2.2 Nil Report for Harvest Log - Licence Issued but Not Fished

In the event that a licence is issued but not fished, the license holder is responsible for submitting a Nil Report for the season. The Nil Report must be submitted prior to the issue 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 license holder constitutes a Nil Report.

FISHERIES AND OCEANS CANADA REMINDS HARVESTERS THAT HARVEST LOGS MUST BE COMPLETED ACCURATELY DURING FISHING OPERATIONS AND SUBMITTED TO THE DEPARTMENT IN ACCORDANCE WITH THE TIMING SET OUT IN CONDITIONS OF LICENCE. DELAY OF COMPLETION OR SUBMISSION OF LOGS IS A VIOLATION OF A CONDITION OF LICENCE.

#### 4.11.2.3 Confidentiality of Harvest Data

Harvest data, including fishing location data supplied through latitude/longitude coordinates, collected for use under the harvest logbooks for shellfish fisheries programs, are used by the Department in the proper assessment, management and control of the fisheries. Upon receipt by the Department of harvest log data and/or fishing location information, supplied by the fish harvester in accordance with the 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 prejudice the competitive position of the license holder.

#### 4.11.3 Octopus

Octopus retention and release information has been incorporated into the crab harvest logbook. A separate log specific to octopus is no longer required. The retention privilege of octopus currently permitted in the crab trap fishery may be reviewed if unsatisfactory compliance with octopus catch reporting requirements occurs.

#### 4.11.4 Fish Slip Requirements

It is a Condition of 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. This includes all crab and octopus retained under authority of the license. The written report shall be posted not later than seven days after the offloading and sent to:

Fisheries and Oceans Canada  
Regional Data Unit  
Suite 200 - 401 Burrard Street  
Vancouver, B.C., V6C 3S4  
(604) 666-3784

## 5 CLOSURES

### 5.1 Navigation Channels and Restricted Areas, *Navigable Waters Protection Act*

The *Navigable Waters Protection Act* (NWPA) is a federal statute designed to protect the public right of navigation by prohibiting the building or placement of works in, on, over, under, through, or across any waterway without approval of the Minister of Transport Canada. The

Navigable Waters Protection Division, which is a directorate of Transport Canada - Marine, is responsible for administering the NWPA.

For Navigational issues, contact Navigable Waters Protection Division, Transport Canada-Marine at (604) 775-8867.

Harvesters are reminded to keep navigation channels clear of buoys and lines. The number of complaints to Transport Canada, the Department's Coast Guard, Conservation and Protection and Fishery Management offices, has significantly increased in recent years. The Tofino area is one area that continues to have issues with respect to the crab fishery and maintaining navigation channels. Maps of these areas are also posted around the Tofino community and specifically at the 4<sup>th</sup> Street dock. The designated navigation channels in the Tofino area are identified in Appendix 7.

There are a number of restricted Areas identified through the Navigable Waters Protection Division. The purpose of the restricted areas described below is to maintain a safe navigation passage for small vessels transiting in and out of the harbour by restricting the use of floats within the prescribed channel. Please note that this restriction is for floats and not traps. However lines to the traps must be made of a non-floating material and kept as close to the bottom as possible. Floats identifying fishing gear shall be of a size and marked in accordance with the appropriate regulations. All fishing gear must have a float of sufficient size such that it will not submerge with tidal or current change.

Regardless of what area it is in, any fishing gear or private mooring buoy that hinders or impedes safe navigation may be removed under the NWPA.

Transport Canada will be implementing further closures for the purpose of safe navigation in other high traffic, high density areas, and subject to further consultation. These may include approaches to Pedder Bay, Nanaimo Harbour, Sidney, and Cordova Channels.

The Navigational restricted area around Roberts Bank/Deltaport/Tsawwassen BC Ferries will continue to be a navigational closure in 2019. The description of this closure is provided below. A map describing this closure is provided in Appendix 7.

The Area "A" Crab Association, through consultations with BC Ferries, has developed a transportation corridor through Area A crab fishing grounds. This route is described in 5.1.2.4. below and shown on a chart in Appendix 7.

### **5.1.2 Restricted Areas**

The restricted areas described below, Ganges Harbour and Tsehum Harbour are reserved for navigation only. Crab floats must remain outside of the restricted area at all times. Maps of the restricted areas are in Appendix 7.

#### **5.1.2.1 Ganges Harbour, Chart 3478, NAD 83**

The channel is 110 meters wide by two nautical miles long; bearing 308° true inbound and 128° outbound. The entrance to the channel is just off Sister Island and Ganges Shoal in 12.5 meters of water at LLW. The north side of the channel follows the marked submarine cable for approximately 2/3 its length. The channel ends inside the harbour at 90° to the second green navigation light off of the fuel dock in approximately 5.5 meters of water at LLW. At present, there are no navigational marks for this channel.

Restricted area description:

Outer North, Latitude 48°50.096, Longitude 123°27.191'W  
Outer South, Latitude 48°50.057'N, Longitude 123°27.251'W  
Inner North, Latitude 48°51.134'N, Longitude 123°29.241'W  
Inner South, Latitude 48°51.127'N, Longitude 123°29.367'W

5.1.2.2 Tsehum Harbour, Chart 3476, NAD 83

A dogleg channel approximately 112 meters across at the most Easterly point, which is located at the 10m LLW contour mark on chart 3476 on the following locations:

North East point Latitude 48°40.234'N, Longitude 123°23.850'W  
South East point Latitude 48°40.183'N, Longitude 123°23.916'W  
Bearing 290° True Inbound  
Bearing 110° True Outbound

Restricted area description:

Travelling westerly for approximately 1050 meters the north side of the channel is bounded by the starboard hand red buoy showing QR directly across from the breakwater, and further into the harbour by the Starboard hand day marks (red triangles). The Southern side of the channel is in line with the northern tip of the breakwater at the entrance to Tsehum Harbour.

At latitude 48°40'25"N / 123°24'33"W is on a transit from the marked wreck on the south shore to the small Islet just south of Kingfisher Point. The channel turns north and narrows to approximately 30 meters, staying within the bounds of the marked navigation channel. The Channel terminates at its northern end at latitude 48°40'43"N, longitude 123°24'45"W which is at the port hand day mark (square green/white).

5.1.2.3 Roberts Bank/Deltaport/Tsawwassen BC Ferries Terminal and Proposed Roberts Bank Terminal 2 Project

To ensure and maintain a safe approach for deep-sea vessels, ferries and berthing tugs transiting in and out of the Roberts Bank/Deltaport and BC Ferries terminal, crab fishing is prohibited within the area described in Section 5.7.2.2 and shown on a map in Appendix 7.

Port Metro Vancouver proposes the construction and operation of a new three-berth marine container terminal located at Roberts Bank in Delta to be located next to the existing Deltaport and Westshore Terminals. This proposed project known as Roberts Bank Terminal 2, is undergoing an environmental assessment by a federal review panel to identify and evaluate potential effects associated with the construction and operation of the Project (e.g. proposed 110ha+ infill and associated vessel exclusion zone) and to develop mitigation measures that will be used to avoid and/or minimize potential negative effects. Should this project proceed, further stakeholder consultation would be required. Parties interested in providing input for consideration by the Review Panel are encouraged to consult the Canadian Environmental Assessment Agencies project-specific web site at : <http://www.ceaa-acee.gc.ca/050/details-eng.cfm?evaluation=80054> or by sending an email to RobertsBank@ceaa-acee.gc.ca.

Additional information can be found on the Port Metro Vancouver website: [www.robertsbankterminal2.com](http://www.robertsbankterminal2.com)

#### 5.1.2.4 Dogfish Bank BC Ferries Lane

A one nautical mile wide corridor, one-half nautical mile on either side of a line between 53° 56.0' N, 130° 55.7' W and 53° 45.3' N, 131° 16.2' W Then one-half nautical mile wide corridor, with one-quarter nautical mile on either side of a line between 53° 45.3' N, 131° 16.2' W and 53° 39.9' N, 131° 26.2' W. This half-mile corridor is eight miles long and traverses "Dog's Head" After this, another one nautical mile wide corridor, with one-half nautical mile on either side of a line between 53° 39.9' N, 131° 26.2' W and 53° 27.58' N, 131° 49.3' W.

For a complete description of all points that form the boarder of this corridor see the chart in Appendix 7.

## 5.2 Haida Gwaii - Area A

### 5.2.2 Area A Year Round Crab Closures

The following areas are closed permanently to commercial crab harvesting:

#### 5.2.2.1 Portions of Area 2:

##### Subarea 2-1

Those waters of Skidegate Inlet and adjacent waters lying westerly of a line that begins at 53°25.854'N 131°54.640'W [Lawn Point] then southerly following the surfline to 53°15.632'N 131°46.232'W [surfline] then true west to 53°15.632'N 131°49.290'W [Spit Point] and easterly of the meridian passing through 132°16.966'W at McLellan Point (First Nations FSC and Recreation Closure).

##### Subarea 2-2

Those waters inside a line that begins at 53°15.632'N 131°49.290'W [Spit Point] then true east to 53°15.632'N 131°46.232'W [surfline] then southerly following the surfline to 53°06.533'N 131°38.748'W [Gray Point] then northerly following the shoreline to the beginning point (First Nations FSC and Recreation Closure).

##### Subarea 2-3

Those waters of Cumshewa Inlet and adjacent waters lying westerly of a line that begins at 53°06.533'N 131°38.748'W [Gray Point] then southerly following the surfline to 52°57.832'N 131°32.897'W [surfline] then true west to 52°57.832'N 131°36.199'W [Skedans Point] and easterly of the meridian passing through 131°50.320'W at Conglomerate Point (First Nations FSC and Recreation Closure).

##### Subarea 2-4

Those waters of Cumshewa Inlet and adjacent waters lying westerly of the meridian passing through 131°50.320'W at Conglomerate Point and easterly of a line that begins at

53°01.476'N 131°57.690'W [near Barge Point] then to 53°00.859'N 131°55.969'W [Louise Island] (First Nations FSC and Recreation Closure).

#### Subarea 2-63

Those waters of Buck Channel and adjacent waters inside a line that begins at 53°09.121'N 132°37.757'W [surflines] then true east to 53°09.121'N 132°35.137'W [Tcenakun Point] then following the southerly shoreline of Chaatl Island to 53°07.576'N 132°24.043'W [Chaatl Island] then true east to 53°07.576'N 132°23.622'W [Demariscove Point] then westerly following the shoreline to 53°05.732'N 132°34.496'W [Buck Point] then northerly following the surflines to the beginning point (First Nations FSC and Recreation Closure).

#### Subarea 2-64

Those waters of Skidegate Channel inside a line that begins at 53°10.603'N 132°33.832'W [Ells Point] then southeasterly following the shoreline to 53°09.163'N 132°30.818'W [Mercer Point] then to 53°08.687'N 132°29.959'W [Newton Point] then true south to 53°07.704'N 132°29.959'W [Chaatl Island] then following the northerly shoreline to 53°09.121'N 132°35.137'W [Tcenakun Point] then to the beginning point (First Nations FSC and Recreation Closure).

#### Subarea 2-65

Those waters of Dawson Inlet and Dawson Harbour lying northerly of a line that begins at 53°09.163'N 132°30.818'W [Mercer Point] then to 53°08.687'N 132°29.959'W [Newton Point] (First Nations FSC and Recreation Closure).

#### Subarea 2-66

Those waters of Skidegate Channel lying easterly of the meridian passing through 132°29.959'W at Newton Point and westerly of a line that begins at 53°07.576'N 132°24.043'W [Chaatl Island] then true east to 53°07.576'N 132°23.622'W [Demariscove Point] then true north to 53°08.316'N 132°23.622'W [Graham Island] (First Nations FSC and Recreation Closure).

#### Subarea 2-67

Those waters of Skidegate Channel and adjacent waters lying easterly of the meridian passing through 132°16.966'W at McLellan Point and westerly of the meridian passing through 132°23.622'W at Demariscove Point (First Nations FSC and Recreation Closure).

#### Subarea 2-77

Those waters of Shields Bay inside a line that begins at 53°20.424'N 132°26.568'W [Dawson Head] then true north to 53°21.050'N 132°26.569'W [Graham Island] then following the shoreline of Shields Bay to 53°19.419'N 132°27.322'W [Graham Island] then true north to 53°19.476'N 132°27.322'W [Shields Island] then following the westerly shoreline of Shields Island to the beginning point. (First Nations FSC and Recreational Access Closure)

#### 5.2.2.2 Bowie Seamount:

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)

#### 5.2.2.3 Gwaii Haanas National Marine Conservation Area Reserve and Haida Heritage Site

Until the new zoning plan is implemented and communicated through subsequent Fishery Notices, the following commercial and recreational closures remain in effect.

##### (1) Burnaby Narrows

Those waters of Subareas 2-13 and 2-16 inside a line commencing at 52°23.049 minutes N and 131°23.438 minutes W east to 52°23.077 minutes N and 131°22.908 minutes W, following the southern shoreline of Kat island east to 52°23.107 minutes N and 131°22.274 minutes W, then east to 52°23.295 minutes N and 131° 21.34 minutes W, following the western shoreline of Burnaby Island south to 52° 20.951 minutes N and 131°20.509 minutes W, then west to 52°20.733 minutes N and 131°21.072 minutes W, and then north following the eastern shoreline of Moresby Island back to the point of commencement. [Burnaby Narrows]

##### (2) Louscoone Estuary

Those waters of Subareas 2-33 and 2-34 north of a line drawn from 52°11.836 minutes N and 131°15.658 minutes W east to 52°12.271 minutes N and 131°14.594 minutes W. [Louscoone Estuary]

##### (3) Flamingo Estuary

Those waters of Subarea 2-37 north of a line drawn from 52°14.456 minutes N and 131°22.234 minutes W southeast to 52°14.246 minutes N and 131°21.489 minutes W. [Flamingo Estuary]

##### (4) Gowgaia Estuary

Those waters of Subarea 2-41 east of a line drawn from 52°24.944 minutes N and 131°32.138 minutes W southeast to 52°24.238 minutes N and 131°32.024 minutes W. [Gowgaia Estuary]

##### (5) Cape Saint James

Those waters of Subareas 2-19, 102-3, 130-3 and 142-1 inside a line commencing at 51°56.523 minutes N and 131°01.522 minutes W, southwest to 51°55.627 minutes N and 131°02.574 minutes W, then southeast to 51°52.5 minutes N and 130°57.919 minutes W, then south to 51°51.676 minutes N and 130°57.805 minutes W, the southeast to 51°50.349 minutes N and 130°56.442 minutes W, then northeast to 51°51.062 minutes N and 130°54.717 minutes W, then north to 51°53.888 minutes N and 130°55.608 minutes W, then northwest to 51°58.671 minutes N and 130°59.464 minutes W, and then west to

51°58.743 minutes N and 131°00.606 minutes W, and then following the southern shore of Kunghit Island west to the point of commencement. [Cape Saint James]

(6) SGang Gwaay

Those waters of Subareas 2-31 and 142-1 inside a 3km radius from the centre point on Anthony Island located at 52°05.655 minutes N and 131°13.178 minutes W. [SGang Gwaay]

5.2.2.4 Hecate Strait Queen Charlotte Sound Glass Sponge Reef Areas:

The MPA's regulations establish the outer boundaries of the three MPA areas, consisting of the seabed, the subsoil to a depth of 20 meters and the water column above the seabed, that are bounded by a series of rhumb lines as follows:

The Northern Reef Area is described as bounded by a series of rhumb lines drawn from a point 53°11'52.9" North latitude and 130°19'47.2" West longitude, to a point having coordinate values of 53°09'22.0" North latitude and 130°18'53.0" West longitude, then to a point having coordinate values of 53°02'54.5" North latitude and 130°25'16.2" West longitude, then to a point having coordinate values of 53°03'06.9" North latitude and 130°30'35.6" West longitude, then to a point having coordinate values of 53°07'17.8" North latitude and 130°42'03.2" West longitude, then to a point having coordinate values of 53°07'44.5" North latitude and 130°46'26.5" West longitude, then to a point having coordinate values of 53°13'28.7" North latitude and 130°47'28.7" West longitude, then to a point having coordinate values of 53°19'20.0" North latitude and 130°54'24.2" West longitude, then to a point having coordinate values of 53°24'05.4" North latitude and 130°48'37.8" West longitude then to a point having coordinate values of 53°23'40.7" North latitude and 130°42'52.2" West longitude then to a point having coordinate values of 53°18'42.5" North latitude and 130°38'09.3" West longitude, then to a point having coordinate values of 53°15'20.6" North latitude and 130°33'01.3" West longitude, then back to the point of Commencement.

The Northern Reef Area Core Protection Zone (CPZ) is described as bounded by a series of rhumb lines drawn from a point having coordinate values of 53°18'40.4" North latitude and 130°52'46.5" West longitude, to a point having coordinate values of 53°22'12.1" North latitude and 130°47'01.7" West longitude, then to a point having coordinate values of 53°22'20.2" North latitude and 130°43'12.5" West longitude, then to a point having coordinate values of 53°17'22.8" North latitude and 130°38'18.2" West longitude, then to a point having coordinate values of 53°15'01.7" North latitude and 130°36'35.5" West longitude, then to a point having coordinate values of 53°10'55.2" North latitude and 130°20'19.3" West longitude, then to a point having coordinate values of 53°04'30.2" North latitude and 130°25'53.6" West longitude, then to a point having coordinate values of 53°04'58.0" North latitude and 130°32'16.9" West longitude then to a point having coordinate values of 53°07'22.2" North latitude and 130°37'37.6" West longitude, then to a point having coordinate values of 53°08'36.6" North latitude and 130°39'29.5" West longitude, then to a point having coordinate values of 53°08'41.8" North latitude and 130°45'40.0" West longitude, then to a point having coordinate values of 53°13'51.2" North latitude and 130°46'41.2" West longitude, then back to the point of Commencement.

The Central Reefs Area is described as bounded by a series of rhumb lines drawn from a point 52°00'24.4" North latitude and 129°14'12.6" West longitude, to a point having coordinate values of 51°55'50.5" North latitude and 129°18'13.8" West longitude, then to a point having coordinate values of 51°51'32.5" North latitude and 129°36'37.4" West longitude, then to a point having coordinate values of 51°53'00.7" North latitude and 129°44'03.4" West longitude, then to a point having coordinate values of 52°05'14.1" North latitude and 129°36'14.1" West longitude, then to a point having coordinate values of 52°08'46.0" North latitude and 129°33'33.5" West longitude, then to a point having coordinate values of 52°15'42.6" North latitude and 129°44'12.3" West longitude, then to a point having coordinate values of 52°29'35.4" North latitude and 129°52'32.7" West longitude, then to a point having coordinate values of 52°32'05.4" North latitude and 129°53'06.2" West longitude, then to a point having coordinate values of 52°34'05.6" North latitude and 129°47'51.4" West longitude, then to a point having coordinate values of 52°25'42.7" North latitude and 129°35'12.2" West longitude, then to a point having coordinate values of 52°20'02.8" North latitude and 129°29'51.7" West longitude, then to a point having coordinate values of 52°09'52.3" North latitude and 129°25'29.5" West longitude, then back to the point of Commencement.

The Central Reefs Area Core Protection Zone (CPZ) Zone 'A' is described as bounded by a series of rhumb lines drawn from a point having coordinate values of 52°14'03.4" North latitude and 129°38'33.2" West longitude, to a point having coordinate values of 52°16'54.8" North latitude and 129°43'13.4" West longitude, then to a point having coordinate values of 52°21'57.1" North latitude and 129°43'56.5" West longitude, then to a point having coordinate values of 52°24'24.5" North latitude and 129°47'22.8" West longitude, then to a point having coordinate values of 52°29'05.9" North latitude and 129°50'59.4" West longitude, then to a point having coordinate values of 52°31'05.2" North latitude and 129°50'13.9" West longitude, then to a point having coordinate values of 52°31'06.7" North latitude and 129°47'40.9" West longitude, then to a point having coordinate values of 52°27'42.0" North latitude and 129°40'25.1" West longitude, then to a point having coordinate values of 52°25'22.9" North latitude and 129°37'24.0" West longitude, then to a point having coordinate values of 52°19'47.0" North latitude and 129°32'43.2" West longitude, then to a point having coordinate values of 52°16'18.2" North latitude and 129°33'22.8" West longitude, then back to the point of Commencement.

The Central Reefs Area Core Protection Zone (CPZ) Zone 'B' is described as bounded by a series of rhumb lines drawn from a point having coordinate values of 51°54'43.1" North latitude and 129°41'22.2" West longitude, to a point having coordinate values of 52°01'22.5" North latitude and 129°35'48.4" West longitude, then to a point having coordinate values of 52°05'13.5" North latitude and 129°34'32.5" West longitude, then to a point having coordinate values of 52°08'48.5" North latitude and 129°31'44.1" West longitude then to a point having coordinate values of 52°08'51.3" North latitude and 129°29'18.0" West longitude, then to a point having coordinate values of 52°04'27.1" North latitude and 129°21'17.3" West longitude, then to a point having coordinate values of 51°59'40.8" North latitude and 129°15'23.9" West longitude, then to a point having coordinate values of 51°56'04.5" North latitude and 129°18'46.2" West longitude, then to a point having coordinate values of 51°52'55.7" North latitude and 129°36'49.8" West longitude, then back to the point of Commencement.

The Southern Reef Area is described as bounded by a series of rhumb lines drawn from a point 51°24'44.2" North latitude and 128°47'58.3" West longitude, to a point having coordinate values of 51°18'32.5" North latitude and 128°40'35.6" West longitude, then to a point having coordinate values of 51°14'57.6" North latitude and 128°47'01.2" West longitude, then to a point having coordinate values of 51°14'33.9" North latitude and 128°55'45.5" West longitude, then to a point having coordinate values of 51°17'42.3" North latitude and 129°00'29.0" West longitude, then to a point having coordinate values of 51°19'24.5" North latitude and 129°00'53.6" West longitude, then back to the point of Commencement.

The Southern Reef Area Core Protection Zone is described as bounded by a series of rhumb lines drawn from a point having coordinate values of 51°17'59.2" North latitude and 128°57'31.9" West longitude, to a point having coordinate values of 51°19'30.8" North latitude and 128°58'22.7" West longitude, then to a point having coordinate values of 51°23'41.9" North latitude and 128°48'50.9" West longitude, then to a point having coordinate values of 51°19'17.5" North latitude and 128°42'33.6" West longitude, then to a point having coordinate values of 51°18'24.5" North latitude and 128°42'37.7" West longitude, then to a point having coordinate values of 51°15'56.0" North latitude and 128°47'04.2" West longitude, then to a point having coordinate values of 51°15'52.2" North latitude and 128°54'20.4" West longitude, then back to the point of Commencement.

### **5.2.3 Area A Seasonal Crab Closures**

#### **5.2.3.1 Area A (excluding McIntyre Bay, Naden Harbour):**

Area A closes due to soft-shell crab 00:01 hours March 1 to 08:00 hours August 1, 2019. The Department may endorse a monitoring program in accordance with the soft-shell guidelines, (see Appendix 10). If a program is in place and testing commences no later than February 15th, the Area, or portions of the Area (see Appendix 7 for a map and a description of the Area A Soft-shell Management Areas), could close earlier or later than March 1 if sampling indicates a change to the closing date is appropriate. If a program is in place, the Area, or portions of the area, could also open earlier or later than August 1 if sampling indicates a change to the opening date is appropriate. (Soft-shell Closure).

#### **5.2.3.2 McIntyre Bay,(Soft-shell Area 10):**

Those portions of Subareas 1-5 and 101-4 to 101-10 that lie east of the meridian passing through 132°04' west longitude, and west of the meridian passing through 131°30' west longitude, except for that portion of Subarea 101-10 that lies southeasterly of a line that begins at 54°09' N 131°40' W [Rose Spit] then to 54°12'N 131°38' W then to 54°14.9' N 131°30.7' W, closed 00:01 hours, March 1 to 08:00 hours, September 1, 2019. The Department may endorse a monitoring program in accordance with the soft-shell guidelines, (see Appendix 10). If a program is in place and testing commences no later than February 15th, the area may close no later than May 1, 2019 if soft-shell sampling indicates a change to the closure date is appropriate. McIntyre Bay may re-open at the earliest 0800 hours September 1, 2019 (Conservation, First Nation FSC and Recreational Access).

The maximum number of traps permitted to be fished in McIntyre Bay between 00:01 h April 1, 2019 and November 1, 2019 and 00:01 h January 1, 2020 and March 31, 2020 is one-half the total trap allocation indicated on the vessel licence.

### 5.2.3.3 Naden Harbour

#### Subarea 1-4

Those waters of Naden Harbour and adjacent waters lying southerly of a line that begins at 54°02.830'N 132°34.166'W [Mary Point] then to 54°03.010'N 132°32.731'W [Deepwater Point] closed 00:01 hours March 1 to 08:00 hours October 15, 2019. **Ring net fishery only.** (Soft-shell Closure)

### 5.2.4 Area A Crab Closure Requests

Details and status on the requests for commercial closures in portions of Area A can be obtained upon request to the Area Crab Manager.

## 5.3 North Coast Mainland - Area B

All areas within Area B are closed from Dec 1 to March 1 of each calendar year.

### 5.3.2 Area B Year Round Crab Closures

The following areas are closed permanently to commercial crab harvesting:

#### 5.3.2.1 Kincolith:

Those portions of Subarea 3-12 and the Nass River estuary inside a line that begins at 55°00.626'N 130°00.329'W [Nass Point] then to 55°00.000'N 130°01.000'W then to 54°58.200'N 129°55.000'W then to 54°59.082'N 129°55.053'W [Fort Point navigation marker] then following the shoreline to the beginning point (First Nations FSC and Recreational Access Closure).

#### 5.3.2.2 Stewart:

That portion of 3-15 lying northerly of the parallel passing through 55°37.617'N [Green Islets] and easterly of the international boundary between Canada and the United States (First Nations FSC and Recreation Closure).

#### Subarea 3-16

Those waters of Portland Canal and adjacent waters lying northerly of the parallel passing through 55°47.807'N at Engineers Point and easterly of the international boundary between Canada and the United States (First Nations FSC and Recreational Access Closures).

#### 5.3.2.3 Prince Rupert:

That portion of Subarea 4-9 inside a line that begins at 54°20.141'N 130°27.678'W [Observation Point] then to 54°19.921'N 130°29.696'W [Doolan Point] then following

the easterly shoreline of Tugwell Island to 54°19.125'N 130°30.980'W [Dawes Point] then to 54°18.447'N 130°28.457'W [Straith Point] then to the beginning point (First Nations FSC and Recreational Access Closures).

#### Subarea 4-10

Those waters of Prince Rupert Harbour and adjacent waters inside a line that begins at 54°20.141'N 130°27.678'W [Observation Point] then following the shoreline of Tuck Inlet to 54°20.197'N 130°16.490'W [Pethick Point] then to 54°20.052'N 130°17.009'W [Ritchie Point] then following the westerly shoreline of Kaien Island to 54°14.079'N 130°20.085'W [near Bishop Island] then to 54°14.113'N 130°22.665'W [Lima Point] then following the easterly shoreline of Digby Island to 54°18.447'N 130°28.457'W [Straith Point] then to the beginning point (First Nations FSC and Recreational Access Closures).

#### Subarea 4-11

Those waters of Porpoise Harbour, Wainwright Basin, Morse Basin, and adjacent waters lying southerly of a line that begins at 54°20.052'N 130°17.009'W [Ritchie Point] then to 54°20.197'N 130°16.490'W [Pethick Point] and northerly of a line that begins at 54°12.152'N 130°18.514'W [Ridley Island] then to 54°12.097'N 130°18.142'W [Lelu Island] then northerly following the shoreline to 54°12.634'N 130°17.485'W [Lelu Island] then true east to 54°12.634'N 130°17.199'W [Tsimpsean Peninsula] (First Nations FSC Recreational Access Closure and Dioxin closures). Please refer to the First Nations Harvest plan or the BC Tidal Water Sport Fishing Guide for the Dioxin Closure information.

#### 5.3.2.4 Kitkatla:

##### Subarea 5-3

Those waters of Kitkatla Channel and adjacent waters inside a line that begins at 53°50.268'N 130°30.206'W [Chief Point] then easterly following the shoreline to 53°49.704'N 130°20.488'W [Sparrowhawk Point] then to 53°47.766'N 130°18.771'W [McCauley Island] then to 53°47.308'N 130°23.724'W [Browning Island] then to 53°47.490'N 130°24.571'W [Dolphin Island] then following the northerly shoreline of Dolphin Island to 53°47.819'N 130°25.981'W [Kitkatla Village on Dolphin Island] then to 53°49.194'N 130°30.009'W [Goschen Island] then to the beginning point. (First Nations FSC and Recreational Access Closure)

##### Subarea 5-10

Those waters of Browning Entrance and adjacent waters inside a line that begins at 53°49.194'N 130°30.009'W [Goschen Island] then to 53°47.819'N 130°25.981'W [Kitkatla Village on Dolphin Island] then following the southerly shoreline of Dolphin Island to 53°47.490'N 130°24.571'W [Dolphin Island] then to 53°47.308'N 130°23.724'W [Browning Island] then to 53°47.766'N 130°18.771'W [McCauley Island] then southerly following the shoreline to 53°40.427'N 130°24.525'W [Baird Point] then to 53°38.261'N 130°27.990'W [Banks Island] then to 53°47.291'N 130°33.162'W [Viscount Point] then northeasterly following the shoreline to the beginning point. (First Nations FSC and Recreational Access Closure)

### 5.3.2.5 Kitimat:

#### Subarea 6-1

Those waters of Douglas Channel, Devastation Channel, Kitimat Arm, and adjacent waters lying northeasterly of a line that begins at 53°45.238'N 129°01.852'W [Paisley Point] then to 53°41.498'N 129°05.121'W [Grant Point] then following the shoreline to 53°41.197'N 129°04.789'W [Maitland Island] then to 53°40.494'N 129°04.797'W [Hawkesbury Island] then following the easterly shoreline of Hawkesbury Island to 53°33.600'N 128°53.406'W [Eva Point] then to 53°34.147'N 128°49.007'W [Staniforth Point] then to 53°33.903'N 128°46.107'W [mainland]. (First Nations FSC and Recreational Access Closure)

### 5.3.2.6 Coghlan Anchorage:

That portion of Subarea 6-2 west of a line begins at 53°25.478'N 129°14.242'W [Halsey Point] then to 53°24.728'N 129°14.214'W [Dawson Point] then following the westerly shoreline of Promise Island to 53°22.022'N 129°15.699'W [Thom Point] then to 53°21.878'N 129°16.208'W [Waterman Point] then northerly following the shoreline to the beginning point. (First Nations FSC and Recreational Access Closure)

### 5.3.2.7 Kitkiata Inlet:

That portion of Subarea 6-2 west of a line begins at 53°37.876'N 129°13.853'W [Gertrude Point] then to 53°36.798'N 129°14.411'W [Helen Point]. (First Nations FSC and Recreational Access Closure)

### 5.3.2.8 Kiskosh Inlet:

That portion of Subarea 6-2 west of a line begins at 53°31.180'N 129°13.955'W then to 53°30.579'N 129°14.140'W. (First Nations FSC and Recreational Access Closure)

### 5.3.2.9 Higgins Passage:

Those portions of Subareas 6-16 and 7-3 lying inside of a line that begins at 52°29.074586'N 128°45.836113'W [southwest Swindle Island], then southwest to 52°28.658625'N 128°47.783029'W, then south to 52°27.752182'N 128°47.957771'W, then east to 52°27.505255'N 128°45.896523'W [west Price Island], then following the northern shoreline of Price Island to 52°27.564212'N 128°37.583357'W, then 52°27.919086'N 128°36.925324'W then following the southern shoreline of Swindle Island to the beginning point. (First Nations FSC and Recreational Access Closure)

### 5.3.2.10 Kynoch Inlet:

#### Subarea 7-11

Those waters of Kynoch Inlet lying easterly of a line that begins at 52°46.109'N 128°07.820'W [Garvey Point] then to 52°45.582'N 128°06.788'W [Kynoch Point]. (First Nations FSC and Recreational Access Closure)

#### 5.3.2.11 Mussel Inlet:

##### Subarea 7-7

Those portions of Mussel Inlet lying easterly of a line that begins at 52°54.608550'N 128°7.088569'W [Carse Point] then south to 52°53.891016'N 128°6.686082'W [east of David Bay]. (First Nations FSC and Recreational Access Closure)

#### 5.3.2.12 Troup Passage:

Those portions of Subarea 7-15 lying inside of a line that begins at 52°18.201'N 127°57.968'W [Jagers Point], then following the westerly shoreline of Cunningham Island to 52°12.252'N 128°05.718'W [Dumas Point], then to 52°13.595'N 128°07.398'W [Chatfield Island], then following the northerly shoreline of Chatfield Island to 52°18.201'N 128°00.831'W, then due east to the beginning point. (First Nations FSC and Recreational Access Closure)

#### 5.3.2.13 Fitz Hugh Sound:

##### Subarea 8-3:

Those waters of Fitz Hugh Sound including the Koeve River estuary inside a line that begins at 51°44.011'N 127°59.798'W [Kelpie Point Light] then to 51°48.949'N 127°53.842'W [Uganda Point] then southerly following the shoreline to 51°42.967'N 127°53.462'W [Whidbey Point] then to the beginning point. (First Nations FSC and Recreational Access Closure).

#### 5.3.2.14 Dean Channel

##### Subarea 8-7:

Those waters of Dean Channel and adjacent waters lying northeasterly of a line that begins at 52°16.065'N 127°47.100'W [Boscowitz Point] then to 52°14.759'N 127°45.956'W [Rattenbury Point] and southwesterly of a line that begins at 52°27.297'N 127°17.586'W [north of Eucott Bay] then to 52°26.354'N 127°16.415'W [Edward Point]. (First Nations FSC and Recreational Access Closure)

#### 5.3.2.15 North Bentinck Arm

##### Subarea 8-11:

Those waters of North Bentinck Arm and adjacent waters lying easterly of a line that begins at 52°19.948'N 126°59.164'W [Loiyentsi Point] then to 52°18.084'N 127°00.457'W [near Menzies Point] then to 52°18.727'N 126°57.905'W [Tallheo Point]. (First Nations FSC and Recreational Access Closure)

#### 5.3.2.16 Burke Channel

##### Subarea 8-13:

Those waters of Burke Channel and adjacent waters inside a line that begins at 52°12.377'N 127°29.953'W [King Island] then to 52°11.198'N 127°28.355'W

[Cathedral Point] then to 52°09.508'N 127°31.638'W [Mapalaklenk Point] then southerly following the shoreline to 51°54.326'N 127°52.267'W [Edmund Point] then to 51°55.448'N 127°54.337'W [Walker Point] then following the easterly shoreline of Humchitt Island to 51°55.884'N 127°53.892'W [Humchitt Island] then true east to 51°55.884'N 127°53.684'W [King Island] then northerly following the shoreline to the beginning point. (First Nations FSC and Recreational Access Closure)

### **5.3.3 Area B Seasonal Crab Closures**

Please see Table 2.8.4 for the applicable open times.

#### **5.3.3.1 Khutzeymateen Inlet:**

Subarea 3-10:

Those waters of Khutzeymateen Inlet and adjacent waters lying easterly of a line that begins at 54°42.989'N 130°13.731'W [Keemein Point] then to 54°43.589'N 130°13.050'W [Welgeegenk Point] closes to commercial crab fishing at 00:01 hours November 16 (Winter Ice Closure).

#### **5.3.3.2 Nass Estuary (with half trap vessel limit and one haul per day):**

Those portions of Subareas 3-12, 3-18 and the Nass River estuary inside a line begins at 54°58.995'N 130°06.270'W [Ramsden Point Light] then to a 54°56.5'N 130°04.2'W located three nautical miles southwest of Arrandale on Mylor Peninsula then following the shoreline to 54°58.933'N 129°50.385'W [Leading Point] then to 54°59.620'N 129°53.467'W [east of Mill Bay] then following the shoreline to 55°00.626'N 130°00.329'W [Nass Point] then due west to 55°00.626'N 130°03.350'W, (on the opposite mainland shore) then following the shoreline to the beginning point closed January 1 to 08:00 hours October 1 of each year and from 00:01 hours, November 9 to December 31 of each calendar year. (First Nations FSC and Recreational Access Closure). The closure date of November 9<sup>th</sup> may be changed pre-season based on consultation.

#### **5.3.3.3 Stewart:**

That portion of 3-15 lying southerly of the parallel passing through 55°37.617'N [Green Islets] and easterly of the international boundary between Canada and the United States. (First Nations FSC and Recreational Access Closure)

#### **5.3.3.4 Big Bay:**

That portion of Subarea 4-8 east of a line that begins at 54°28.461'N 130°25.712'W [Shattock Point] then to 54°27.342'N 130°27.049'W [Simpson Point]. (First Nations FSC and Recreational Access Closure)

#### **5.3.3.5 Prince Rupert:**

That portion of Subarea 4-9 inside a line that begins at 54°21.803'N 130°29.243'W [Ryan Point] then to 54°20.355'N 130°30.519'W [Chapman Point] then following the easterly shoreline of Tugwell Island to 54°19.921'N 130°29.696'W [Doolan Point] then

to 54°20.141'N 130°27.678'W [Observation Point] then following the shoreline to the beginning point. (First Nations FSC and Recreational Access Closure)

#### 5.3.3.6 Kitkatla:

The following areas are closed by variation order and notice to industry during the herring seine and roe-on-kelp fisheries. Since 2018, half trap limits and daily haul restrictions will be in place for the first 14 days of the commercial crab fishery.

#### Subarea 5-4

Those waters of Kitkatla Inlet and adjacent waters inside a line that begins at 53°53.961'N 130°41.984'W [Porcher Peninsula] then true east to 53°53.961'N 130°39.758'W [Gurd Island] then following the southerly shoreline of Gurd Island to 53°53.765'N 130°35.208'W [Gurd Island] then to 53°53.765'N 130°33.400'W [Snass Point] then to 53°52.233'N 130°30.941'W [Whiteley Point] then southerly following the shoreline to 53°50.268'N 130°30.206'W [Chief Point] then to 53°49.194'N 130°30.009'W [Goschen Island] then following the northeasterly shoreline of Goschen Island to 53°51.024'N 130°33.962'W [Nubble Point] then to 53°51.333'N 130°35.312'W [Coquitlam Island] then to 53°51.542'N 130°36.661'W [Porcher Peninsula] then northerly following the shoreline to the beginning point. (Herring Seine and Roe-on-Kelp Closure)

#### Subarea 5-5

Those waters of Kitkatla Inlet and adjacent waters inside a line that begins at 53°56.184'N 130°38.170'W [Porcher Island] then to 53°55.438'N 130°35.062'W [Porcher Island] then southerly following the shoreline to 53°53.765'N 130°33.400'W [Snass Point] then true west to 53°53.765'N 130°35.208'W [Gurd Island] then northerly following the shoreline to 53°55.237'N 130°37.984'W [Gurd Point] then to the beginning point. (Herring Seine and Roe-on-Kelp Closure)

#### Subarea 5-6

Those waters of Dries Inlet and adjacent waters lying northerly of a line that begins at 53°56.184'N 130°38.170'W [Porcher Island] then to 53°55.438'N 130°35.062'W [Porcher Island]. (Herring Seine and Roe-on-Kelp Closure)

#### Subarea 5-7

Those waters of Serpentine Inlet and adjacent waters lying northerly of a line that begins at 53°55.060'N 130°40.843'W [Porcher Peninsula] then to 53°56.184'N 130°38.170'W [Porcher Island]. (Herring Seine and Roe-on-Kelp Closure)

#### Subarea 5-8

Those waters of Kitkatla Inlet and adjacent waters inside a line that begins at 53°55.060'N 130°40.843'W [Porcher Peninsula] then to 53°56.184'N 130°38.170'W [Porcher Island] then to 53°55.237'N 130°37.984'W [Gurd Point] then southerly following the shoreline to 53°53.961'N 130°39.758'W [Gurd Island] then true west to 53°53.960'N 130°41.984'W [Porcher Peninsula] then northerly following the shoreline to the beginning point, (Herring Seine and Roe-on-Kelp Closure).

#### 5.3.3.7 Portions of Area 6 (with half trap vessel limit and one haul per day):

##### Subarea 6-3

Those waters of Verney Passage, Ursula Channel, and adjacent waters inside a line that begins at 53°33.600'N 128°53.406'W [Eva Point] then to 53°34.147'N 128°49.007'W [Staniforth Point] then southerly following the shoreline to 53°18.723'N 128°53.302'W [mainland] then to 53°18.867'N 128°56.685'W [Pilot Point] then following the northerly shoreline of Gribbell Island to 53°22.910'N 129°07.364'W [Gribbell Island] then true west to 53°22.910'N 129°09.921'W [Money Point] then following the easterly shoreline of Hawkesbury Island to the beginning point. (First Nations and Recreational Access Closure)

##### Subarea 6-4

Those waters of Gardner Canal and adjacent waters lying southerly of a line that begins at 53°34.147'N 128°49.007'W [Staniforth Point] then to 53°33.903'N 128°46.107'W [mainland]. (First Nations and Recreational Access Closure)

#### 5.3.3.8 Khutze Inlet:

##### Subarea 6-23

Those waters of Khutze Inlet lying easterly of a line that begins at 53°05.259'N 128°33.381'W [Asher Point] then to 53°04.041'N 128°33.051'W [Griffin Point].(First Nations FSC and Recreational Access Closure).

#### 5.3.3.9 Portions of Area 7:

##### Subarea 7-6

Those waters of Finlayson Channel inside a line that begins at 52°53.012'N 128°30.634'W [Sarah Head] then true east to 52°53.012'N 128°29.883'W [mainland] then following the shoreline to 52°49.124'N 128°23.499'W [Carter Point] then to 52°48.316'N 128°23.541'W [Fawn Point] then following the westerly shoreline of Roderick Island to 52°38.529'N 128°26.799'W [Roderick Island] then true west to 52°38.529'N 128°30.330'W [Pering Point] then northerly following the shoreline to the beginning point (First Nations and Recreational Access Closure)

##### Subarea 7-10

Those waters of Mathieson Channel and adjacent waters inside a line that begins at 52°46.109'N 128°09.358'W [Pooley Island] then true east to 52°46.109'N 128°07.820'W [Garvey Point] then to 52°45.582'N 128°06.788'W [Kynoch Point] then southerly following the shoreline to 52°34.310'N 128°14.752'W [Hird Point] then to 52°35.229'N 128°17.203'W [Charles Head] then northerly following the shoreline to the beginning point (First Nations and Recreational Access Closure)

##### Subarea 7-13

Those waters of Spiller Channel and adjacent waters lying southerly of the parallel passing through 52°23.665'N near Mosquito Bay and northerly of a line that begins at 52°15.694'N 128°17.072'W [Don Peninsula near Foote Islets] then to 52°15.735'N

128°14.647'W [Hyndman Reefs Light] then to 52°16.773'N 128°12.912'W [Grief Island] then following the northerly shoreline of Grief Island to 52°16.742'N 128°12.261'W [Grief Island] then true east to 52°16.742'N 128°11.656'W [Yeo Island] (First Nations and Recreational Access Closure)

#### Subarea 7-14

Those waters of Spiller Channel, Bullock Channel, Briggs Inlet and adjacent waters lying northerly of a line that begins at 52°23.665'N 128°09.896'W [near Mosquito Bay] then true east to 52°23.665'N 128°07.908'W [Yeo Island] then following the northerly shoreline of Yeo Island to 52°19.144'N 128°02.819'W [Ettershank Point] then to 52°19.177'N 128°01.551'W [Coldwell Point] then to 52°19.085'N 128°00.469'W [Florence Peninsula] (First Nations and Recreational Access Closure)

#### Subarea 7-15

Those waters of Return Channel and adjacent waters inside a line that begins at 52°19.144'N 128°02.819'W [Ettershank Point] then to 52°19.177'N 128°01.551'W [Coldwell Point] then to 52°19.085'N 128°00.469'W [Florence Peninsula] then easterly following the shoreline to 52°22.251'N 127°53.051'W [Roscoe Point] then to 52°21.764'N 127°52.023'W [Clatse Point] then southerly following the shoreline to 52°18.201'N 127°55.805'W [near Albert Islet] then true west to 52°18.201'N 127°57.968'W [Jagers Point] then following the westerly shoreline of Cunningham Island to 52°18.071'N 127°59.275'W [northwest point of Cunningham Island] then due west to Chatfield Island to 52°18.080'N 128°00.686'W [northwest point of Troup Narrows] then following the northerly shoreline of Chatfield Island to 52°14.911'N 128°10.574'W [Noon Point] then to 52°16.477'N 128°10.894'W [Yeo Island] then easterly following the shoreline to the beginning point. (First Nations and Recreational Access Closure)

#### Subarea 7-16

Those waters of Roscoe Inlet and adjacent waters lying north-easterly of a line that begins at 52°22.251'N 127°53.051'W [Roscoe Point] then to 52°21.764'N 127°52.023'W [Clatse Point] (First Nations and Recreational Access Closure)

#### Subarea 7-17

Those waters of Hunter Channel, Lama Passage, and adjacent waters inside a line that begins at 52°11.109'N 128°06.733'W [Dryad Point] then to 52°12.252'N 128°05.718'W [Dumas Point] then following the southerly shoreline of Cunningham Island to 52°11.355'N 127°53.653'W [Madigan Point] then to 52°11.111'N 127°53.058'W [Georgie Point] then following the westerly shoreline of Denny Island to 52°04.549'N 127°56.547'W [Start Point] then to 52°03.829'N 127°57.056'W [Kaiete Point] then following the northerly shoreline of Hunter Island to 52°00.589'N 128°09.961'W [Hunter Island] then true west to 52°00.589'N 128°11.012'W [Soulsby Point] then northerly following the shoreline to the beginning point. (First Nations and Recreational Access Closure)

#### 5.3.3.10 Portions of Area 9:

##### Subarea 9-2

Those waters of Rivers Inlet inside a line that begins at 51°30.536'N 127°41.792'W [Penrose Island] then to 51°30.246'N 127°41.186'W [Walbran Island] then following the southerly shoreline of Walbran Island to 51°31.166'N 127°34.918'W [Walbran Island] then to 51°30.398'N 127°32.954'W [west of Johnston Bay] then southerly following the shoreline to 51°28.498'N 127°33.745'W [north shoreline of Draney Narrows] then to 51°28.375'N 127°33.947'W [south shoreline of Draney Narrows] then southwesterly following the shoreline to 51°22.624'N 127°44.777'W [Mainland, near Open Bight] then to 51°27.209'N 127°44.705'W [Dimsey Point] then to 51°27.348'N 127°44.219'W [Joachim Island] then following the easterly shoreline of Joachim Island to 51°27.762'N 127°43.838'W [Joachim Island] then to 51°27.982'N 127°43.341'W [Penrose Island] then following the easterly shoreline of Penrose Island to the beginning point (First Nations and Recreational Access Closure)

##### Subarea 9-3

Those waters of Rivers Inlet inside a line that begins at 51°34.251'N 127°34.217'W [Walbran Island] then to 51°34.210'N 127°31.450'W [near Ida Island] then southerly following the shoreline to 51°30.398'N 127°32.954'W [west of Johnston Bay] then to 51°31.166'N 127°34.918'W [Walbran Island] then northerly following the shoreline to the beginning point (First Nations and Recreational Access Closure)

##### Subarea 9-4

Those waters of Rivers Inlet inside a line that begins at 51°38.657'N 127°30.325'W [near Whannock Cove] then to 51°37.393'N 127°30.284'W [Stone Point] then southerly following the shoreline to 51°34.210'N 127°31.432'W [near Ida Island] then to 51°34.251'N 127°34.217'W [Walbran Island] then westerly following the shoreline to 51°34.477'N 127°34.820'W [McLeod Point] then to 51°34.638'N 127°34.982'W [near Dawsons Landing] then northerly following the shoreline to the beginning point. (First Nations and Recreational Access Closure)

##### Subarea 9-6

Those waters of Rivers Inlet and adjacent waters lying easterly of a line that begins at 51°39.432'N 127°25.749'W [McAllister Point] then to 51°38.301'N 127°26.792'W [near Scandinavia Bay]. (First Nations and Recreational Access Closure)

### 5.3.4 Area B Crab Closures Requests

Details and status on the requests for commercial closures in portions of Area B can be obtained upon request to the Area Crab Manager. Consultation will continue and may result in in-season management action.

## 5.4 West Coast Vancouver Island - Area E

### 5.4.2 Area E Year Round Crab Closures

The following areas are closed permanently to commercial crab harvesting:

#### 5.4.2.1 Port Renfrew:

That portion of Subarea 20-2 northerly of a line that begins at 48°32.574'N 124°29.861'W [Owen Point] then to 48°34.395'N 124°24.440'W. (First Nations and Recreational Access Closure)

#### 5.4.2.2 Race Rocks:

Those waters of Subareas 19-3 and 20-5 within 0.5 nautical miles of Great Race Rock. (Marine Reserve) This closure is within both Area 'H' and Area 'E'.

#### 5.4.2.3 Becher Bay – Inside:

That portion of Subarea 20-5 inside a line that begins at 48°20.111'N 123°36.205'W then to 48°20.010'N 123°35.511'W then following the shoreline to the beginning point. (First Nations FSC and Recreational Access Closure)

#### 5.4.2.4 Alberni Inlet - Subarea 23-1:

Those waters of Alberni Inlet lying northerly of the parallel passing through 49°06.222'N. (First Nations FSC and Recreational Access Closure)

#### 5.4.2.5 Pacific Rim National Park, Broken Group Islands:

Those portions of Subareas 23-6, 23-7, 23-8, 23-9 and 23-11 inside a line that begins at 48°57.752'N 125°19.689'W then to 48°55.575'N 125°12.795'W then to 48°50.221'N 125°18.865'W then to 48°51.757'N 125°23.699'W then to 48°54.318'N 125°23.719'W then to the beginning point. (Park)

#### 5.4.2.6 Ahousaht/Millar Channel:

That portion of Subarea 24-4 inside a line that begins at 49°18.030'N 126°04.140'W [northern end of McNeill Peninsula] then to 49°18.030' N 126°03.710' W then to 49°17.483' N 126°03.024' W then to 49°16.814' N 126°02.960' W then to 49°16.439' N 126°02.608' W then to 49°16.226' N 126°02.823' W [Yates Point]. (Navigational and First Nations and Recreational Access Closure)

#### 5.4.2.7 Tofino Navigation Channel:

No buoys are permitted in those portions of Subareas 24-4, 24-6, 24-8, 24-9 and 124-3 shown in Appendix 7. (Navigation Closure)

#### 5.4.2.8 Muchalat Inlet:

##### Subarea 25-1

Those waters of Muchalat Inlet lying easterly of the meridian at 126°12.867'W at the Muchalat Inlet south shore Light. (Dioxin Closure)

##### Subarea 25-2

Those waters of Muchalat Inlet lying westerly of the meridian at 126°12.867'W at the Muchalat Inlet south shore Light and easterly of a line that begins at 49°38.680'N 126°20.888'W [Muchalat Inlet Light] then to 49°38.150'N 126°21.250'W [Ous Point].

## Subarea 25-3

Those waters of King and Williamson Passages lying westerly of a line that begins at 49°38.680'N 126°20.888'W [Muchalat Inlet Light] then to 49°38.150'N 126°21.250'W [Ous Point] and easterly of a line that begins at 49°39.178'N 126°26.457'W [Atrevida Point Light] then to 49°38.767'N 126°28.292'W [Anderson Point Light]. (Dioxin Closure)

### 5.4.3 Area E Seasonal Crab Closures

#### 5.4.3.1 Becher Bay – Outside:

That portion of Subarea 20-5 north of a line that begins at 48°20.196'N 123°37.377'W then to 48°19.848'N 123°37.243'W [Lamb Islet] then to 48°19.848'N 123°35.568'W then following the shoreline to the beginning point closed to commercial crab fishing from 00:01 March 15 to 23:59 September 15. (First Nations FSC and Recreational Access Closure)

#### 5.4.3.2 Pedder Bay:

That portion of Subarea 20-5 north of a line that begins at 48°19.927'N 123°32.892'W [Manor Point] then to 48°20.245'N 123°32.458'W then following the Pedder Bay shoreline to the beginning point closed to commercial crab fishing from 00:01 March 15 to 23:59 September 15.

#### 5.4.3.3 Sooke Harbour:

That portion of Subarea 20-6 inside a line that begins at 48°22.500'N 123°42.012'W [Trollope Point] then to 48°22.651'N 123°42.643'W then to 48°22.770'N 123°42.684'W then following the shoreline to 48°22.684'N 123°41.487'W [Billings Point] then to 48°22.444'N 123°41.487'W then following the shoreline to the beginning point closed to commercial crab fishing from 00:01 March 15 to 23:59 September 15. (First Nations FSC and Recreational Access Closure)

#### 5.4.3.4 Ucluelet Harbour:

That portion of Subarea 23-11 north of a line that begins at 48°55.289'N 125°30.572'W then to 48°55.295'N 125°31.429'W [Francis Island] then following the southerly shore of Francis Island to 48°55.313'N 125°31.572'W then to 48°55.329'N 125°31.711'W then following the shoreline to the beginning point closed to commercial crab fishing from 00:00 hours January 1 to 23:59 hours March 31 and 00:01 hours October 1 to 23:59 hours December 31. (First Nations FSC and Recreational Access Closure)

### 5.4.4 Area E Crab Closure Requests

Details and status on the requests for commercial closures in portions of Area E can be obtained upon request to the Area Crab Manager. Consultations will continue and may result in in-season management action.

## **5.5 Johnstone Strait - Area G**

### **5.5.2 Areas G Year Round Crab Closures**

The following areas are closed permanently to commercial crab harvesting:

#### **5.5.2.1 Nimpkish:**

##### **Subarea 12-19**

Those waters of Broughton Strait inside a line that begins at 50°36.260'N 127°04.710'W [Ledge Point] then to 50°35.910'N 127°01.490'W [Haddington Island South Light] then to 50°35.213'N 126°57.052'W [Yellow Bluff Light] then following the southerly shore of Cormorant Island to 50°34.791'N 126°54.329'W [Gordon Bluff] then to 50°33.108'N 126°51.257'W [Lewis Point Light] then following the shoreline to the beginning point. (First Nations FSC and Recreational Access Closure)

#### **5.5.2.2 Discovery Passage:**

##### **Subarea 13-3**

Those waters of Discovery Passage inside a line that begins at 50°07.837'N 125°21.532'W [Wilfred Point Light] then to 50°07.830'N 125°20.870'W [Maud Island Light] then northerly following the shoreline to the dam, then across the dam to the shoreline of Quadra Island, then southerly following the shoreline to 50°03.142'N 125°13.866'W [north entrance to Quathiaski Cove] then to 50°02.496'N 125°13.287'W [south entrance to Quathiaski Cove] then southerly following the shoreline to 49°59.913'N 125°11.737'W [Cape Mudge Light] then true west to 49°59.913'N 125°13.794'W [Vancouver Island] then northerly following the shoreline to 50°02.664'N 125°15.037'W [Tyee Spit] then true east to 50°02.664'N 125°14.215'W [Discovery Passage] then to 50°04.392'N 125°15.510'W [Discovery Passage] then true west to 50°04.392'N 125°16.608'W [Orange Point] then northerly following the shoreline to the beginning point. (Dioxin Closure)

##### **Subarea 13-4**

Those waters of Quathiaski Cove on Quadra Island lying easterly of a line that begins at 50°03.142'N 125°13.866'W [north entrance to Quathiaski Cove] then to 50°02.496'N 125°13.287'W [south entrance to Quathiaski Cove]. (Dioxin Closure)

##### **Subarea 13-5**

Those waters of Discovery Passage and the Campbell River lying westerly of a line that begins at 50°04.392'N 125°16.608'W [Orange Point] then true east to 50°04.392'N 125°15.510'W [Discovery Passage] then to 50°02.664'N 125°14.215'W [Discovery Passage] then true west to 50°02.664'N 125°15.037'W [Tyee Spit]. This includes the tidal portion of the Campbell River. (Dioxin Closure)

##### **Subarea 13-6**

Those waters of Discovery Passage inside a line that begins at 50°11.181'N 125°22.914'W [Vancouver Island] then to 50°10.827'N 125°21.137'W [Separation Head] then southerly following the shoreline to 50°07.830'N 125°20.870'W [Maud

Island Light] then to 50°07.837'N 125°21.532'W [Wilfred Point Light] then northerly following the shoreline to the beginning point. (Dioxin Closure)

#### Subarea 13-11

Those waters of Kanish Bay lying easterly of a line that begins at 50°16.644'N 125°23.000'W [Granite Point] then to 50°14.883'N 125°22.016'W [Bodega Point]. (Dioxin Closure)

That portion of Subarea 13-7 southeast of a line that begins at 50°10.827'N 125°21.137'W [Separation Head] then to 50°11.487'N 125°20.344'W. (Dioxin Closure)

That portion of Subarea 13-10 east of a line that begins at 50°17.702'N 125°18.922'W [Chonat Point] then to 50°17.367'N 125°18.922'W. (Dioxin Closure)

That portion of Subarea 13-14 inside a line that begins at 50°00.696'N 125°08.802'W [Francisco Point] then northerly along the shore for 5 km to 50°03.208'N 125°10.347'W then true east to the 200 m contour then following the 200 m contour south to 50°00.696'N 125°06.956'W then to the beginning point. (Dioxin Closure)

#### 5.5.2.3 Owen Bay:

That portion of Subarea 13-12 north of a line from 50°18.872'N 125°14.203'W [Walters Point] to 50°18.872'N 125°13.339'W. (Dioxin Closure)

#### 5.5.2.4 Heydon Bay:

That portion of Subarea 13-43 westerly of a line that begins at 50°35.649'N 125°33.219'W then to 50°34.700'N 125°33.652'W. (First Nations FSC and Recreational Access Closure)

### 5.5.3 Area G Crab Closure Requests

Details and status on the requests for commercial closures in portions of Area G can be obtained upon request to the local Area Crab Manager.

## 5.6 Strait of Georgia - Area H

### 5.6.2 Area H Year Round Crab Closures

The following areas are closed permanently to commercial crab harvesting:

#### 5.6.2.1 Strait of Georgia Glass Sponge Reefs

In accordance with the Sensitive Benthic Areas Policy and its Ecological Risk Assessment Framework (ERAF) for Cold-water Corals and Sponge Dominated Communities, DFO has conducted a risk assessment regarding the potential impacts of bottom-contact fisheries on nine glass sponge reef areas in the Strait of Georgia. The Department consulted with First Nations, commercial and recreational fishers and other interested groups on proposed protection measures for the reefs. Formal closures of bottom contact fishing activities in these areas were put in place in-season in 2015.

Coordinates and a figure describing the nine glass sponge reef closure areas can be found in Appendix 7 and on the following web site:

#### 5.6.2.2 Comox Harbour:

##### Subarea 14-11

Those waters of Comox Harbour inside a line that begins at 49°42.059'N 124°51.581'W [Cape Lazo] then to 49°38.488'N 124°51.685'W [Comox Bar Light and Bell Buoy P54] then to 49°36.540'N 124°50.647'W [Longbeak Point] then to 49°35.613'N 124°53.240'W [near Hart Creek] then northerly following the shoreline to 49°38.707'N 124°55.541'W [Gartley Point] then to 49°39.618'N 124°55.505'W [Goose Spit Light] then northerly following the shoreline to the beginning point.

##### Subarea 14-14

Those waters of Comox Harbour inside a line that begins at 49°39.618'N 124°55.505'W [Goose Spit Light] then to 49°38.707'N 124°55.541'W [Gartley Point] then following the shoreline to the beginning point.

#### 5.6.2.3 Pender Harbour:

##### Subarea 16-4

Those waters of Pender Harbour lying easterly of a line that begins at 49°37.878'N 124°03.443'W [Henry Point] then true south to 49°37.497'N 124°03.443'W [Francis Peninsula] then following the easterly shoreline of Francis Peninsula to 49°36.995'N 124°01.988'W [Bargain Narrows] then true south to 49°36.985'N 124°01.988'W [Bargain Narrows], (First Nations FSC and Recreational Access Closure)

#### 5.6.2.4 Porpoise Bay:

That portion of Subarea 16-5 inside a line that begins at 49°29.917'N 123°44.798'W then to 49°29.917'N 123°46.401'W then following the shoreline to the beginning point, (First Nations FSC and Recreational Access Closure).

#### 5.6.2.5 Stuart Channel South:

Those waters in portions of Subareas 17-6, 17-7 and all of Subarea 17-9 lying inside a line that begins at 48°57.934'N 123°39.673'W [Donckele Pt] 48°58.155'N 123°40.417'W [south-eastern entrance to Preedy Harbour, Thetis Island] then to 48°58.241'N 123°41.441'W [Dayman Island] then to 48°58.283'N 123°41.706'W [Scott Island] then to 48°58.882'N 123°46.105'W [Sharpe Point] then to 48°58.296'N 123°47.239'W then following the westerly shoreline of Vancouver Island to 48°50.851'N 123°35.530'W [Grave Point] then to 48°51.000'N 123°34.242'W [Erskine Point] then following the easterly shoreline of Saltspring Island to 48°53.963'N 123°35.559'W [Parminter Point] then to then to 48°56.031'N 123°37.921'W [Josling Point] ] then following the westerly shore of Kuper Island to the beginning point. (Dioxin Closure).

#### 5.6.2.6 Stuart Channel North:

Those portions of Subareas 17-4 and 17-5 west of a line that begins at 49°05.799'N 123°48.039'W [Reynolds Point] then to 49°02.255'N 123°42.580'W [Miami Islet] then to 49°00.466'N 123°45.806'W [south of Kulleet Bay]. (Dioxin Closure)

#### 5.6.2.7 Satellite Channel:

Those portions of Subareas 18-6 and 18-7 that begins at 48°42.472'N 123°30.216'W then to 48°42.815'N 123°28.800'W then to 48°41.883'N 123°28.285'W then to 48°41.540'N 123°29.699'W then to the beginning point. (British Columbia Provincial Ecological Reserve #67) Note: some electronic charts do not correspond to these boundaries. You must ensure that you use the above coordinates when determining the closure area.

#### 5.6.2.8 Burgoyne Bay:

That portion of Subarea 18-7 east of a line that begins at 48°47.259'N 123°33.235'W [Bold Bluff Point] then to 48°48.820'N 123°33.235'W. (Dioxin Closure)

#### 5.6.2.9 Maple Bay:

Those waters of Subarea 18-7 westerly of a line from 48°48.500'N 123°35.322'W [Paddy Mile Stone] to 48°49.257'N 123°35.318'W [Arbutus Point]. (Dioxin Closure)

#### 5.6.2.10 Cowichan Bay:

##### Subarea 18-8

Those waters of Cowichan Bay lying westerly of a line that begins at 48°44.564'N 123°34.203'W [Separation Point] then to 48°42.945'N 123°33.292'W [Cherry Point]. (First Nations FSC and Recreational Access Closure)

#### 5.6.2.11 Fulford Harbour:

##### Subarea 18-10

Those waters of Fulford Harbour inside a line that begins at 48°43.998'N 123°25.533'W [Isabella Point] then to 48°45.220'N 123°23.219'W [Eleanor Point] then following the shoreline to the beginning point. (First Nations FSC and Recreational Access Closure)

#### 5.6.2.12 Sidney Spit:

Those waters easterly of a line that begins at 48°39.223'N 123° 20.763'W [navigation light at the north end of Sidney Island] then to 48°38.245'N 123°20.437'W then following the shoreline to the beginning point. (Recreational Access Closure)

#### 5.6.2.13 Patricia Bay:

Commercial crab harvesters are advised to avoid setting gear within in that portion of Patricia Bay in Saanich Inlet (portion of Subarea 19-8) inside a line that begins at 48°39.18'N 123°29.35'W then to 48°39.18'N 123°29.02'W then to 48°38.97'N 123°29.02'W then to 48°38.97'N 123°29.35'W then returning to the beginning point in order to avoid entanglement with sea bed oceanographic instruments deployed by the University of the Victoria Venus project. Please note that there is also a power and data cable from this location running to shore in Pat Bay, as described in a notice to mariners. For additional information see: [www.venus.uvic.ca/index.html](http://www.venus.uvic.ca/index.html)

#### 5.6.2.14 Victoria Harbour:

That portion of Subarea 19-1 inside a line that begins at 48°26.444'N 123°23.267'W [Chapman Point] then to 48°26.409'N 123°23.317'W then following the shoreline to 48°25.024'N 123°24.494'W [Macauley Point] then to 48°24.814'N 123°23.633'W [the

light at the western end of the Ogden Point breakwater] then following the shoreline to the beginning point. (Dioxin Closure)

5.6.2.15 Ogden Point:

Those portions of Subarea 19-3 inside a line that begins at 48°24.814'N 123°23.633'W [the light at the western end of the Ogden Point breakwater] then to 48°24.387'N 123°23.280'W [Brotchie Ledge Light] then to 48°24.649'N 123°22.701'W [Holland Point]. (Marine Reserve)

5.6.2.16 Race Rocks:

Those waters of Subareas 19-3 and 20-5 within 0.5 nautical miles of Great Race Rock. (Marine Reserve) This closure is within both Area 'H' and Area 'E'.

5.6.2.17 Ganges Harbour:

No buoys are permitted in that portion of Subarea 18-3 shown in Appendix 7. (Navigation Closure)

5.6.2.18 Dinner Bay:

That portion of 18-2 inside a line from 48°50.427'N 123°19.984'W then to 48°50.010'N 123°19.675'W [Dinner Point] then following the shoreline to the beginning point. (First Nations FSC and Recreational Access Closure)

5.6.2.19 Horton Bay:

That portion of 18-5 inside a line that begins at 48°50.123'N 123°14.703'W then to 48°50.062'N 123°14.571'W then following the shoreline to 48°49.566'N 123°14.230'W then to 48°49.481'N 123°14.206'W then following the shoreline to the beginning point. (First Nations FSC and Recreational Access Closure)

5.6.2.20 Esquimalt Harbour

As a precautionary measure, Esquimalt Harbour (Subarea 19-2) was closed on May 10<sup>th</sup>, 2016 to all fishing due to a fuel spill (see Fisheries Notices FN 0393 & FN0700). This closure will remain in place until testing can be done to determine that all species are safe for human consumption. Please check fisheries notices for status updates on this closure for the duration of this plan. (Fuel Spill)

5.6.2.21 Tsehum Harbour:

No buoys are permitted in that portion of Subarea 19-5 shown in Appendix 7. (Navigation Closure)

5.6.2.22 Cordova Channel:

Those waters of Subarea 19-5 inside a line that begins at 48°35.990'N and 123°23.400'W [Turgoose Point] then to 48°37.040' N 123°22.780' W [light off NW point of James Island] then following the shoreline of James Island to 48°35.370' N 123°20.960' W then to 48°33.490'N 123°21.750'W [Cowichan Head] then northerly following the shoreline to the beginning point, (First Nations FSC and Recreational Access Closure)

### **5.6.3 Area H Seasonal Crab Closures**

#### **5.6.3.1 Kuper Island:**

That portion of Subarea 17-8 that begins at 48°59.397'N 123°39.126'W [Thetis Island] then to 48°59.181'N 123°38.201'W [navigational buoy near Centre Reef] then to 48°58.897'W 123°37.627'W [Norway Island] then following the northerly shoreline of Norway Island to 48°58.549'N 123°37.021'W then to 48°58.121'N 123°36.838'W then to 48°57.981'N 123°36.575'W then to 48°56.031'N 123°37.921'W [Josling Point] then following the easterly shoreline of Kuper Island to 48°59.043'N 123°39.648'W then to 48°59.122'N 123°39.648'W then following the southerly shoreline of Thetis Island to the beginning point closed to commercial crab fishing from 00:01 March 15 to 23:59 September 15. (First Nations FSC and Recreational Access Closure)

#### **5.6.3.2 Sechelt Inlet:**

That portion of Subarea 16-5 inside a line that begins at 49°31.389'N 123°46.759'W [Four Mile Point] then to 49°31.943'N 123°47.393'W [Carlson Point] then following the shoreline to 49°29.917'N 123°46.401'W then to 49°29.917'N 123°44.798'W then following the shoreline to the beginning point closed to commercial crab fishing from 00:01 March 15 to 23:59 September 15. (First Nations FSC and Recreational Access Closure)

#### **5.6.3.3 Nanaimo Harbour:**

Subarea 17-14:

Those waters of Newcastle Channel and Nanaimo Harbour lying southerly of a line that begins at 49°11.598'N 123°56.936'W [Pimbury Point] then to 49°11.677'N 123°56.829'W [Shaft Point] then following the southwesterly shoreline of Newcastle Island to 49°11.023'N 123°55.553'W [Newcastle Island] then true south to 49°10.638'N 123°55.553'W [Protection Island] then following the southwesterly shoreline of Protection Island to 49°10.226'N 123°55.082'W [Gallows Point] then to 49°09.996'N 123°53.676'W [Jack Point] and northerly of the parallel passing through 49°06.952'N at the Cedar Road Bridge on the Nanaimo River closed to commercial crab fishing from 00:01 March 15 to 23:59 September 15. (First Nations FSC and Recreational Access Closure)

### **5.6.4 Area H Crab Closure Requests**

Details and status on the requests for commercial closures in portions of Area H can be obtained upon request to the Area Crab Manager. Consultations will continue and may result in season management action.

## **5.7 Fraser River - Area I**

### **5.7.2 Area I Year Round Crab Closures**

The following areas are closed permanently to commercial crab harvesting:

### 5.7.2.1 Strait of Georgia Glass Sponge Reefs

In accordance with the Sensitive Benthic Areas Policy and its Ecological Risk Assessment Framework (ERAF) for Cold-water Corals and Sponge Dominated Communities, DFO has conducted a risk assessment regarding the potential impacts of bottom-contact fisheries on nine glass sponge reef areas in the Strait of Georgia. The Department consulted with First Nations, commercial and recreational fishers and other interested groups on proposed protection measures for the reefs. Formal closures of bottom contact fishing activities in these areas were put in place in-season in 2015. Coordinates and a figure describing the nine glass sponge reef closure areas can be found in Appendix 7 and on the following web site:

<http://www.dfo-mpo.gc.ca/oceans/ceccsr-cerceef/closures-fermetures-eng.html>

#### Howe Sound:

##### Subarea 28-1

Those waters of Howe Sound inside a line that begins at 49°25.664'N 123°28.767'W [near Langdale ferry landing] then to 49°26.083'N 123°26.853'W [Gambier Island] then following the southerly shoreline of Gambier Island to 49°26.735'N 123°19.302'W [Halkett Point] then to 49°25.189'N 123°18.962'W [Hood Point] then following the westerly shoreline of Bowen Island to 49°20.397'N 123°25.979'W [Cape Roger Curtis] then to 49°20.907'N 123°27.903'W [Worlcombe Island] then to 49°21.500'N 123°29.157'W [Popham Island] then to 49°23.021'N 123°32.166'W [Gower Point] then northerly following the shoreline to the beginning point, (Dioxin Closure)

##### Subarea 28-2

Those waters of Howe Sound inside a line that begins at 49°32.108'N 123°22.823'W [Ekins Point Light] then to 49°33.251'N 123°21.500'W [east of McNab Creek] then to 49°33.348'N 123°19.415'W [Domett Point] then following the westerly shoreline of Anvil Island to 49°30.614'N 123°18.214'W [Irby Point] then to 49°31.558'N 123°15.673'W [Brunswick Point] then southerly following the shoreline to 49°19.823'N 123°15.880'W [Point Atkinson Light] then to 49°20.135'N 123°21.643'W [Point Cowan] then following the easterly shoreline of Bowen Island to 49°25.189'N 123°18.962'W [Hood Point] then to 49°26.735'N 123°19.302'W [Halkett Point] then northerly following the easterly shoreline of Gambier Island to the beginning point, (Dioxin Closure);

##### Subarea 28-3

Those waters of Thornbrough Channel inside a line that begins at 49°33.251'N 123°21.500'W [east of McNab Creek] then to 49°32.108'N 123°22.823'W [Ekins Point Light] then following the westerly shoreline of Gambier Island to 49°26.083'N 123°26.853'W [Gambier Island] then to 49°25.664'N 123°28.767'W [near Langdale ferry landing] then northerly following the shoreline to the beginning point, (Dioxin Closure);

#### Subarea 29-1

Those waters of the Strait of Georgia inside a line that begins at 49°28.409'N 123°53.287'W [Reception Point] then southeasterly following the shoreline to 49°23.021'N 123°32.166'W [Gower Point] then to 49°25.100'N 123°42.717'W [White Islets Light] then to the beginning point, (Dioxin Closure);

Those portions of 29-2 and 29-3 north of a line that begins at 49°28.409'N 123°53.287'W [Reception Point] to 49°19.615'N 123°25.979'W then to 49°19.823'N 123°15.880'W [Point Atkinson Light], (Dioxin Closure).

#### Point Atkinson Reef:

That portion of Subarea 28-6 bounded by a line commencing at the southwest entrance to Starboat Cove thence seaward in a southwest direction for 85 m, thence westerly following the shoreline for 100 m, thence in a northeast direction to a point on land. (Conservation Closure)

#### Burrard Inlet:

#### Subarea 28-10

Those waters of Burrard Inlet lying easterly of a line from 49°19.023'N 123°08.230'W [First Narrows Bridge] to 49°18.796'N 123°08.440'W [First Narrows Bridge] and westerly of a line from 49°17.959'N 123°01.590'W [Second Narrows Bridge] to 49°17.561'N 123°01.582'W [Second Narrows Bridge]. (Navigational Closure)

#### False Creek:

#### Subarea 28-8

Those waters of English Bay lying southeasterly of a line that begins at 49°18.069'N 123°09.526'W [Ferguson Point] then to 49°16.554'N, 123°12.113'W [near Jericho Dock]. (Navigational Closure)

#### 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 south-easterly point of Whyte Inlet; thence following the southern shoreline of Whyte Inlet at a distance of 100 m to a point lying 100 m from the most south-westerly point of Whyte Inlet; 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)

#### 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)

## New Howe Sound Glass Sponge Reef Closure Areas

Effective April 1<sup>st</sup>, 2019 all commercial, recreational and First Nations food, social and ceremonial (FSC) bottom-contact fishing activities for prawn, shrimp, crab and groundfish, and the use of downrigger gear, are prohibited within portions of Subareas 28-2 and 28-4 to protect nine Howe Sound glass sponge reefs. Details of these new closure areas are provided in the coordinates below, on an overview map in Appendix 7 and on the following web site:

<http://www.dfo-mpo.gc.ca/oceans/ceccsr-cerceef/closures-fermetures-eng.html>

### **Howe Sound Sponge Reef Closure Areas (4-sided polygons)**

**East Defence Island (1):** That portion of Subarea 28-4 that lies inside a line that begins at 49° 34.716' N, 123° 16.430' W then northeast to 49° 34.717' N, 123° 16.384' W then southeast to 49° 34.633' N, 123° 16.372' W then northwest to 49° 34.641' N, 123° 16.425' W then to the beginning point.

**East Defence Island (2):** That portion of Subarea 28-4 that lies inside a line that begins at 49° 34.770' N, 123° 16.312' W then true east to 49° 34.770' N, 123° 16.261' W then southeast to 49° 34.647' N, 123° 16.214' W then northwest to 49° 34.648' N, 123° 16.311' W then to the beginning point.

**Anvil Island:** That portion of Subarea 28-4 that lies inside a line that begins at 49° 32.790' N, 123° 17.343' W then southeast to 49° 32.788' N, 123° 16.955' W then southwest to 49° 32.572' N, 123° 16.978' W then northwest to 49° 32.574' N, 123° 17.345' W then to the beginning point.

**Lost Reef:** That portion of Subarea 28-2 that lies inside a line that begins at 49° 29.801' N, 123° 18.059' W then northeast to 49° 29.857' N, 123° 17.957' W then southeast to 49° 29.651' N, 123° 17.737' W then southwest to 49° 29.633' N, 123° 17.885' W then to the beginning point.

**Brunswick Point:** That portion of Subarea 28-2 that lies inside a line that begins at 49° 28.384' N, 123° 15.181' W then northeast to 49° 28.479' N, 123° 14.987' W then southeast to 49° 28.417' N, 123° 14.870' W then southwest to 49° 28.315' N, 123° 15.038' W then to the beginning point.

**Lions Bay:** That portion of Subarea 28-2 that lies inside a line that begins at 49° 27.483' N, 123° 15.611' W then northeast to 49° 27.499' N, 123° 15.420' W then southeast to 49° 27.239' N, 123° 15.347' W then southwest to 49° 27.227' N, 123° 15.536' W then to the beginning point.

**Kelvin Grove:** That portion of Subarea 28-2 that lies inside a line that begins at 49° 27.268' N, 123° 15.047' W then northeast to 49° 27.290' N, 123° 14.639' W then southwest to 49° 27.036' N, 123° 14.715' W then southwest to 49° 27.032' N, 123° 15.037' W then to the beginning point.

**Halkett Point:** That portion of Subarea 28-2 that lies inside a line that begins at 49° 26.771' N, 123° 18.823' W then northeast to 49° 26.912' N, 123° 18.660' W then southeast to 49° 26.879' N, 123° 18.594' W then southwest to 49° 26.722' N, 123° 18.700' W then to the beginning point.

**Bowyer Island:** That portion of Subarea 28-2 that lies inside a line that begins at 49° 24.403' N, 123° 16.282' W then northeast to 49° 24.737' N, 123° 16.113' W then southeast to 49° 24.676' N, 123° 15.911' W then southwest to 49° 24.274' N, 123° 16.106' W then to the beginning point.

**Dorman Point:** That portion of Subarea 28-2 that lies inside a line that begins at 49° 22.485' N, 123° 19.259' W then southeast to 49° 22.472' N, 123° 19.191' W then southwest to 49° 22.391' N, 123° 19.268' W then northwest to 49° 22.416' N, 123° 19.321' W then to the beginning point.

#### 5.7.2.2 Roberts Bank/Deltaport/Tsawwassen BC Ferries:

Portions of Subarea 29-7 are closed to commercial fishing in 2019. To ensure and maintain a safe approach for deep sea vessels, ferries, and berthing tugs transiting in and out of the Deltaport and BC Ferries terminals, crab fishing is prohibited with those waters bounded by the following coordinates:

Commencing from the in-shore end of the turning basin:

49° 1.567' North Latitude 123° 08.783' West Longitude  
49° 1.467' North Latitude 123° 8.533' West Longitude  
49° 0.950' North Latitude 123° 8.450' West Longitude  
49° 0.933' North Latitude 123° 8.183' West Longitude  
49° 0.600' North Latitude 123° 7.767' West Longitude  
49° 0.433' North Latitude 123° 7.983' West Longitude  
49° 0.367' North Latitude 123° 7.833' West Longitude  
49° 0.467' North Latitude 123° 7.583' West Longitude  
49° 0.117' North Latitude 123° 7.117' West Longitude  
49° 0.117' North Latitude 123° 11.267' West Longitude  
49° 0.917' North Latitude 123° 11.267' West Longitude  
49° 0.767' North Latitude 123° 10.583' West Longitude  
49° 1.083' North Latitude 123° 10.317' West Longitude  
49° 0.817' North Latitude 123° 9.533' West Longitude  
then to the beginning point.

Please refer to section 5.1.2.3 for an update on the proposed Roberts Bank Terminal 2 project.

#### 5.7.2.3 Fraser Delta - Venus Project:

Harvesters are advised that the installation of sea bed oceanographic monitoring equipment by the University of Victoria VENUS project occurred in May 2013. The location of the instrument arrays are available from the VENUS project website and harvesters are advised to familiarize themselves with the locations of the instruments prior to the 2019 fishery. For additional information see:

<http://venus.uvic.ca/>

### 5.7.3 Area I Seasonal Crab Closures

#### 5.7.3.2 Fraser River:

Areas 28 and 29, excluding Subareas 29-5 and 29-8 are closed January 1 to 08:00 hours June 15, 2019 and from 16:00 hours November 30 to December 31, 2019, (Soft-shell and Conservation Closure).

## **5.7 Boundary Bay - Area J**

### **5.7.2 Area J Seasonal Crab Closures**

#### **5.7.2.0 Boundary Bay:**

Subarea 29-8 is closed January 1 to 08:00 hours July 15, 2019 and 16:00 hours November 30 to December 31, 2019. For 2019, the two day bait ban has been removed. (Soft-shell and Conservation Closure)

## **5.8 Octopus Closures**

All octopus caught in octopus closure areas must be removed from the trap and released immediately in the location where they were caught, in a manner that will cause least harm. The retention of incidentally caught octopus species is prohibited within the following areas:

### **5.8.2 Area 6**

#### **5.8.2.0 Subarea 6-2 (First Nations FSC access closure)**

### **5.8.3 Area 13**

#### **5.8.3.2 Discovery Passage:**

Subareas 13-3, 13-4, 13-5 and a portion of 13-6. Those waters of Discovery Passage bounded on the north by a straight line drawn true west from North Bluff on Quadra Island, across Seymour Narrows to a fishing boundary sign on Vancouver Island, and on the south by a line from the Cape Mudge light true west to Vancouver Island. (Marine Reserve)

#### **5.8.3.3 Mitlenach Island**

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

### **5.8.4 Area 14**

#### **5.8.4.2 Hornby Island:**

Those waters of Lambert Channel and the Strait of Georgia, Subarea 14-7, inside a line commencing at Shingle Spit on Hornby Island, thence 239° true for 0.5 nautical miles, thence 126° true for 3.5 nautical miles, thence 64° true for 4.9 nautical miles, thence 304° true for 2.9 nautical miles, thence 213° true for 0.5 nautical miles to Cape Gurney on Hornby Island. (Marine Reserve)

#### **5.8.4.3 Mitlenatch Island**

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

## **5.8.5 Area 15**

### **5.8.5.2 Vivian Island**

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)

### **5.8.5.3 Rebecca Rock**

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)

### **5.8.5.4 Dinner Rock**

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

### **5.8.5.5 Emmonds Beach**

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)

### **5.8.5.6 Mitlenatch Island**

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

### **5.8.5.7 Beach Gardens**

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

## **5.8.6 Area 16**

### **5.8.6.2 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)

## **5.8.7 Area 19**

### **5.8.7.2 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)

### **5.8.7.3 10 Mile Point**

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

#### 5.8.7.4 Race Rocks

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

Note: Consultation regarding the boundaries for the Race Rocks Marine Protected Areas will be ongoing in 2019. Changes to boundary descriptions resulting from consultations may occur in season.

#### 5.8.7.5 Saanich Inlet

Subareas 19-7 to 19-12 inclusive. (First Nations FSC and Recreational access closure)

### 5.8.8 Area 20

#### 5.8.8.2 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)

#### 5.8.8.3 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)

### 5.8.9 Area 21

#### 5.8.9.2 Pacific Rim National Park

That portion of Area 21 between the lowest low water on record and the highest high water on record from Pachena Point thence following the Vancouver Island shoreline easterly to Bonilla Point. (Park)

### 5.8.10 Area 23

#### 5.8.10.2 Pacific Rim National Park, Broken Group Islands

Those waters of the Broken Group Islands in Barkley Sound within park boundaries as shown, since 1989, on Canadian Hydrographic Service Chart 3671. (Park)

#### 5.8.10.3 Pacific Rim National Park

That portion of Subarea 23 between the lowest low water on record and the highest high water on record from Whittlestone Point to Cape Beale. (Park)

#### 5.8.10.4 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)

### **5.8.11 Area 26**

#### 5.8.11.2 Checleset Bay Fishery Closure Area

Those waters of Checleset Bay within Subareas 26-7, 26-8 and 26-10 and 126-1 on the northwest coast of Vancouver Island enclosed by the coordinates 49° 59' to 50° 6.3' N and 127° 26' to 127° 39' W. (Ecological Reserve)

#### 5.8.11.3 Kyuquot Sound Marine Communities Study Area

Kyuquot Bay: A portion of 26-6 inside or northerly of a line from White Cliff Head to Racoon Point and identified on the Kyuquot map attached to this plan, and:

Entrance to Crowther Channel: A portion of 26-6 on the west side of Union Island commencing at position 50° 0.4' N, 127° 19.3' W and identified on the map attached to this plan. (Research Closures)

### **5.8.12 Area 28**

#### 5.8.12.2 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)

#### 5.8.12.3 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)

#### 5.8.12.4 Burrard Inlet

Subarea 28-10. (Navigational Closure)

#### 5.8.12.5 False Creek

Subarea 28-8. (Navigational Closure)

## 6 LICENCING

### 6.8 Licence Category

A crab by trap, category R or communal commercial category FR licence is required to commercially harvest crab by trap gear. Category R licence eligibilities are limited entry and vessel based. Category FR licence eligibilities are limited entry and party based; a First Nations group is the licence eligibility holder and the eligibility must be designated annually at the time of licensing to a commercially registered fishing vessel that meets maximum vessel length restrictions.

### 6.9 Application Fees

The annual licence fee for a category R licence is \$590.00. There is no annual licence fee for communal commercial FR licences.

### 6.10 Licence Issuance

Renewal of a category R licence and payment of 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. The category R licences not renewed by March 31 will cease and licence issuance requests will be unable to be considered in future.

Prior to annual licence issuance of a communal commercial licence, 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/fm-gp/sdc-cps/licence-permis-eng.htm>).

Prior to annual licence issuance, vessel owners/licence eligibility holders are required to:

- a.) Any Ministerial conditions placed on the licence eligibility are met;
- b.) Any conditions of the previous year's licence, such as submission and approval of logbooks, have been met and approved by the Shellfish Data Unit;
- c.) Any application for re-allocation of a traps must be submitted **by March 1, 2019**.

### 6.11 Licence Documents

Crab by Trap licence documents are valid from the date of issue to March 31<sup>st</sup> of the following calendar year. Replacement for lost or destroyed licence documents maybe obtained by reprinting the licence document through the licence holders account via the National Online Licensing System.

### 6.12 Trap Re-allocation

Temporary crab trap re-allocation (stacking) will be permitted on an annual basis in Areas E-Tofino, E-Sooke, G, H and J. The reallocated licence must come from the same licence area.

Where traps are reallocated to another vessel within the same fishing area, 100% of the traps associated with the crab licence eligibility reallocating the traps will be relinquished, and the trap allocation will be zero for the licence year. Whereas the receiving vessel may then fish a maximum of 66% of the relinquished traps. All trap reallocations will be reverted back to the original crab licence eligibility at the end of the licence year.

All request to temporarily reallocate the crab traps must be submitted through the National Online Licensing System. All requests must be received by March 1, 2019, without exception. Any request received after March 1, 2019 will not be accepted.

Trap reallocations cannot be reversed once the transaction has been completed.

### **6.13 Vessel Replacement**

The owner(s) of a category R licence may make an application to replace the commercial fishing vessel. Both the replacement vessel and the vessel being replaced must have a survey on file with the Pacific Fishery Licence Unit (PFLU) or submitted with the vessel replacement application. Vessel measurement must be surveyed in accordance to Department guidelines.

The replacement vessel may not exceed the overall length of the vessel being replaced. A vessel may hold only one crab by trap licence eligibility.

Category R licence eligibilities become married to other vessel based licence eligibilities when combined on a vessel.

### **6.14 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 (see Contacts in Appendix 8 of the Integrated Fishery Management Plan for Crab by Trap).

## **7. OTHER RESTRICTIONS AND GENERAL INFORMATION**

### **7.1 Domoic Acid and Paralytic Shellfish Poison**

In some areas, high levels of naturally occurring toxins such as domoic acid (DA) and paralytic shellfish poison (PSP) have been found in the viscera of Dungeness crabs. DA can cause a variety of gastrointestinal symptoms and also fatigue, disorientation, and memory loss. In extreme circumstances, ingestion of high concentrations of PSP and DA can be fatal to humans. Crab harvesters should be aware of the potential for PSP and DA accumulation in crabs

harvested in areas where there are concerns or closures due to increased marine biotoxin levels, which could lead to fishery closures. Fishers may be called upon to help prevent fishery closures by contributing to area sampling programs and should always keep accurate harvest information.

In September of 2012, all bivalve fisheries were closed in Subarea 1-5 in Haida Gwaii due to high levels of domoic acid detected in razor clam samples submitted to the Canadian Food Inspection Agency (CFIA) as a part of the on-going marine biotoxin monitoring program. Through a cooperative effort between the Area A Association and their service provider Ecotrust Canada, crab samples from this Subarea (McIntyre Bay) were obtained and submitted to CFIA for analysis of potential accumulations of DA. All results for the submitted crab samples showed negligible amounts of DA and the area was cleared from contamination concerns.

## **7.2 Violations and Licence Suspensions**

The Crab Sectoral Committee has recommended the application of court imposed licence suspensions in cases of serious violations in this fishery.

## **7.3 Groundfish Taken for Bait**

Harvesters are reminded that any groundfish taken for bait must be taken in accordance with the appropriate groundfish licence and attached licence conditions. Dockside monitoring is an essential element of groundfish stock monitoring and quota management. Therefore, it is important that harvesters using any groundfish for bait (e.g. dogfish, rockfish, and flatfish), land, and validate that groundfish catch prior to using it for bait, in accordance with the Schedule II Conditions of Licence under which authority that groundfish species are taken.

## **7.4 Vessel Safety & Stability**

- Please see Appendix 4

## Appendix 4: Fishing Vessel Safety

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## 1. OVERVIEW – FISHING 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. In BC, WorkSafeBC also regulates health and safety issues in commercial fishing. This includes requirements to ensure the health and safety of the crew and safe operation of the vessel. In BC, 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 owner, master or operator 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, crew training, and knowledge of current and forecasted weather conditions. As safety requirements and guidelines may change, the vessel owner, crew, and other workers must be aware of the latest legislation, policies and guidelines prior to each trip.

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

Education and training programs

Marine emergency duties training

Fish Safe – Stability Education Program & 1 Day Stability Workshop

Fish Safe – SVOP/Safe on the Wheel Course

Fish Safe – Safest Catch Program – **FREE** for BC commercial fishers

First Aid training

Radio Operators Course

Fishing Masters Certificate training

Small Vessel Operators Certificate training

Publications:

- 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>)
- Gearing Up for Safety – WorkSafeBC
- Safe At Sea DVD Series – Fish Safe
- Stability Handbook – Safe at Sea and Safest Catch – DVD Series

- Safest Catch Log Book
- Safety Quick

For further information see: [www.tc.gc.ca/eng/marinesafety/menu.htm](http://www.tc.gc.ca/eng/marinesafety/menu.htm)  
[www.fishsafebc.com](http://www.fishsafebc.com)  
[www.worksafebc.com](http://www.worksafebc.com)

## 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 drills 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 also to correct ballasting. Fish harvesters must be familiar with their vessel's centre of gravity, the effect of liquid free surfaces on stability (i.e. 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 a reputable naval architect, marine surveyor or the local Transport Canada Marine Safety Office.

Fishing vessel owners are required to develop detailed instructions addressing the limits of stability for each of their vessels. These instructions must include detailed safe operation documentation kept on board the vessel. Examples of detailed documentation include: engine room procedures; maintenance schedules to ensure watertight integrity; and, instructions for regular practice of emergency drills.

The *Fishing Vessel Safety Regulations* currently require, with certain exceptions, a full stability assessment for vessels between 15 and 150 gross tons that do not exceed 24.4 metres in length and include fishing vessels involved in the catch of herring or capelin. 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, the following fishing vessels must successfully undergo a stability assessment by a competent person:

- A new fishing vessel that has a hull length of more than 9 m;
- 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 vessels 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

A fishing vessel that is not required to undergo a stability assessment shall have 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. 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 one, or to receive guidance on obtaining competent assessor.

TC is updating [SSB No. 01/2008](#), which was issued in 2008 and 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 2005 and found a variety of factors that effected the vessel's stability were identified as contributing factors in vessels capsizing, such as with: [M05W0110](#) - *Morning Sunrise*, [M07M0088](#) - *Big Sisters*, [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* and [M17P0052](#) - *Miss Cory*.

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 Regulation (OHSR) require owners of fishing vessels to provide documentation on board, readily accessible to crew members, which describes vessel characteristics, including stability.

In 2013, Fish Safe developed a code of best practices for the food and bait herring fishery and the prawn fishery: 'Food and Bait – Best Practice Reminders'; 'Prawn Industry - Best Industry Recommended Practices.' A roe herring code of best practices was developed in 2017. Please contact Ryan Ford at Fish Safe for a copy of the program materials they developed to address safety and vessel stability in these fisheries. Ryan Ford – Cell phone: (604) 739-0540 - Email: [ryan@fishsafebc.com](mailto:ryan@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.

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) require 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 with the crew for the established procedures.

Between 2011 and 2015 the TSB investigated 17 fishing vessel accidents which resulted in 17 fatalities. The reports 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 WorkSafe Bulletin *Cold Water Immersion* (available from the WorkSafeBC website at [www.worksafebc.com](http://www.worksafebc.com))

WorkSafeBC currently requires workers who are employed under conditions which involve a risk of drowning to wear a PFD or lifejacket with sufficient buoyancy to keep the worker's head above water. Where there is a risk of entering the water, the use of a PFD will prepare a crew member to remain afloat, to survive the effects of cold shock, reduce the need to swim and give rescuers time to respond.

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](#) and the *Caledonian* - [M15P0286](#) fishing vessel accidents the Board recommended that both TC and WorkSafeBC 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.

## 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](http://www.weatheroffice.gc.ca/marine/index_e.html)

### 2.4.2 Emergency Radio Procedures

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

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

Since August 1, 2003 all commercial vessels greater than 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](http://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 MCTS and DSC can be obtained by contacting a local Coast Guard MCTS centre (located in Victoria or Prince Rupert or from the Coast Guard website:

[www.ccg-gcc.gc.ca/Pacific](http://www.ccg-gcc.gc.ca/Pacific)).

### 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 (250) 363-8904 or from the Coast Guard website: <http://www.ccg-gcc.gc.ca/eng/CCG/Home>.

### 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, 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, and personal flotation devices (PFDs). Part 12 addresses issues related to tools, machinery and equipment, including safeguarding. Part 15 addresses issues related to rigging.

Additionally, Part 3 of the *WCA* defines the roles and responsibilities of owners, employers, supervisors and workers. (Fishing vessel masters are considered to be employers under the *WCA*)

The OHSR and the *WCA* are available from the Provincial Crown Printers or by visiting the WorkSafeBC website: [www.worksafebc.com](http://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	Vancouver/ Richmond/Delta	(604) 244-6477
Mark Lunny	Courtenay	(250) 334-8732
Cody King	Courtenay	(250) 334-8733
Gregory Matthews	Courtenay	(250) 334-8734
Jessie Kunce	Victoria	(250) 881-3461

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 (604) 233-4062 or by email: [tom.pawlowski@worksafebc.com](mailto:tom.pawlowski@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.

Fish Safe is managed by Ryan Ford, 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:

Ryan Ford	Cell: (604) 739-0540
Program Manager	Office: (604) 261-9700
Fish Safe	Email: <a href="mailto:ryan@fishsafebc.com">ryan@fishsafebc.com</a>
#100, 12051 Horseshoe Way	<a href="http://www.fishsafebc.com">www.fishsafebc.com</a>
Richmond, BC V7A 4V4	

#### 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 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 released one investigation report:

- the capsizing of the trawl [Caledonian](#) and subsequent fatalities.

In 2018 the TSB 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.

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 fishers 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 fishers still don't wear them. Regulations currently require that PFDs be worn only if fishers identify a risk, however; you never know when you could end up in the water. So the TSB is recommending to TC and WorksafeBC 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.

For more information about the TSB, visit the website at [www.tsb.gc.ca](http://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/2018/marine.asp>

Reporting an Occurrence: [www.tsb.gc.ca/eng/incidents-occurrence/marine/](http://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.

Glenn Budden, Investigator, Marine - Fishing Vessels  
Transportation Safety Board of Canada  
4 - 3071 No. 5 Road  
Richmond, BC, V6X 2T4  
Telephone: 604-666-2712  
Cell: (604) 619-6090  
Email: [glenn.budden@tsb.gc.ca](mailto:glenn.budden@tsb.gc.ca)

# CRAB TRAP HARVEST LOG

 V.R.N. Vessel Registration No.

 Vessel Vessel Name

 Year 2 0 1 8

Page No.

**Fishing Method:**  Singles  Ground Lines  
 (check all that apply)

**Depth:**  
 (check one)

 Fathoms  
 or  
 Meters

**Catch Weight:**  
 (check one)

 Pounds  
 or  
 Kilograms

**Bait Fastener:**  
 (check all that apply)

 Jars  
 Cages  
 Clips / Hooks

**Bait Type:**  
Herring
**Section A: Fishing Information - make a new entry for each day, where sub-area, soak time and depth range fished are the same**

DATE HAULED		SOAK TIME (days or hours)		Give one representative point for each sub-area where the soak time and depths fished are the same		PACIFIC FISHERY MANAGEMENT		DEPTH		Dungeness Crab <input checked="" type="checkbox"/>	CATCH INFORMATION		No. of Traps Pulled	Vessel Master Name (printed)	Vessel Master Signature	Vessel Master FIN	PBS Code							
month	day	Days	Hours	Latitude dd° mm.mmm	Longitude ddd° mm.mmm	Area	Sub-area	Min.	Max.	(specify if other)	No. of Pieces	Weight												
0	3	1	5	2	51° 03.123'	127° 18.421'	1	1	3	1	4	2	0	√	9	6	1	5	6	195	Joe Happy	Joe Happy	54321	
	↓	↓	↓	↓	50° 54.316'	127° 16.523'	1	2	1	3	4	8	√	2	4	3	8	50	Joe Happy	Joe Happy	54321			
	↓	1	8	3	51° 03.123'	127° 18.421'	1	1	3	1	4	2	0	√	7	2	1	1	7	195	John Smith	John Smith	12345	

**INSTRUCTIONS FOR COMPLETING CRAB HARVEST LOG WITH EXPLANATION OF CRAB LOG TERMS**

\*\*Each entry must be completed by midnight of the day that fishing occurred. Each entry must include the name, signature and FIN of the vessel master.\*\*

**SECTION A: FISHING INFORMATION**

TERM	DESCRIPTION	TERM	DESCRIPTION
Fishing Method	Indicate if the traps were attached to a Ground line, Single-buoyed or a mix of both (check all that apply)	Depth	Check off if reporting in Fathoms or Meters. Record minimum and maximum depth of traps set.
Bait Fastener	Indicate if bait is in a Jar (container), in Cages or held on by a Clip or Hook (check all that apply)	Bait Type	Indicate bait used; for example herring, squid, salmon heads, etc.
Catch Weight	Check off if reporting weights in Pounds or Kilograms	Catch Information	Record the total count of crab retained and/or total weight of crab retained
Date Hauled	Month and day that gear was HAULED. Month (01 to 12); Day (01 to 31)	Soak Time	Length of time that traps were in water fishing. Records as total DAYS soaked OR total HOURS soaked.
Latitude/Longitude	The vessel master shall record a position to represent the fishing location in the Pacific Fishery Management sub-area, for traps with equal soak times being fished at equal depth ranges. See example above for format.	Pacific Fishery Management	Boundaries are defined in the <i>Pacific Fishery Management Area Regulations, 2007</i> . Must correspond to Latitude and Longitude recorded.
Species	Use check mark to indicate Dungeness Crab as species of crab retained. Describe if other: RR = Red Rock, RK = Red King Crab, GK = Golden King Crab	Area/Sub-area	
		No. of Traps Pulled	Total number of traps pulled. Not to exceed total allowable limit.

**Section B: Incidental Octopus Catch - report by number and weight**

Line Number	Count of Octopus	Total Weight
2	2	3 0
3	1	1 0

**Section C: Description of Traps - must complete at beginning of every season and each time trap descriptions change during the season**

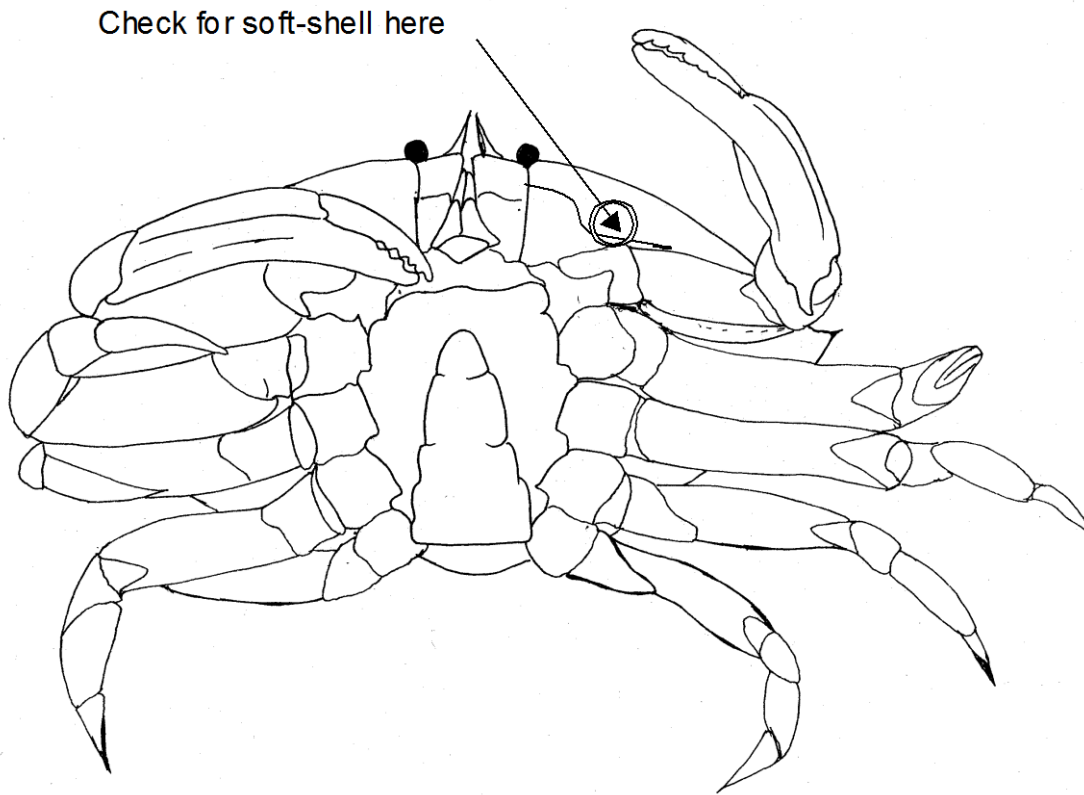
Trap information same as previous page? (check box for yes)

Trap Type	No. of Traps	Trap Shape (circle one)	Frame Type (circle one)	Diameter (inches)	Height (inches)	Mesh Type (circle one)	Escape Ring Size (mm)
#1	2 0 0	circ <sup>o</sup> square conical	Iron Iron+Stainless Stainless	3 6	1 2	Stainless Synthetic	110
#2	9 5	circ <sup>o</sup> square conical	Iron Iron+Stainless Stainless	3 6	1 2	Stainless Synthetic	105
#3		circ <sup>o</sup> square conical	Iron Iron+Stainless Stainless			Stainless Synthetic	

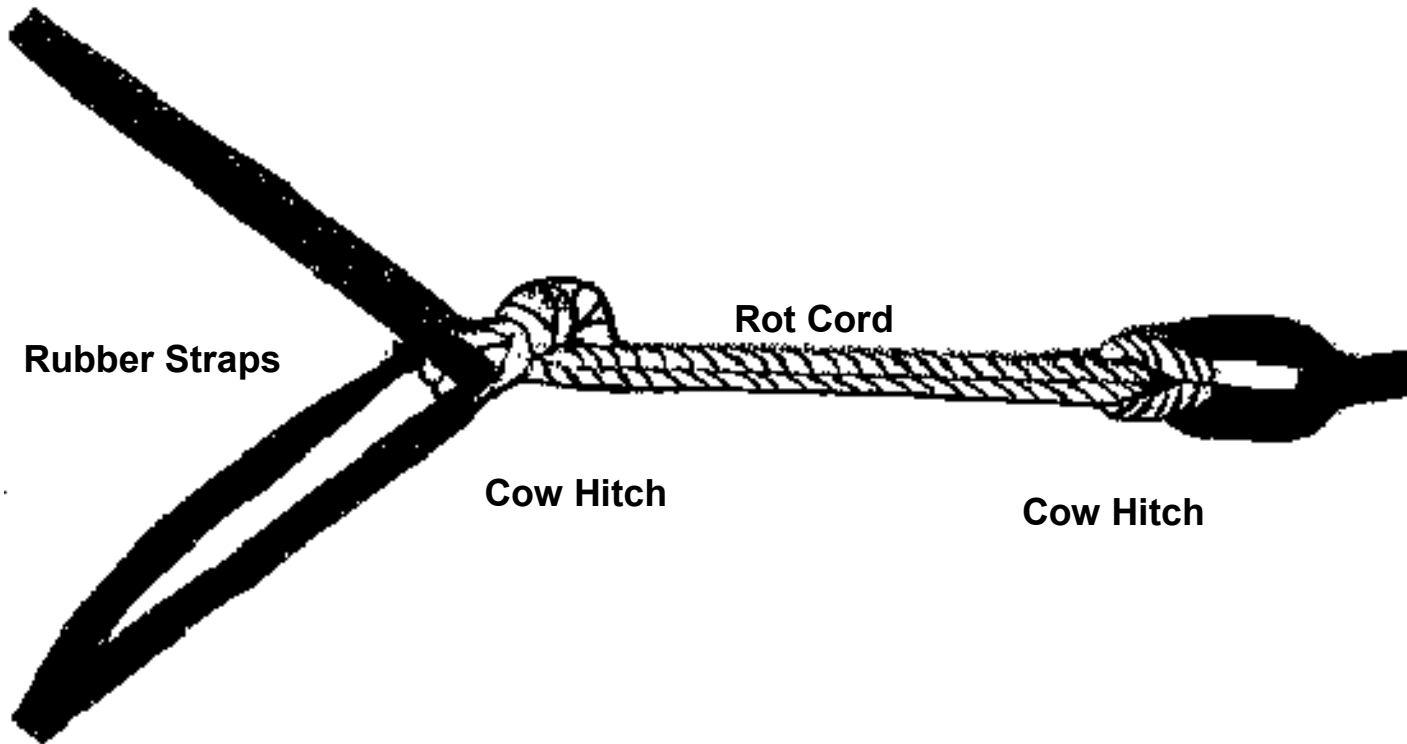
## APPENDIX 6: DIAGRAMS

### APPENDIX 6.1 DIAGRAM OF WHERE TO CHECK CRAB FOR SOFT-SHELL

This diagram is of the underside of a male Dungeness crab. The arrow indicates the location where a crab shall be checked for soft-shell. The circle indicates the correct position for the placement of the foot of the durometer when measuring shell hardness. The adjacent curved line is the suture line.

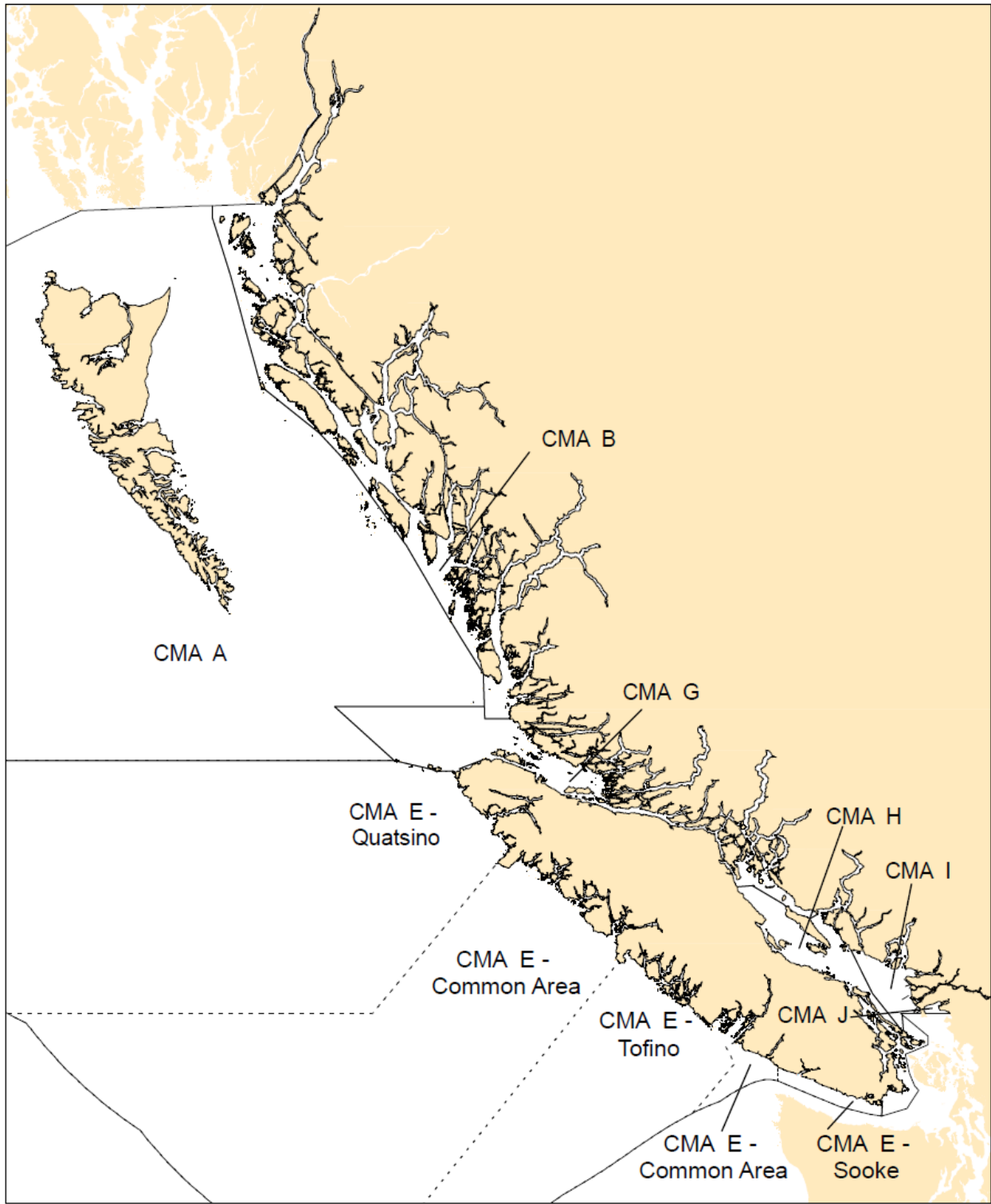


**APPENDIX 6.2 ROT CHORD DIAGRAM PLACEMENT**



## APPENDIX 7: MAPS

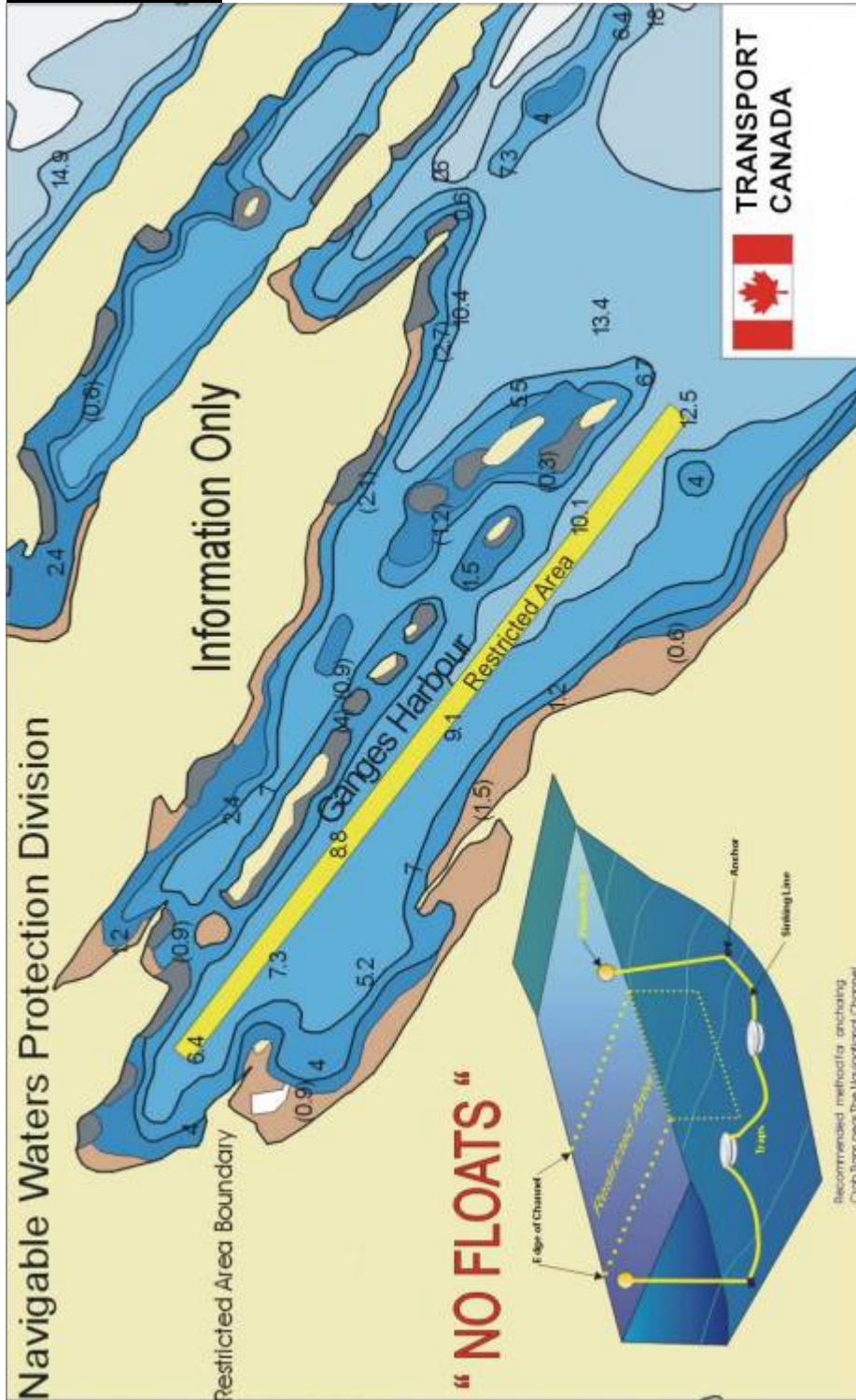
### 7.1 MAP OF COMMERCIAL CRAB MANAGEMENT AREAS



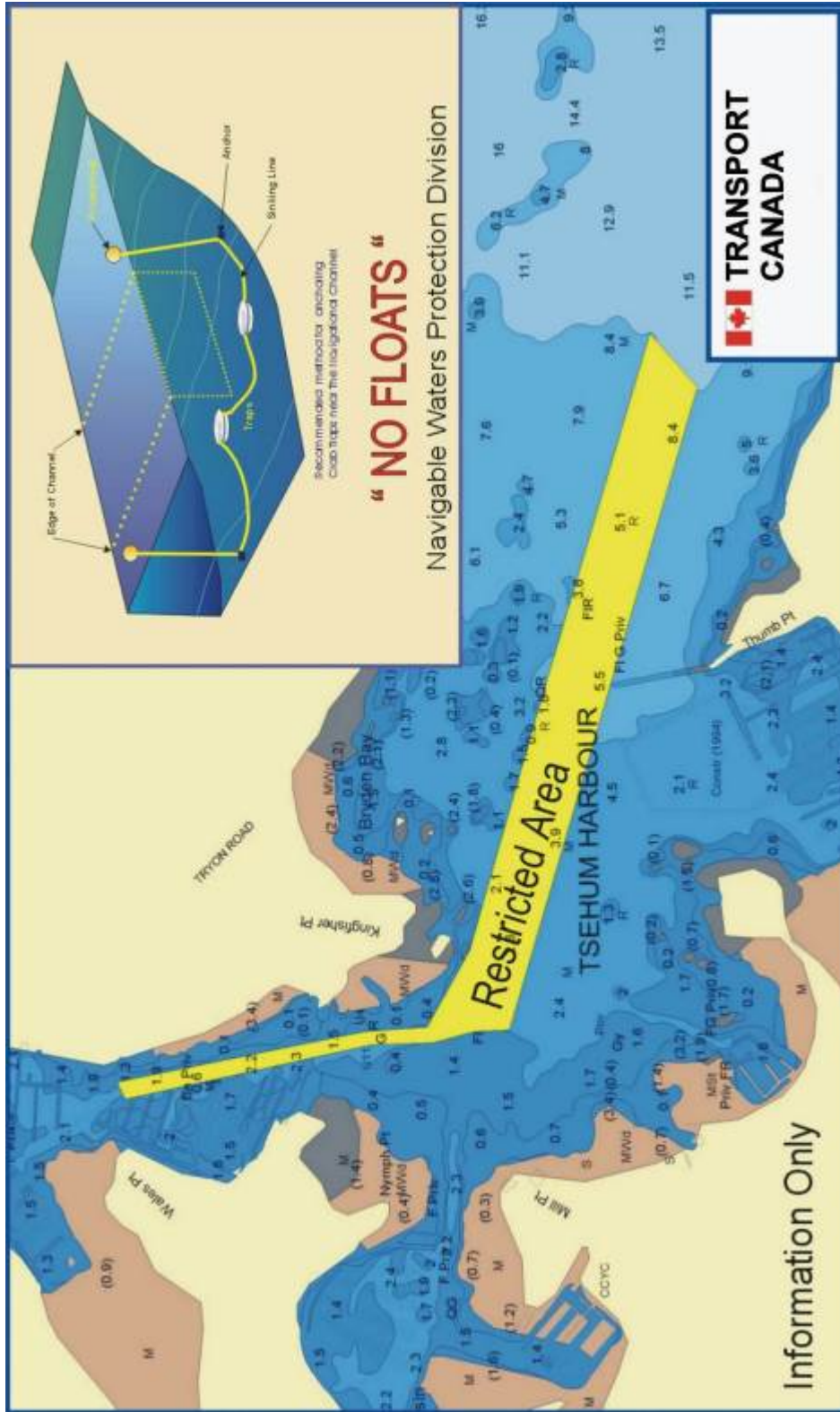
Appendix 7.1: Map of Crab Commercial Management Areas

## 7.2 MAPS OF RESTRICTED FISHING AREAS

### Ganges Harbour

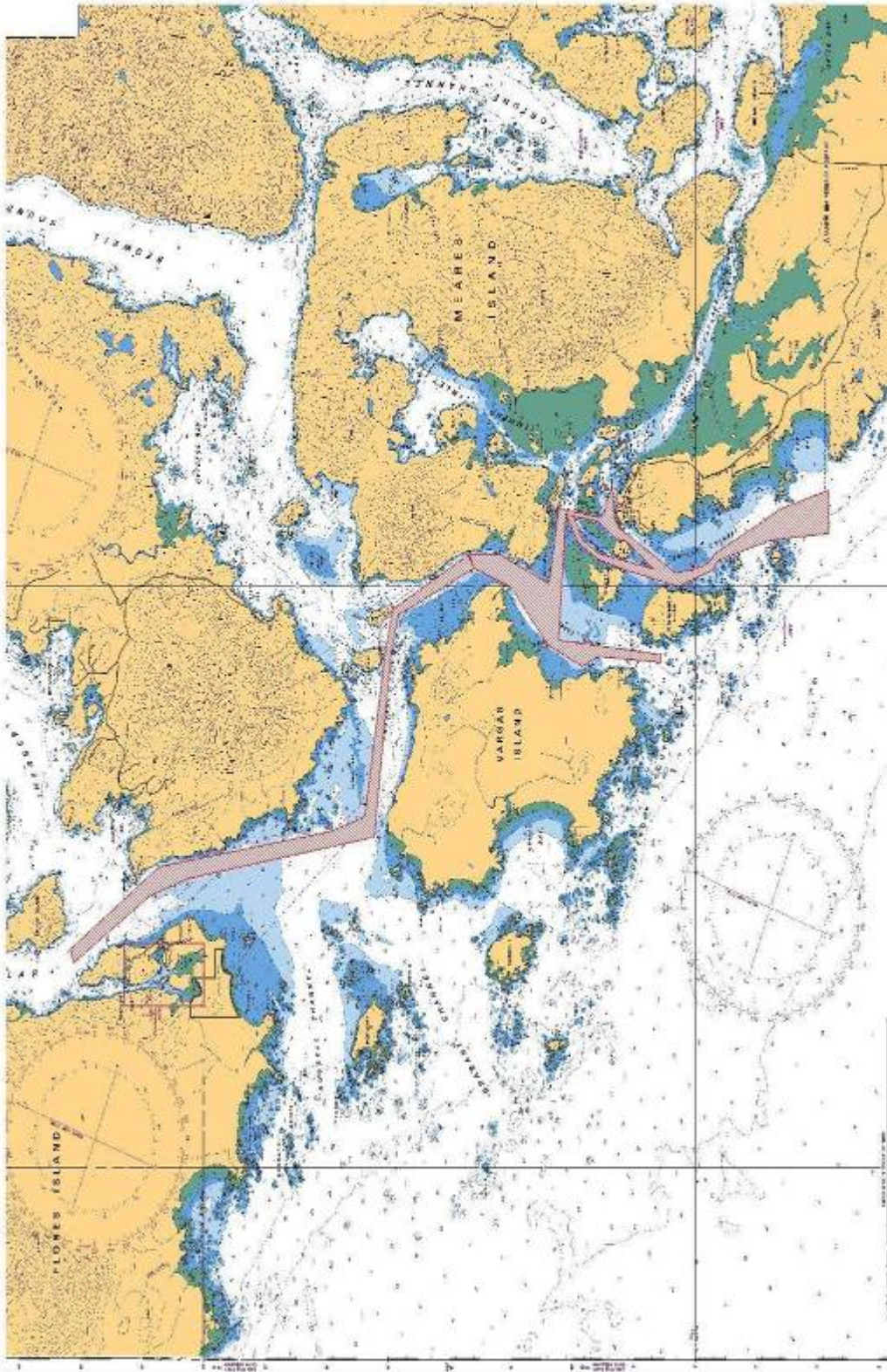


# Tsehum Harbour



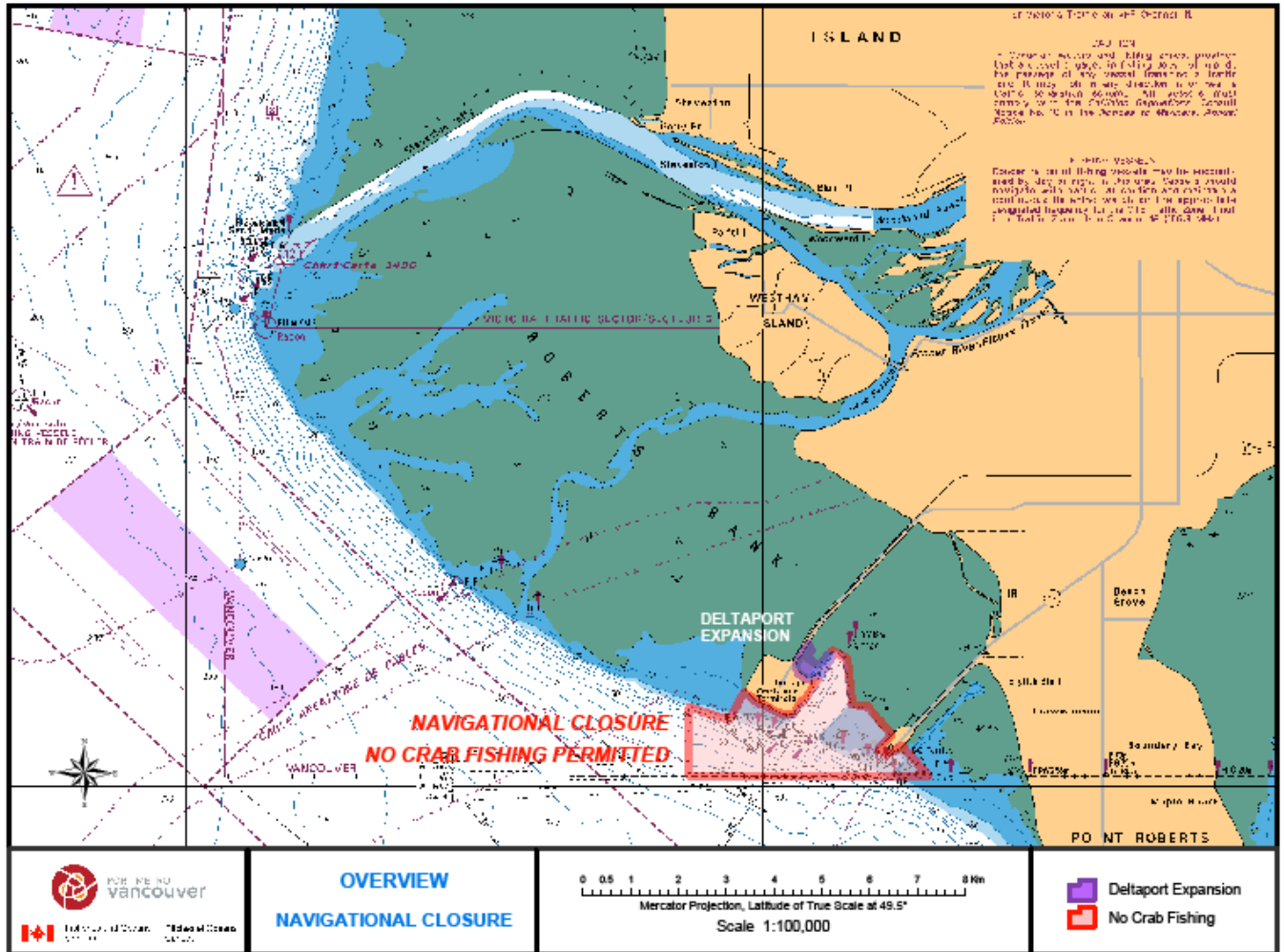
Appendix 7.2: Maps of Restricted Fishing Areas

## Tofino Area



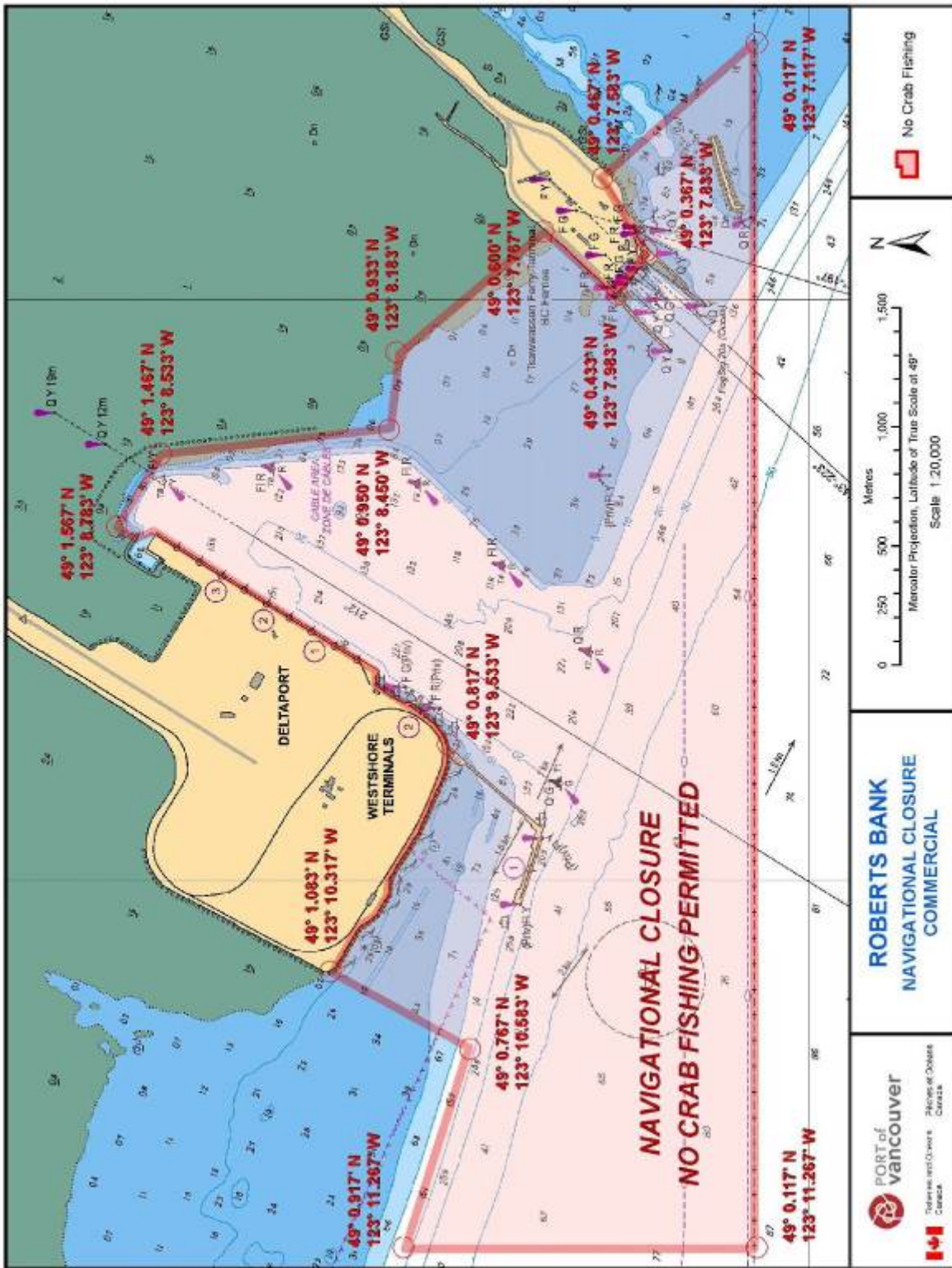
Appendix 7.2: Maps of Restricted Fishing Areas

# Deltaport, Roberts Bank: No Fishing Zone Overview



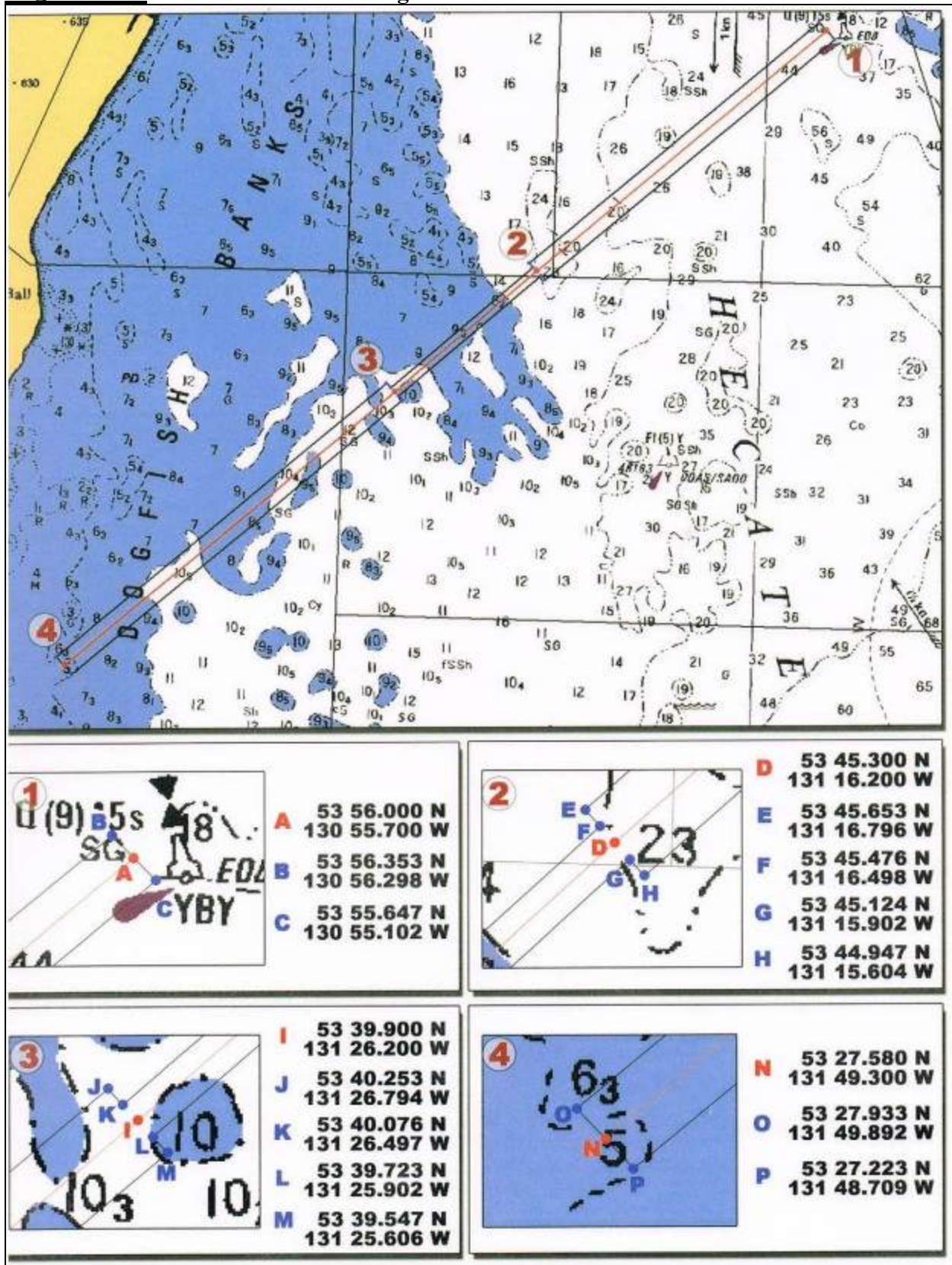
Map created on November 25, 2008.

**Deltaport, Roberts Bank: No Fishing Zone**

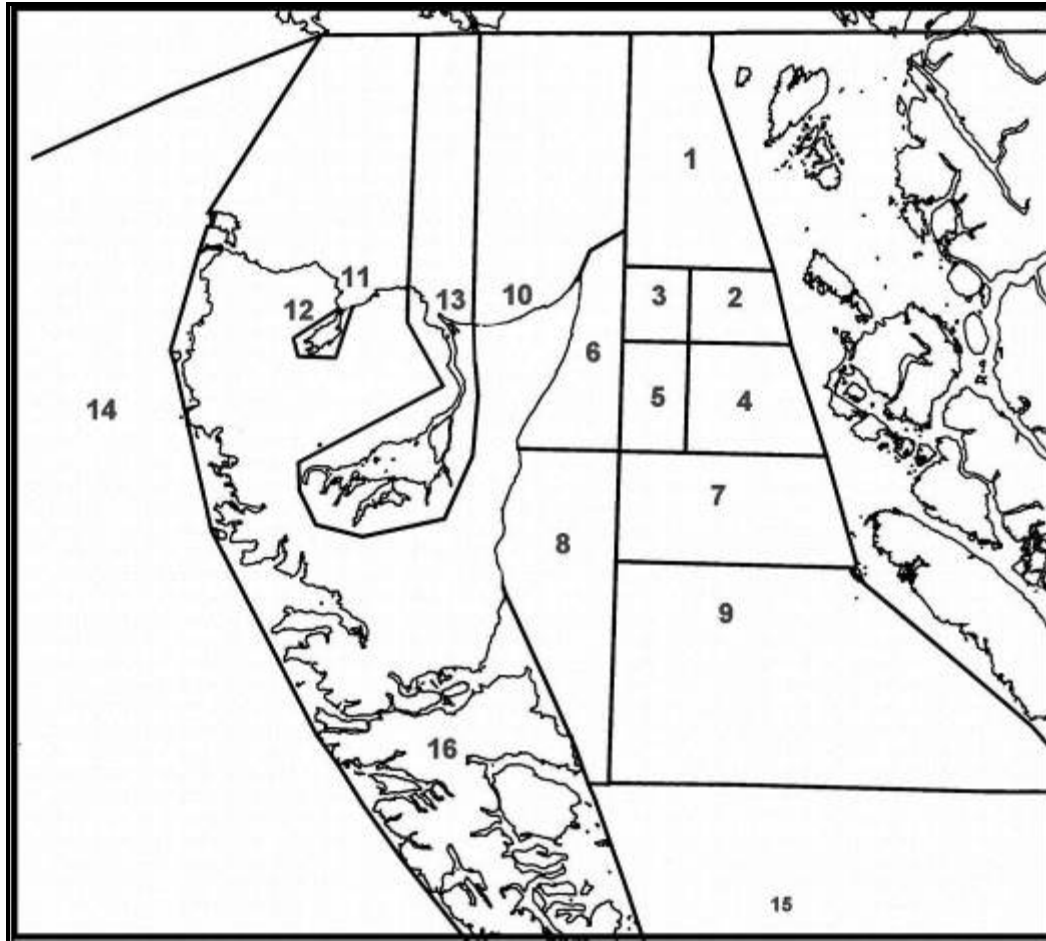


Appendix 7.2: Maps of Restricted Fishing Areas

**Dogfish Bank: BC Ferries Lane through Area A.**



### 7.3 MAP OF AREA "A" SOFT-SHELL MANAGEMENT AREAS



#### Area A soft-shell descriptions:

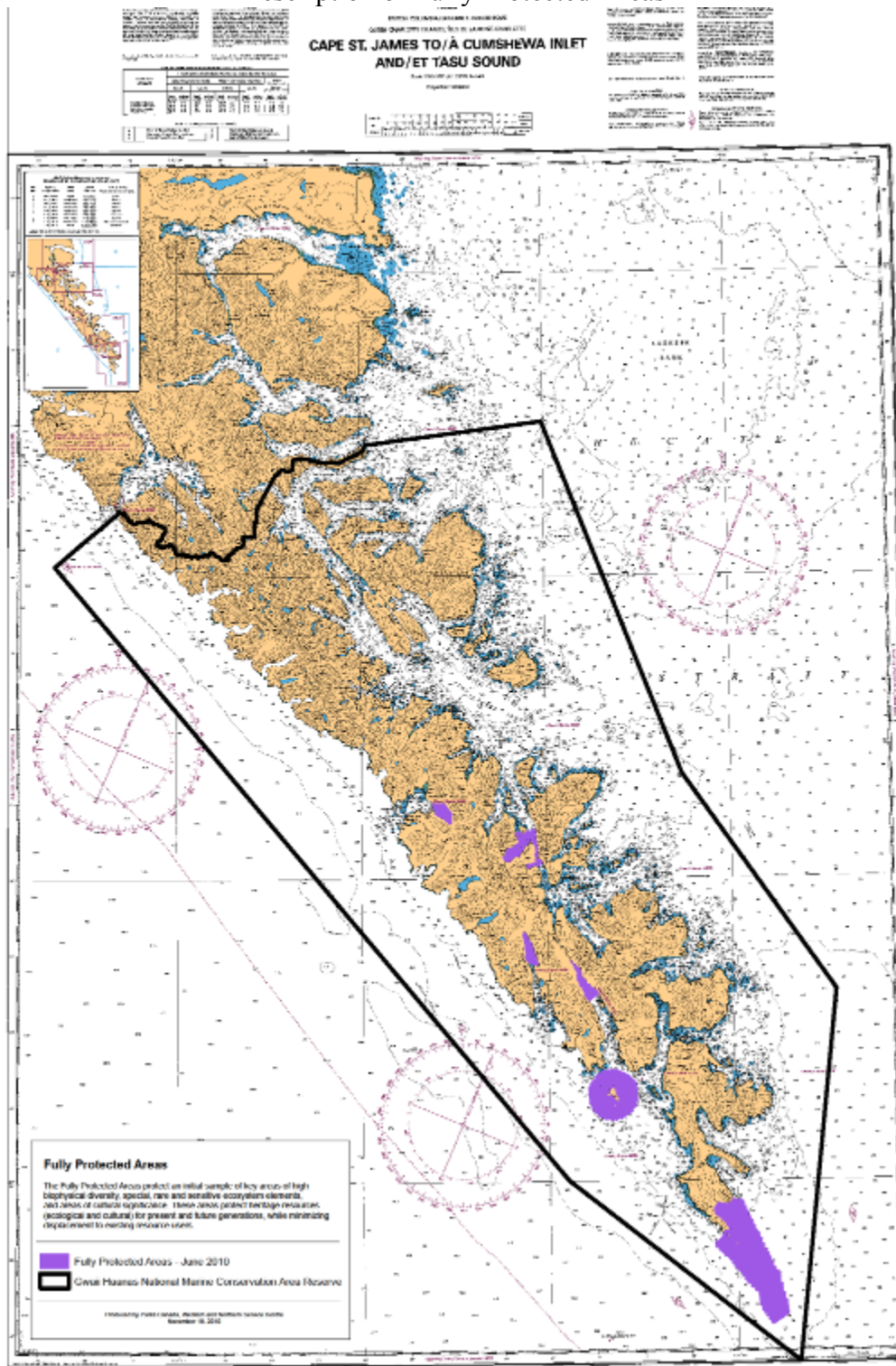
1. Area 103, Subarea 104-1, those portions of Subareas 101-8 to 101-10 east of the meridian running through 131°30' west longitude and those portions of Subareas 104-2, 104-4 and 104-5 that are north of the parallel running through 54°10' north latitude.
2. Those portions of Subareas 104-2 and 104-3 that lie:
  - south of the parallel passing through 54°10' north latitude
  - north of the parallel passing through 54°00' north latitude, and
  - east of the meridian passing through 131°15' west longitude.
3. Those portions of Subareas 102-1, 104-3 and 104-5 that lie inside a line:
  - that begins at           54°10' N       131°30' W
  - then true east to       54°10' N       131°15' W
  - then true south to     54°00' N       131°15' W
  - then true west to     54°00' N       131°30' W
  - then to the beginning point.

4. Those portions of Subareas 104-3 and 105-1 that lie:
  - south of the parallel passing through 54°00' north latitude,
  - north of the parallel passing through 53°45' north latitude, and
  - east of the meridian passing through 131°15' west longitude.
  
5. Those portions of Subareas 102-1, 104-3, 104-5 and 105-1 that lie inside a line:
  - that begins at           54°00' N       131°30' W
  - then true east to       54°00' N       131°15' W
  - then true south to     53°45' N       131°15' W
  - then true west to      53°45' N       131°30' W
  - then to the beginning point.
  
6. That portion of Subarea 101-10 that lies southeasterly of a line:
  - that begins at       54°09' N       131°40' W       [Rose Spit]
  - then to               54°12' N       131°38' W
  - then to               54°14.9' N     131°30.7' W
  - and that portion of Subarea 102-1 that lies north of the parallel passing through 53°45' north latitude and west of the meridian passing through 131°30' west longitude.
  
7. Those portions of Subareas 102-1 and 105-1 that lie:
  - south of the parallel passing through 53°45' north latitude
  - north of the parallel passing through 53°30' north latitude, and
  - east of the meridian passing through 131°30' west longitude.
  
8. Those portions of Subareas 102-1 and 102-2 that lie:
  - south of the parallel passing through 53°45' north latitude
  - north of the parallel passing through 53°00' north latitude, and
  - west of the meridian passing through 131°30' west longitude.
  
9. Those portions of Area 105 and Subareas 102-1, 102-2 and 106-1 that lie:
  - south of the parallel passing through 53°30' north latitude
  - north of the parallel passing through 53°00' north latitude, and
  - east of the meridian passing through 131°30' west longitude.
  
10. Those portions of Subareas 1-5 and 101-4 to 101-10 that lie:
  - east of the meridian passing through 132°04' west longitude at Skonun Point, and
  - west of the meridian passing through 131°30' west longitude,
  - except for that portion of Subarea 101-10 that lies southeasterly of a line
  - that begins at       54°09' N       131°40' W       [Rose Spit]
  - then to               54°12' N       131°38' W
  - then to               54°14.9' N     131°30.7' W.

11. Subareas 1-2, 1-3, 1-7 and those portions of Subareas 101-4 to 101-7 that lie west of the meridian passing through 132°19' west longitude at Wiah Point.
12. Subarea 1-4 (Naden Harbour).
13. Subarea 1-6 those portions of Subareas 1-5, and 101-4 to 101-7 that lie:
  - east of the meridian passing through 132°19' west longitude, and
  - west of the meridian passing through 132°04' west longitude.
14. Areas 130 and 142, and Subareas 101-1, 101-2 and 101-3 (WCQCI)
15. Areas 107 to 110, Subareas 102-3 and 106-2 and those portions of Subareas 102-2, and 106-1 that lie south of the parallel passing through 53°00' north latitude (SHS)
16. Subareas 1-1, 2-5 to 2-62, 2-68 to 2-76, 2-78 to 2-100 (QCI)

**APPENDIX 7.4: Gwaii Haanas National Marine Conservation Area Reserve and Haida Heritage Site**

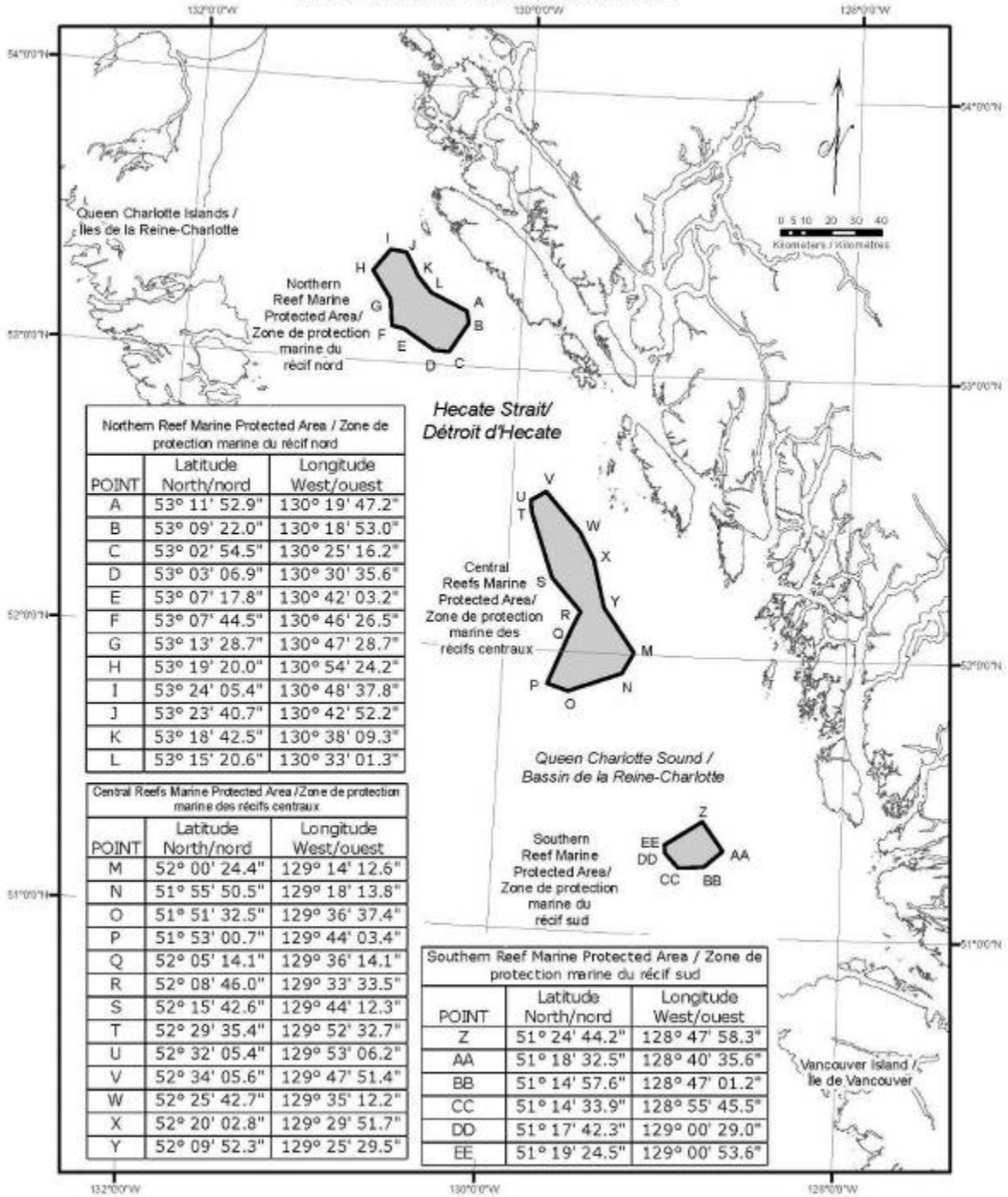
**Description of Fully Protected Areas**



# APPENDIX 7.5: Hecate Strait Glass Sponge Marine Protected Area

## SCHEDULE 1 / ANNEXE 1

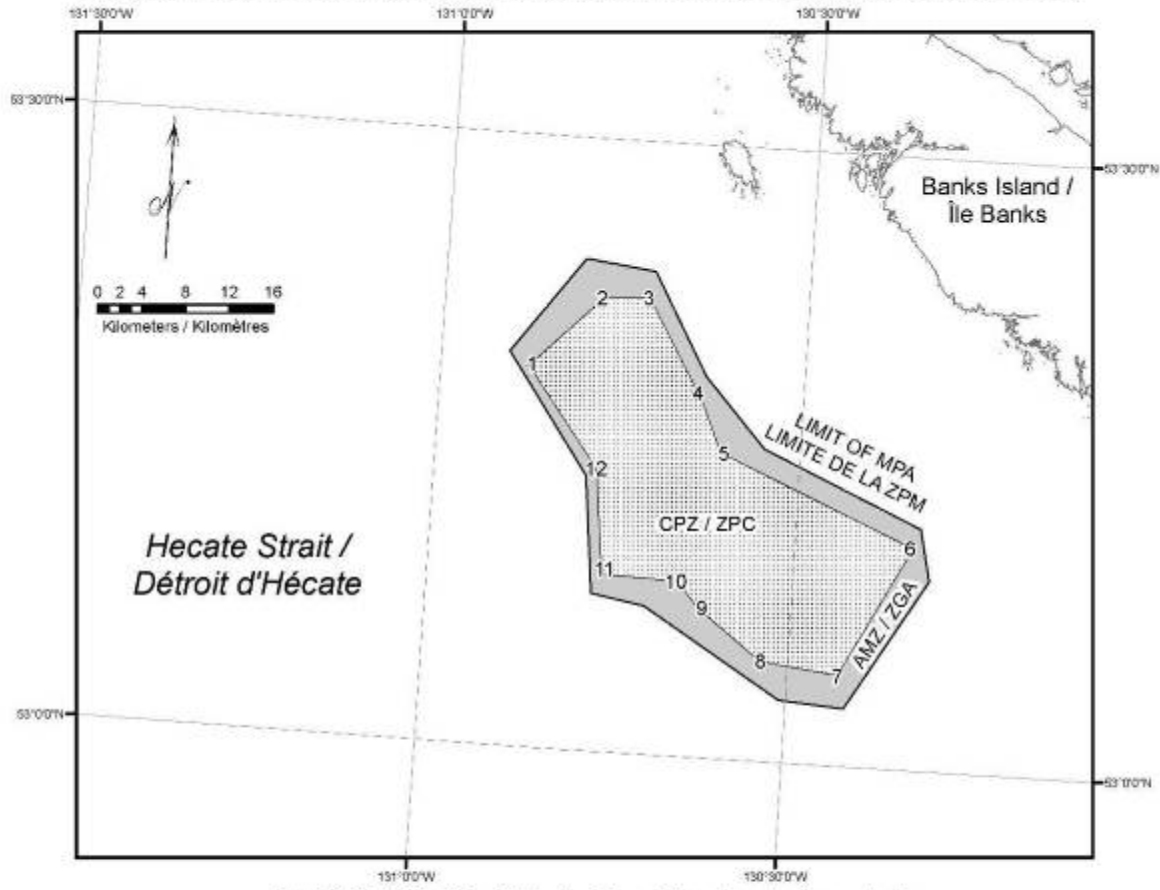
### HECATE STRAIT / QUEEN CHARLOTTE SOUND GLASS SPONGE REEFS MARINE PROTECTED AREAS ZONES DE PROTECTION MARINES DES RÉCIFS D'ÉPONGES SILICEUSES DU DÉTROIT D'HECATE ET DU BASSIN DE LA REINE-CHARLOTTE



# Northern Reef Area

## SCHEDULE 2 / ANNEXE 2

HECATE STRAIT / QUEEN CHARLOTTE SOUND GLASS SPONGE REEFS MARINE PROTECTED AREAS  
 ZONES DE PROTECTION MARINES DES RÛCIFS D'ÛPONGES SILICEUSES DU DÛTROIT D'HÛCATE  
 ET DU BASSIN DE LA REINE-CHARLOTTE  
 NORTHERN REEF MARINE PROTECTED AREA / ZONE DE PROTECTION MARINE DU RÛCIF NORD

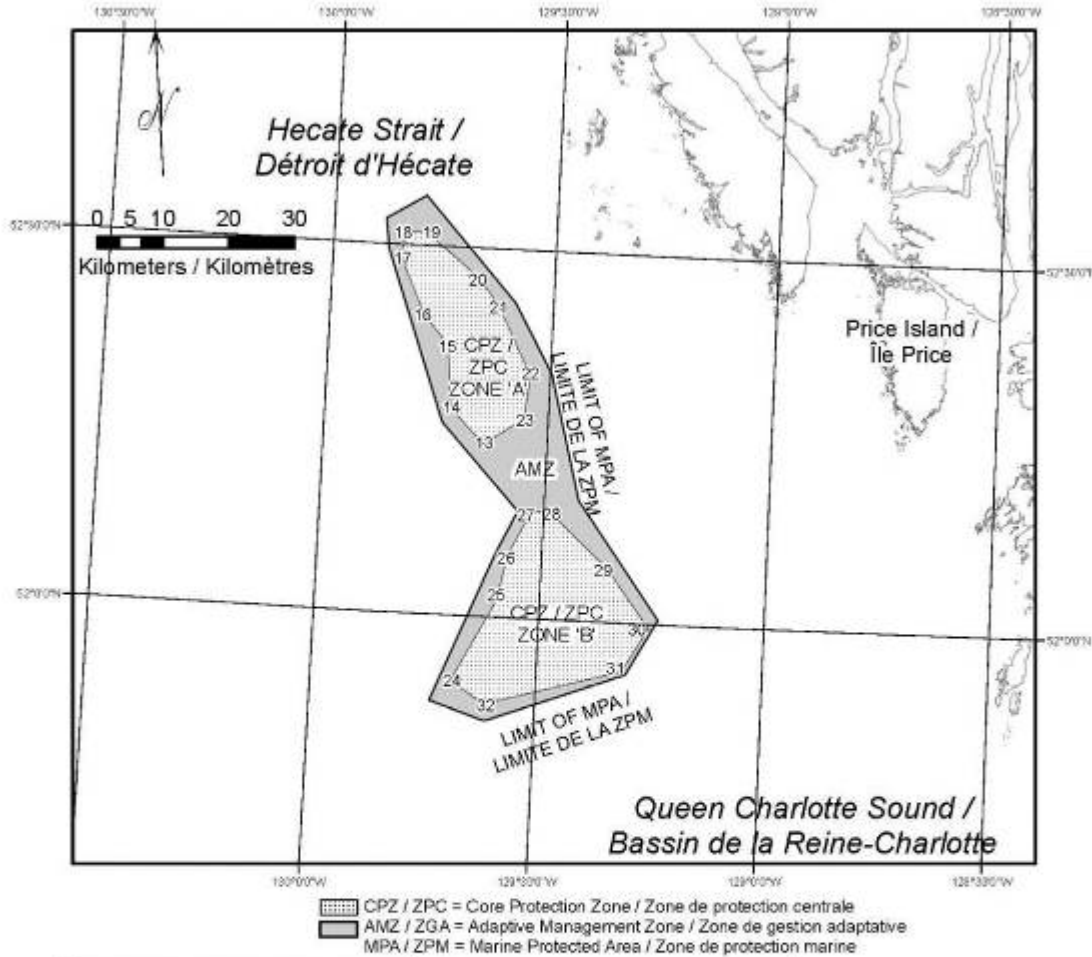


CPZ / ZPC = Core Protection Zone / Zone de protection centrale  
 AMZ / ZGA = Adaptive Management Zone / Zone de gestion adaptative  
 MPA / ZPM = Marine Protected Area / Zone de protection marine

Northern CPZ / ZPC nord		
POINT	Latitude North/nord	Longitude West/ouest
1	53° 18' 40.4"	130° 52' 46.5"
2	53° 22' 12.1"	130° 47' 01.7"
3	53° 22' 20.2"	130° 43' 12.5"
4	53° 17' 22.8"	130° 38' 18.2"
5	53° 15' 01.7"	130° 36' 35.5"
6	53° 10' 55.2"	130° 20' 19.3"
7	53° 04' 30.2"	130° 25' 53.6"
8	53° 04' 58.0"	130° 32' 16.9"
9	53° 07' 22.2"	130° 37' 37.6"
10	53° 08' 36.6"	130° 39' 29.5"
11	53° 08' 41.8"	130° 45' 40.0"
12	53° 13' 51.2"	130° 46' 41.2"

# Central Reef Area

SCHEDULE 3 / ANNEXE 3  
 HECATE STRAIT / QUEEN CHARLOTTE SOUND GLASS SPONGE REEFS MARINE PROTECTED AREAS  
 ZONES DE PROTECTION MARINES DES RÉCIFS D'ÉPONGES SILICEUSES DU DÉTROIT D'HÉCATE  
 ET DU BASSIN DE LA REINE-CHARLOTTE  
 CENTRAL REEFS MARINE PROTECTED AREA / ZONE DE PROTECTION MARINE DES RÉCIFS CENTRAUX



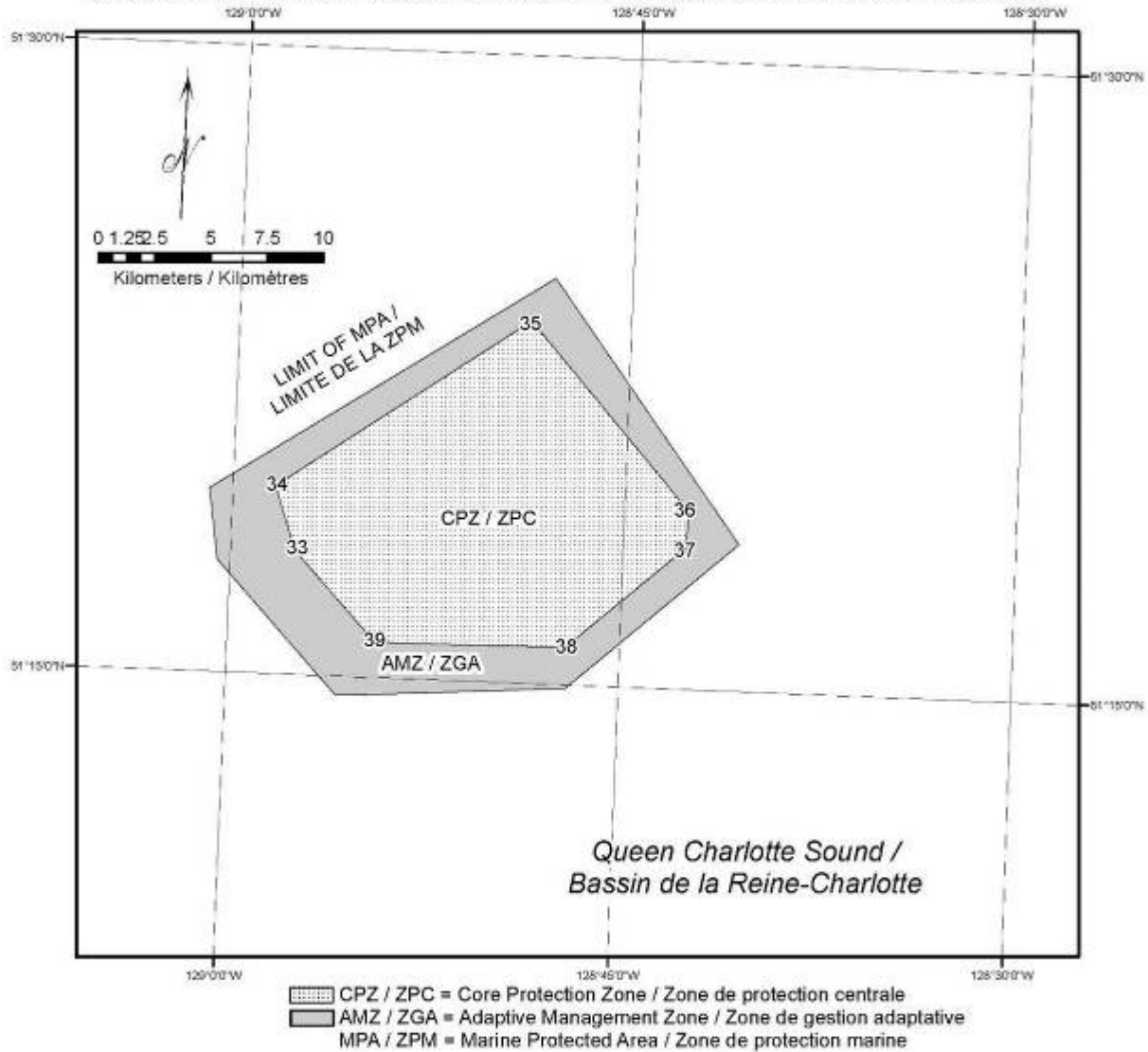
Central CPZ / ZPC centrale - Zone 'A'		
POINT	Latitude North/nord	Longitude West/ouest
13	52° 14' 03.4"	129° 38' 33.2"
14	52° 16' 54.8"	129° 43' 13.4"
15	52° 21' 57.1"	129° 43' 56.5"
16	52° 24' 24.5"	129° 47' 22.8"
17	52° 29' 05.9"	129° 50' 59.4"
18	52° 31' 05.2"	129° 50' 13.9"
19	52° 31' 06.7"	129° 47' 40.9"
20	52° 27' 42.0"	129° 40' 25.1"
21	52° 25' 22.9"	129° 37' 24.0"
22	52° 19' 47.0"	129° 32' 43.2"
23	52° 16' 18.2"	129° 33' 22.8"

Central CPZ / ZPC centrale - Zone 'B'		
POINT	Latitude North/nord	Longitude West/ouest
24	51° 54' 43.1"	129° 41' 22.2"
25	52° 01' 22.5"	129° 35' 48.4"
26	52° 05' 13.5"	129° 34' 32.5"
27	52° 08' 48.5"	129° 31' 44.1"
28	52° 08' 51.3"	129° 29' 18.0"
29	52° 04' 27.1"	129° 21' 17.3"
30	51° 59' 40.8"	129° 15' 23.9"
31	51° 56' 04.5"	129° 18' 46.2"
32	51° 52' 55.7"	129° 36' 49.8"

# Southern Reef Area

## SCHEDULE 4 / ANNEXE 4

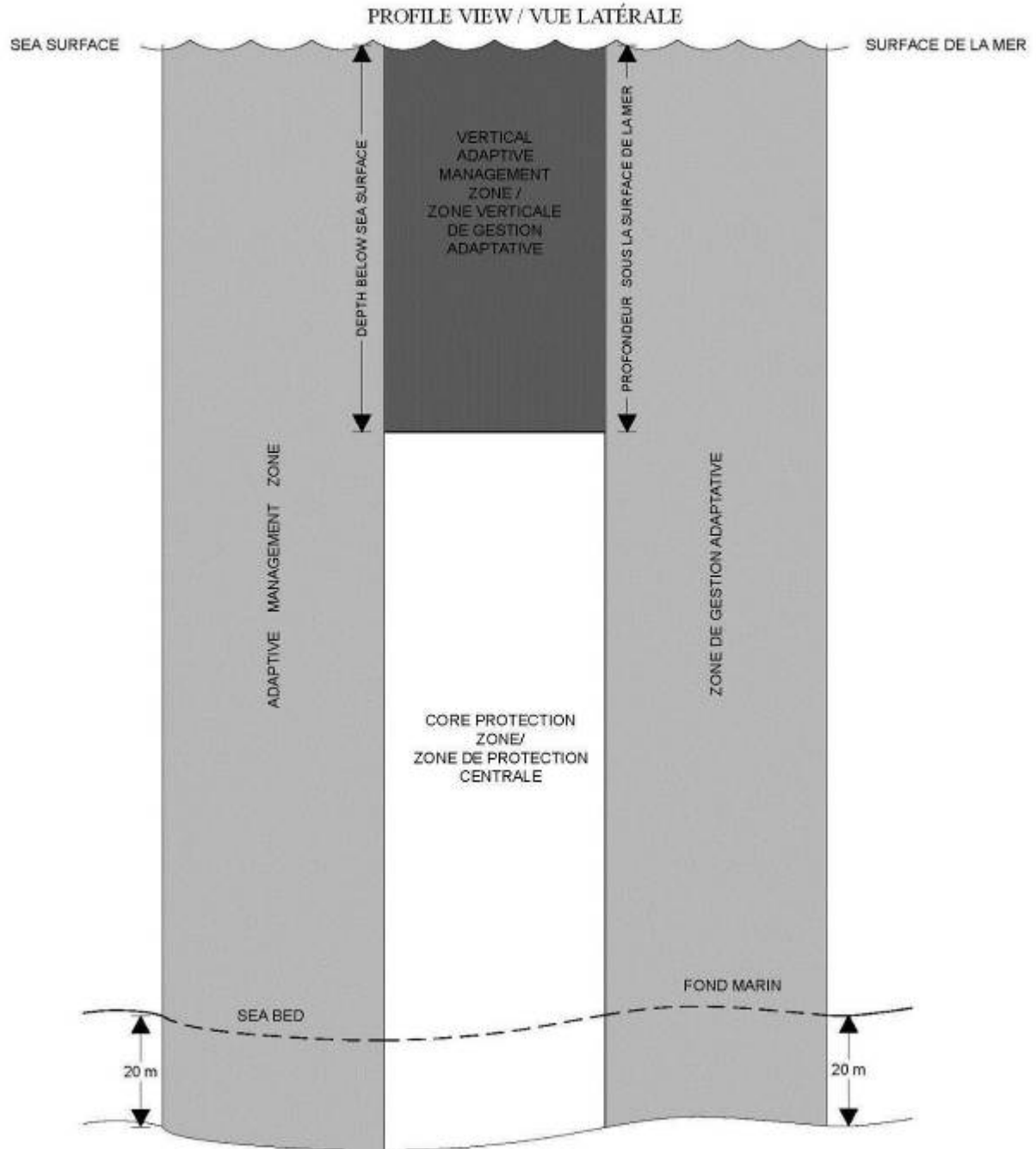
### HECATE STRAIT / QUEEN CHARLOTTE SOUND GLASS SPONGE REEFS MARINE PROTECTED AREAS ZONES DE PROTECTION MARINES DES RÛCIFS D'ÉPONGES SILICEUSES DU DÉTROIT D'HÉCATE ET DU BASSIN DE LA REINE-CHARLOTTE SOUTHERN REEF MARINE PROTECTED AREA / ZONE DE PROTECTION MARINE DU RÛCIF SUD



Southern CPZ / ZPC sud		
POINT	Latitude North/nord	Longitude West/ouest
33	51° 17' 59.2"	128° 57' 31.9"
34	51° 19' 30.8"	128° 58' 22.7"
35	51° 23' 41.9"	128° 48' 50.9"
36	51° 19' 17.5"	128° 42' 33.6"
37	51° 18' 24.5"	128° 42' 37.7"
38	51° 15' 56.0"	128° 47' 04.2"
39	51° 15' 52.2"	128° 54' 20.4"

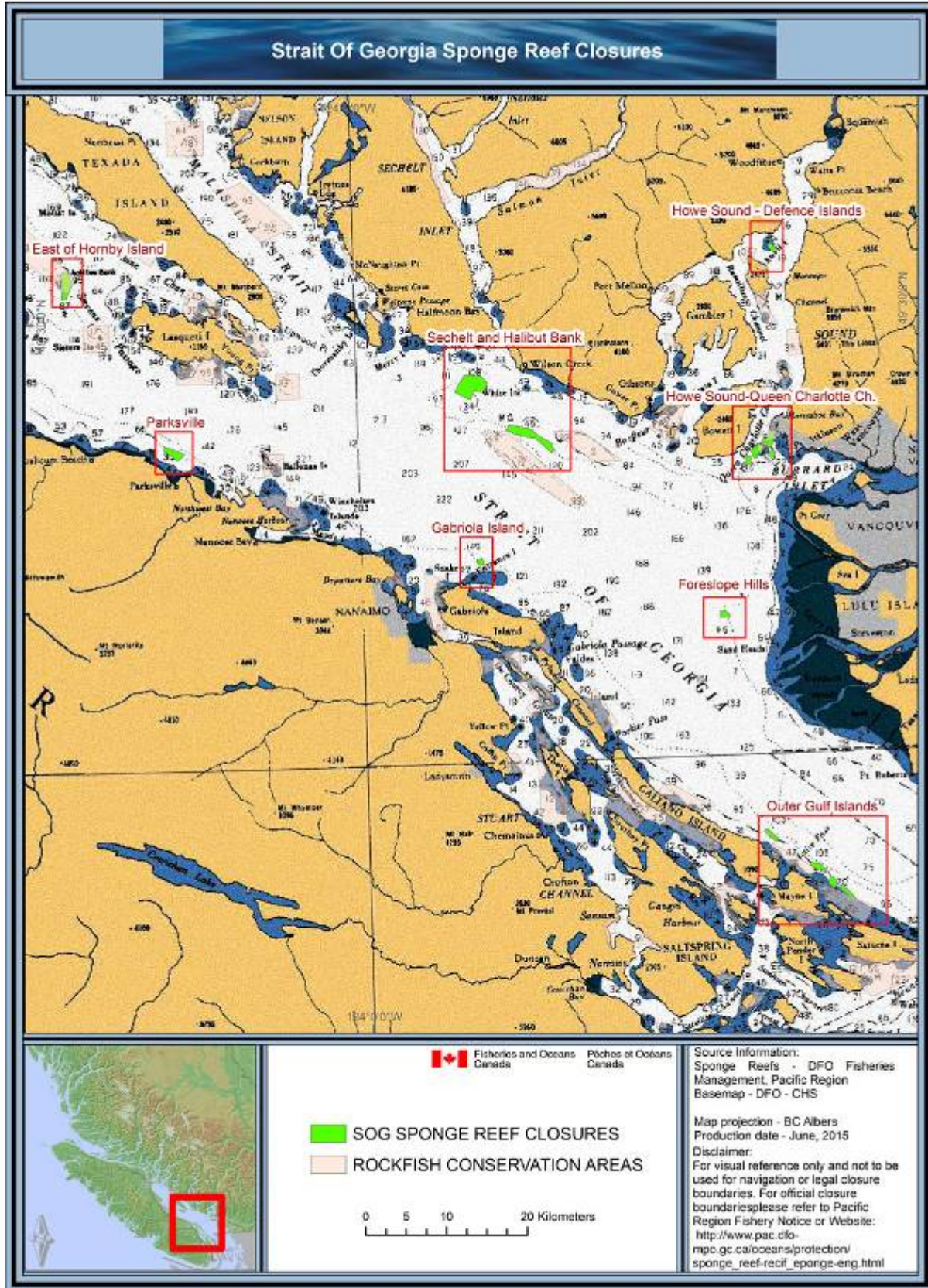
SCHEDULE 5 / ANNEXE 5

HECATE STRAIT / QUEEN CHARLOTTE SOUND GLASS SPONGE REEFS MARINE PROTECTED AREAS  
ZONES DE PROTECTION MARINES DES RÉCIFS D'ÉPONGES SILICEUSES DU DÉTROIT D'HÉCATE  
ET DU BASSIN DE LA REINE-CHARLOTTE



NOT TO SCALE /NON À L'ÉCHELLE

APPENDIX 7.6: Strait of Georgia and Howe Sound Glass Sponge Reef Closures



## Coordinates for the Strait of Georgia Glass Sponge Reef Closures

### 1. Howe Sound - Defence Island Closure

That portion of Subarea 28-4 that lie inside a line:  
begins at 49 34.102N 123 17.070W  
then southerly to 49 33.730N 123 16.562W  
then to 49 33.553N 123 16.462W  
then to 49 33.438N 123 16.750W  
then to 49 33.707N 123 17.201W  
then to 49 33.993N 123 17.391W  
then to the beginning point. [Howe Sound - Defence Islands]

### 2. Howe Sound - Queen Charlotte Channel Closures

Those portions of Subareas 28-2 and 28-3 that lie inside the following lines:]

Howe Sound - Queen Charlotte Channel 1  
begins at 49 21.486N 123 17.254W  
then southerly to 49 20.528N 123 17.690W  
then to 49 20.401N 123 17.956W  
then to 49 20.765N 123 18.794W  
then to 49 20.982N 123 18.584W  
then to 49 21.098N 123 18.037W  
then to 49 21.501N 123 17.737W  
then to the beginning point. [Howe Sound - Queen Charlotte Channel 1]

Howe Sound - Queen Charlotte Channel 2  
begins at 49 20.288N 123 17.693W  
then southeasterly to 49 20.225N 123 17.501W  
then to 49 19.993N 123 17.377W  
then to 49 19.802N 123 17.444W  
then to 49 19.720N 123 17.840W  
then to 49 19.937N 123 18.107W  
then to the beginning point. [Howe Sound - Queen Charlotte Channel 2]

Howe Sound - Queen Charlotte Channel 3  
begins at 49 19.296N 123 19.905W  
then southerly to 49 19.918N 123 19.847W  
then to 49 19.307N 123 20.344W  
then to 49 19.643N 123 20.421W  
then to 49 19.819N 123 20.361W  
then to 49 19.947N 123 20.097W  
then to the beginning point. [Howe Sound - Queen Charlotte Channel 3]

Howe Sound - Queen Charlotte Channel 4  
begins at 49 20.637N 123 19.162W

then easterly to 49 20.577N 123 18.720W  
then to 49 20.441N 123 18.637W  
then to 49 20.068N 123 18.818W  
then to 49 20.076N 123 19.135W  
then to 49 19.718N 123 19.188W  
then to 49 19.726N 123 19.514W  
then to 49 20.259N 123 19.828W  
then to the beginning point. [Howe Sound - Queen Charlotte Channel 4]

**3. Foreslope Hills Closure**

That portion of Subarea 29-3 that lie inside a line:  
begins at 49 09.634N 123 23.048W  
then southeasterly to 49 09.389N 123 22.622W  
then to 49 09.187N 123 22.587W  
then to 49 09.211N 123 23.567W  
then to 49 09.646N 123 23.543W  
then to the beginning point. [Foreslope Hills]

**4. Outer Gulf Islands Closure**

Those portions of Subareas 18-1 and 29-4 that lie inside the following lines:

Outer Gulf Islands 1

begins at 48 54.936N 123 19.589W  
then southerly to 48 54.283N 123 18.529W  
then to 48 54.114N 123 18.619W  
then to 48 54.065N 123 18.771W  
then to 48 54.787N 123 19.929W  
then to 48 54.902N 123 19.793W  
then to the beginning point. [Outer Gulf Islands 1]

Outer Gulf Islands 2

begins at 48 52.588N 123 15.261W  
then easterly to 48 52.520N 123 14.537W  
then to 48 51.971N 123 13.768W  
then to 48 51.795N 123 13.947W  
then to 48 52.150N 123 14.444W  
then to 48 52.038N 123 14.678W  
then to 48 52.479N 123 15.521W  
then to the beginning point. [Outer Gulf Islands 2]

Outer Gulf Islands 3

begins at 48 51.602N 123 13.233W  
then southerly to 48 51.309N 123 12.751W  
then to 48 50.913N 123 12.938W  
then to 48 50.844N 123 13.059W  
then to 48 51.163N 123 13.662W  
then to 48 51.579N 123 13.378W

then to the beginning point. [Outer Gulf Islands 3]

**Outer Gulf Islands 4**

begins at 48 50.999N 123 12.391W  
then southerly to 48 50.608N 123 11.603W  
then to 48 50.097N 123 10.956W  
then to 48 49.959N 123 11.182W  
then to 48 50.857N 123 12.654W  
then to 48 50.959N 123 12.566W  
then to the beginning point. [Outer Gulf Islands 4]

**5. Gabriola Island Closure**

That portion of Subarea 17-11 that lie inside a line:  
begins at 49 13.672N 123 47.577W  
then southerly to 49 13.235N 123 47.429W  
then to 49 13.185N 123 47.882W  
then to 49 13.391N 123 48.119W  
then to 49 13.623N 123 48.166W  
then to the beginning point. [Gabriola Island]

**6. Parksville Closure**

Those portions of Subareas 14-2 and 14-3 that lie inside a line:  
begins at 49 21.680N 124 19.762W  
then southeasterly to 49 21.514N 124 18.893W  
then to 49 21.191N 124 17.723W  
then to 49 21.064N 124 17.724W  
then to 49 20.725N 124 18.380W  
then to 49 21.432N 124 19.811W  
then to the beginning point. [Parksville]

**7. East of Hornby Island (Achilles Bank) Glass Sponge Reef Closure**

That portion of Subarea 14-6 that lie inside a line:  
begins at 49 33.490N 124 29.230W  
then southerly to 49 32.701N 124 28.760W  
then to 49 31.657N 124 29.434W  
then to 49 31.663N 124 29.896W  
then to 49 32.651N 124 29.752W  
then to 49 33.340N 124 29.935W  
then to 49 33.498N 124 29.773W  
then to the beginning point. [East of Hornby Island]

**8. Sechelt Closure**

That portion of Subarea 29-2 that lie inside a line:  
begins at 49 25.948N 123 48.889W  
then easterly to 49 25.899N 123 47.266W

then to 49 25.373N 123 46.494W  
then to 49 24.734N 123 47.083W  
then to 49 24.910N 123 47.951W  
then to 49 24.253N 123 48.283W  
then to 49 24.845N 123 49.914W  
then to the beginning point. [Sechelt]

**9. Halibut Bank Closure**

That portion of Subarea 29-2 that lie inside a line:

begins at 49 21.768N 123 41.501W  
then southerly to 49 21.174N 123 40.045W  
then to 49 20.961N 123 40.139W  
then to 49 20.803N 123 39.860W  
then to 49 20.565N 123 40.182W  
then to 49 21.610N 123 41.843W  
then to 49 21.673N 123 42.643W  
then to 49 21.895N 123 43.908W  
then to 49 22.174N 123 44.748W  
then to 49 22.555N 123 44.456W  
then to 49 22.188N 123 42.167W  
then to the beginning point. [Halibut Bank]

Variation Order No 2015-293

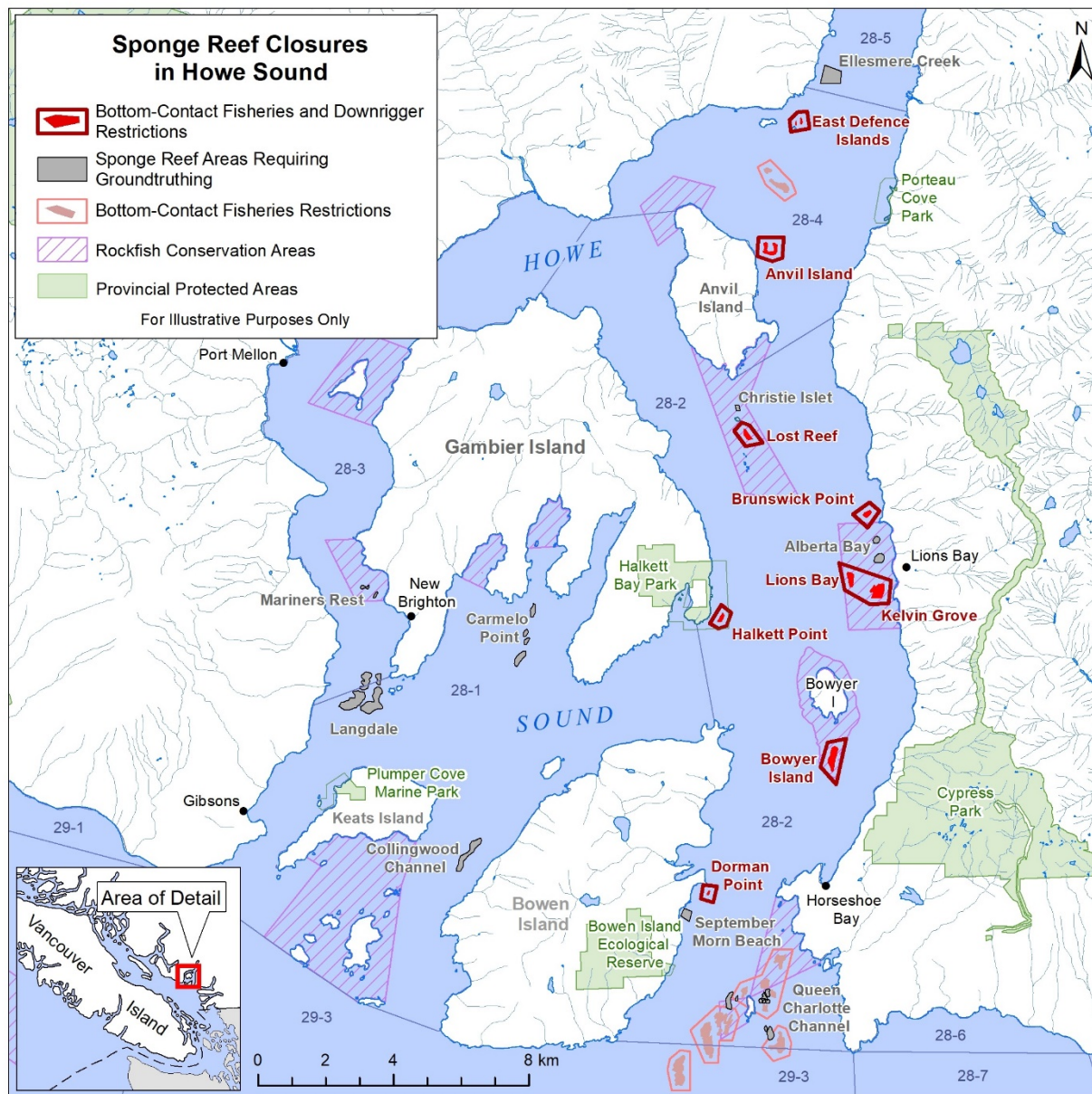
FOR MORE INFORMATION PLEASE VISIT:

<http://www.dfo-mpo.gc.ca/oceans/ceccsr-cerceef/closures-fermetures-eng.html>

OR CALL Deirdre Finn (604) 666-2606

## Map showing New Sponge Reefs Closures in Howe Sound.

Effective April 1<sup>st</sup>, 2019 all commercial, recreational and First Nations food, social and ceremonial (FSC) bottom-contact fishing activities for prawn, shrimp, crab and groundfish, and the use of downrigger gear, are prohibited within portions of Subareas 28-2 and 28-4 to protect the new Howe Sound glass sponge reefs. Coordinates of these closures are provided below.



### Howe Sound Sponge Reef Closure Areas (4-sided polygons)

**East Defence Island (1):** That portion of Subarea 28-4 that lies inside a line that begins at 49° 34.716' N, 123° 16.430' W then northeast to 49° 34.717' N, 123° 16.384' W then southeast to 49° 34.633' N, 123° 16.372' W then northwest to 49° 34.641' N, 123° 16.425' W then to the beginning point.

**East Defence Island (2):** That portion of Subarea 28-4 that lies inside a line that begins at 49° 34.770' N, 123° 16.312' W then true east to 49° 34.770' N, 123° 16.261' W then southeast to 49° 34.647' N, 123° 16.214' W then northwest to 49° 34.648' N, 123° 16.311' W then to the beginning point.

**Anvil Island:** That portion of Subarea 28-4 that lies inside a line that begins at 49° 32.790' N, 123° 17.343' W then southeast to 49° 32.788' N, 123° 16.955' W then southwest to 49° 32.572' N, 123° 16.978' W then northwest to 49° 32.574' N, 123° 17.345' W then to the beginning point.

**Lost Reef:** That portion of Subarea 28-2 that lies inside a line that begins at 49° 29.801' N, 123° 18.059' W then northeast to 49° 29.857' N, 123° 17.957' W then southeast to 49° 29.651' N, 123° 17.737' W then southwest to 49° 29.633' N, 123° 17.885' W then to the beginning point.

**Brunswick Point:** That portion of Subarea 28-2 that lies inside a line that begins at 49° 28.384' N, 123° 15.181' W then northeast to 49° 28.479' N, 123° 14.987' W then southeast to 49° 28.417' N, 123° 14.870' W then southwest to 49° 28.315' N, 123° 15.038' W then to the beginning point.

**Lions Bay:** That portion of Subarea 28-2 that lies inside a line that begins at 49° 27.483' N, 123° 15.611' W then northeast to 49° 27.499' N, 123° 15.420' W then southeast to 49° 27.239' N, 123° 15.347' W then southwest to 49° 27.227' N, 123° 15.536' W then to the beginning point.

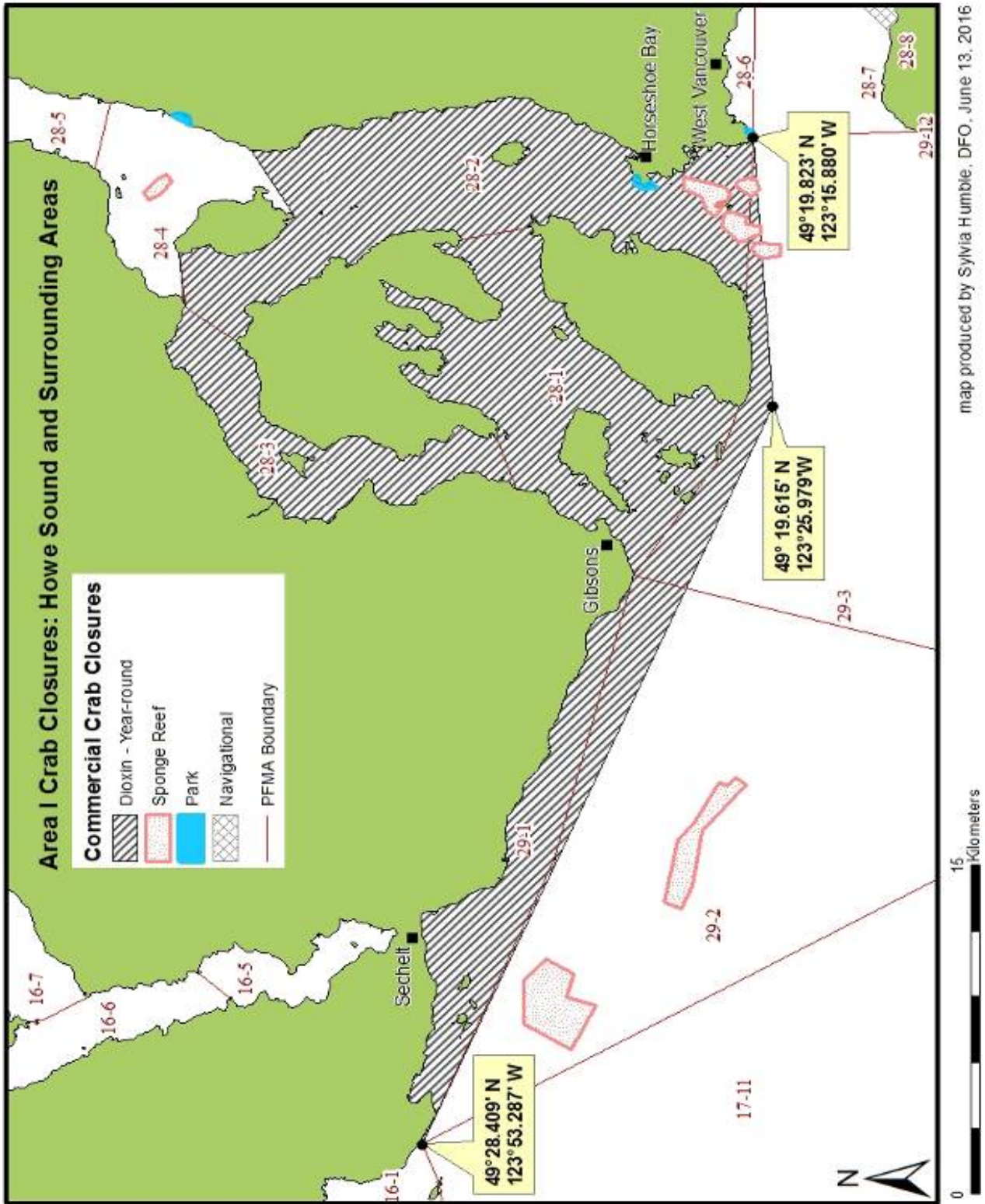
**Kelvin Grove:** That portion of Subarea 28-2 that lies inside a line that begins at 49° 27.268' N, 123° 15.047' W then northeast to 49° 27.290' N, 123° 14.639' W then southwest to 49° 27.036' N, 123° 14.715' W then southwest to 49° 27.032' N, 123° 15.037' W then to the beginning point.

**Halkett Point:** That portion of Subarea 28-2 that lies inside a line that begins at 49° 26.771' N, 123° 18.823' W then northeast to 49° 26.912' N, 123° 18.660' W then southeast to 49° 26.879' N, 123° 18.594' W then southwest to 49° 26.722' N, 123° 18.700' W then to the beginning point.

**Bowyer Island:** That portion of Subarea 28-2 that lies inside a line that begins at 49° 24.403' N, 123° 16.282' W then northeast to 49° 24.737' N, 123° 16.113' W then southeast to 49° 24.676' N, 123° 15.911' W then southwest to 49° 24.274' N, 123° 16.106' W then to the beginning point.

**Dorman Point:** That portion of Subarea 28-2 that lies inside a line that begins at 49° 22.485' N, 123° 19.259' W then southeast to 49° 22.472' N, 123° 19.191' W then southwest to 49° 22.391' N, 123° 19.268' W then northwest to 49° 22.416' N, 123° 19.321' W then to the beginning point.

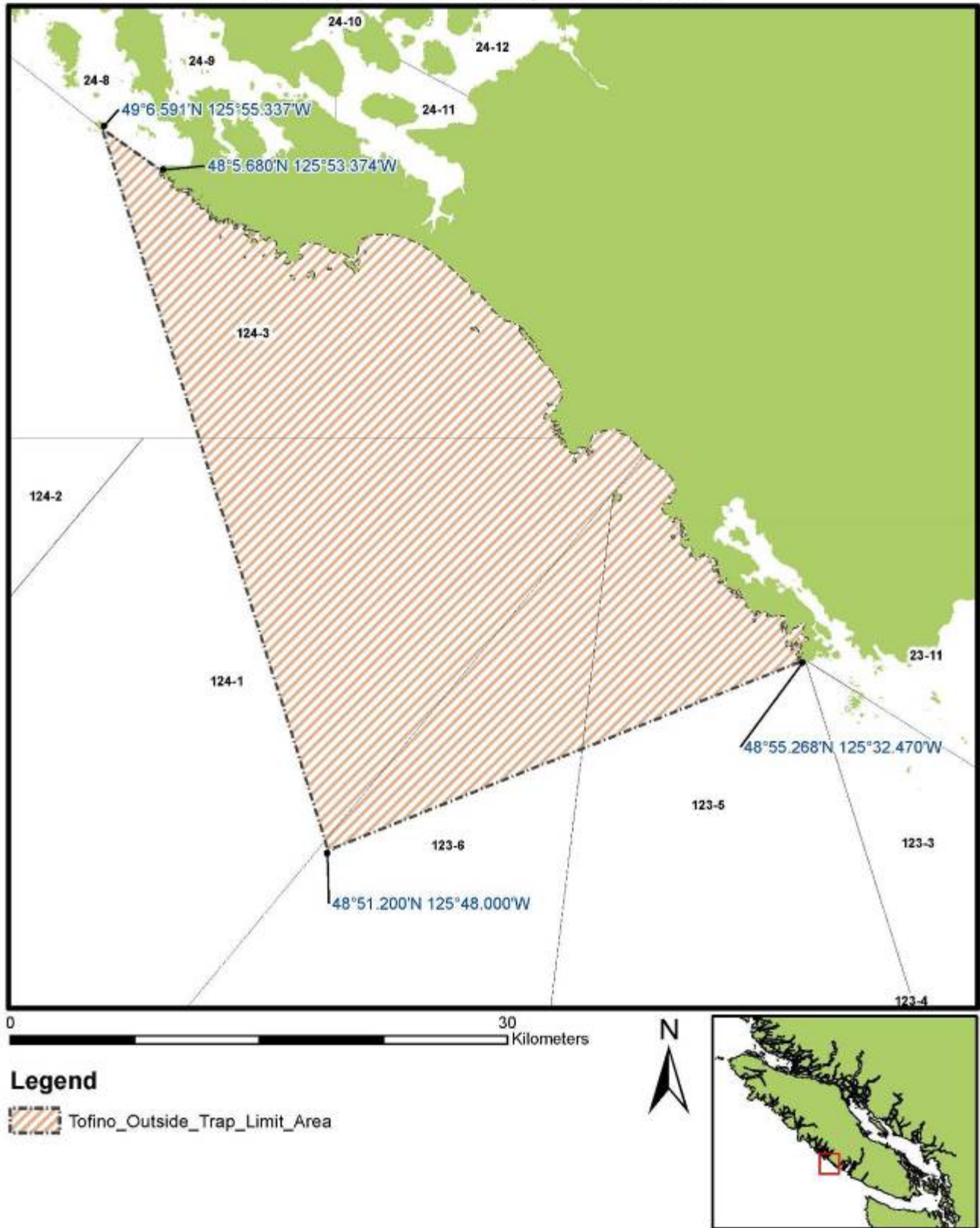
**APPENDIX 7.7: Howe Sound and Surrounding Area Closures**



map produced by Sylvia Humble, DFO, June 13, 2016

Appendix 7.8: Area E (Tofino) – New Outside Tofino trap limit area (“the Hole”)

### Outside Tofino Trap Limit Area



## **APPENDIX 8: CRAB CONTACTS**

### **APPENDIX 8.1: CRAB SECTORAL COMMITTEE 2019/20**

The Sectoral Committee terms of reference and meeting calendar are available from the Resource Managers (see Appendix 8.2) or from the Department's consultation Internet site at:

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<http://www.pac.dfo-mpo.gc.ca/consultation/shell-crust/index-eng.html>

#### **Commercial Crab Area Representatives**

##### **Area A – Queen Charlottes/Hecate Strait**

Area A Crab Association

Dan Edwards, CEO

Phone: 250-624-3225 / Cell: 250-266-0082

Email: [danedwards@telus.net](mailto:danedwards@telus.net)

##### **Area B -North Coast**

Le Tung Mong

Phone: 778-884-5591

Fax: 250-627-4444

##### **Area E -Sooke**

Henry Heggelund Phone: 250-642-3316

Email: [hheggelund@shaw.ca](mailto:hheggelund@shaw.ca)

##### **Area E -Tofino**

Jason Voong (Tofino)

Email : [jayboogz604@gmail.com](mailto:jayboogz604@gmail.com)

Jeff Edwards Phone: 250-726-4279

Email: [lisbethe@telus.net](mailto:lisbethe@telus.net)

##### **Area G -Johnstone Strait**

Steve Fleck

Phone: 250-890-3483

Email: [safleck@shaw.ca](mailto:safleck@shaw.ca)

##### **Area H -Strait of Georgia/Gulf**

Kelvin Campbell

Phone: 250-656-7445

Email: [kcfishing@shaw.ca](mailto:kcfishing@shaw.ca)

**Area I -Fraser River**

Peter Policnick Phone: 604-813-6187  
Email: [policnick@outlook.com](mailto:policnick@outlook.com)

Loc Nguyen Phone: 604-760-3503  
Email: [sellingmybrain@hotmail.com](mailto:sellingmybrain@hotmail.com)

**Area J -Boundary Bay**

Hoan Do  
Phone: 778-388-7025  
Email: [Hoan-do@hotmail.com](mailto:Hoan-do@hotmail.com)

**Commercial Crab Service Providers:**

**Ecotrust Canada**

Amanda Barney  
Suite 200 -515 Third Avenue West  
Prince Rupert, BC V8J 1L9  
Phone: 250-624-4191  
Fax: 604-682-1944  
[amanda@ecotrust.ca](mailto:amanda@ecotrust.ca)

**Pacific Coast Fishery Services Inc.**

Willem Buitendyk  
270 Suneagle Dr.  
Saltspring Island BC, V8K 1E5  
Phone: 250-931-7686  
[willem@pcfish.ca](mailto:willem@pcfish.ca)

**First Nations Representatives**

One or more advisors selected to represent each First Nation is available upon request

**Recreational Fishing Representatives**

Sport Fishing Advisory Board

Pat Ahern: [pat.ahern@shaw.ca](mailto:pat.ahern@shaw.ca)  
Wayne Harling: [harling@shaw.ca](mailto:harling@shaw.ca)  
Ted Brookman: [teddystackle@shaw.ca](mailto:teddystackle@shaw.ca)

## APPENDIX 8.2: CRAB BY TRAP CONTACTS 2019/20

### Observe, Record and Report (Radio Room)

Fisheries Information and Shellfish Contamination Closure Update (24 Hours) (866) 431-3474  
(Greater Vancouver) 604-666-2828

**1-800-465-4336**

### Invertebrate Internet Page:

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

### Resource Management

Regional Shellfish Co-ordinator	Jeff Johansen	604-666-3869
Regional Fisheries Management Officer	Karen Vaudry	604-666-7089
A/Regional Recreational Fisheries Coordinator	Jason Knight	250-850-9370
North Coast Area		
417 2 <sup>nd</sup> Avenue West, Prince Rupert, BC V8J 1G8	General Inquiries	250-627-3499
	Fax	250-627-3427
Shellfish Section Head	Steven Groves	250-627-3455
Resource Manager – Crab	Steven Groves	250-627-3455
Resource Manager	Dillon Buerk	250-627-3477
Aboriginal Affairs Advisor	Amy Wakelin	<a href="mailto:DFO.NCAP-PACN.MPO@dfo-mpo.gc.ca">DFO.NCAP-PACN.MPO@dfo-mpo.gc.ca</a>
Resource Manager – Recreational Fisheries	John Webb	250-627-3409
South Coast Area		
3225 Stephenson Point Road, Nanaimo, BC V9T 1K3	General Inquiries	250-756-7270
	Fax	250-756-7162
Resource Manager – Shellfish, Nanaimo	Mike Kattilakoski	250-756-7315
Resource Manager – Shellfish, Comox	David Fogtmann	250-339-3799
Resource Manager – First Nations Fisheries (North Is.)	Kevin Conley	250-756-7196
Resource Manager – First Nations Fisheries (G. Basin)	Jonathan Joe	250-756-7243
Resource Manager – First Nations Fisheries (G. Basin)	Brenda Spence	250-756-7329
Resource Manager – First Nations Fisheries (WCVI)	Paul Preston	250-720-4452
Resource Manager – Recreational Fisheries	Brad Beath	250-756-7190
Fraser and Interior Area		
Unit 3, 100 Annacis Parkway, Delta, BC V3M 6A2	General Inquiries	604-666-8266
	Fax	604-666-7112

A/Non-salmon Resource Manager	Marisa Keefe	604-666-6390
Resource Manager – First Nations Fisheries	Brian Matts	604-666-8426
Resource Manager – Recreational Fisheries	Barb Mueller	604-666-2370

### **Conservation and Protection**

#### North Coast Area

Masset	250-626-3316
1590 Old Beach Rd, Masset, BC V0T1M0	
Queen Charlotte City	250-559-4413
137 Bay St., Queen Charlotte City V0T1S0	
Prince Rupert	250-627-3499
417 2 <sup>nd</sup> Avenue West, Prince Rupert, BC V8J1G8	
Terrace	250-615-5350
5235-A Keith Ave, Terrace, BC, V8G1L2	
Bella Coola	250-799-5345
McKenzie Hwy 20, PO Box 130, Bella Coola, BC, V0T1C0	

#### South Coast Area

Campbell River	250-287-9564
315-940 Alder St., Campbell River, BC, V9W 2P8	
Duncan	250-746-6221
5245 Trans Canada Hwy, Duncan, BC, V0R2C0	
Nanaimo	250-756-7270
3225 Stephenson Point Rd, Nanaimo, BC, V9T1K3	
Victoria	250-363-3252
4520 Commerce Circle, Victoria, BC, V8Z4M2	

#### Fraser and Interior Area

Langley	604-607-4150
5550 268th St., Langley, BC, V4W 3X4	
Steveston	604-664-9250
12551 No. 1 Rd., Steveston, BC, V7E 1T7	

### **Science**

Pacific Biological Station	Dan Curtis	250-756-7027
3190 Hammond Bay Road		
Nanaimo, B.C. V9T 6N7		

### **Licensing**

Pacific Fishery Licence Unit	Phone	1 877 535 7307
480 -555 West Hastings Street	Fax	604-666 5855
Vancouver, B.C. V6B 5G3		

## Canadian Food Inspection Agency

Vancouver Island, Central, and North Coasts Timothy Delange 250-248-4772 ext. 221

BC Mainland, Interior 604-666-2245

## BC Ministry of Agriculture

250-356-5362

Darah Gibson

250-893-0260

## WorkSafe BC

Occupational Safety Officer, Courtenay	Pat Olsen	250-334 8777
Occupational Safety Officer, Courtenay	Mark Lunny	250-334 8732
Occupational Safety Officer, Victoria	David Clarabut	250-881 3469
Occupational Safety Officer, Richmond	Bruce Logan	604-244 6477

Focus Sector Manager for Fishing, Richmond	Mark Peebles	604-279 7563
	toll free 1 888 621 7233 (ext. 7563)	

Projects related to commercial fishing contact:	Ellen Hanson	604-233-4008
	toll free 1 888 621 7233 (ext. 4008)	

## Sighting Networks

BC Cetacean and Sea Turtle Sighting Network  
Toll free: 1.866.I.SAW.ONE (1-866-472-9663)  
Email: [sightings@ocean.org](mailto:sightings@ocean.org)  
Internet: <http://wildwhales.org/>  
App : WhaleReport

Basking Shark Sighting Network  
Toll free: 1-877-50-SHARK (1-877-507-4275)  
Email: [BaskingShark@dfo-mpo.gc.ca](mailto:BaskingShark@dfo-mpo.gc.ca),  
Internet: [www.pac.dfo-mpo.gc.ca/SharkSightings](http://www.pac.dfo-mpo.gc.ca/SharkSightings)

## Report All Poachers and Polluters (RAPP):

1 877 952 7277 (RAPP)

or Report online: <http://www.env.gov.bc.ca/cos/rapp/form.htm>

Available 24 hours a day, seven days a week, RAPP allows the public to report known or suspected poachers and polluters – anonymously and without risk of confronting the offender.

## Observe, Record and Report (ORR):

1-800-465-4336

## **APPENDIX 9**

### **British Columbia Commercial Crab Fishery Monitoring and Catch Reporting Program Standards For the Licence Year 2019/2020**

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Annex 2 – At-Sea Observer Specifications

Annex 3 – Plastic Trap Tag Database Specifications

Annex 4 – Crab Harvest Logbook Program (Paper) Data Specifications

Annex 5 – Biological Monitoring Specifications

Annex 6 – Licence Area ‘A’ Hail Report Specifications

## 1. PURPOSE OF THIS DOCUMENT

This document describes the official Fisheries and Oceans Canada standards for fishery monitoring and catch reporting in the commercial crab fishery, including data collection, data submission, and reporting. The document defines the requirements for the 2019/20 licence year and will be adapted for subsequent seasons as necessary. Through conditions of licence commercial harvesters are required to establish programs for:

- Vessel activity monitoring through an electronic monitoring system or through at-sea observer coverage;
- Trap limit compliance through plastic trap tags (Licence Areas B, E, G, H, I, and J);
- Harvest logbook reporting;
- Fish Slip reporting;
- Biological sampling;
- Fishing Hail reporting (Licence Area 'A' only); and
- Buoy Marking (Licence Areas 'A', 'G', and portion of 'E')

This document is intended to be used by commercial licence holders in discussions with third-party service providers who may be interested in bidding on the opportunity to provide these programs and requirements on behalf of licence holders.

Persons applying for a licence for the 2019/20 season will be required to demonstrate that they have made arrangements, either individually or through an area association, for an approved service provider to conduct each element of the fishery monitoring programs on their behalf.

All program components must be in place for April 1, 2019 or the start of the fishery in a particular licence area.

All biological sampling conducted at-sea must be conducted by an approved DFO-designated Observer.

The Department requires that all licence holders within a single crab licence area choose a single service provider for the electronic monitoring program in that licence area. A single service provider for each licence area must also be established for the biological sampling program and for the harvest log program. The electronic monitoring, biological sampling, and harvest log programs do not have to be provided by the same service provider.

To assist the Department and crab licence holders in evaluating the efficiency and effectiveness of the programs, it is expected that service providers will participate in a post-season review and performance evaluation of the programs (see Sections 4 and 5).

## **2. MONITORING OBJECTIVES FOR COMMERCIAL CRAB FISHERY**

Over-arching objectives for monitoring of the fishery were developed at the beginning of the electronic monitoring program, and have been recently updated to include:

- Collect accurate harvest and effort data
- Collect accurate and timely data on vessel activity
- Collect data to support compliance with conditions of licence
- Collect biological data on target and non-target catch
- Collect economic data from the fishery

## **3. MONITORING PROGRAMS**

The monitoring of the commercial crab fishery during the 2019/20 fishing season will be accomplished through six programs. It is expected that most harvesters will meet the monitoring requirements through electronic monitoring, plastic trap tags, harvest logbook, fish slip, biological sampling, hail reporting, and buoy marking programs. Detailed reporting standards for each of these programs are provided in Annexes 1 through 6.

### **3.1. Fishery Monitoring**

#### **3.1.1. Electronic Monitoring**

Harvesters may choose to use an electronic monitoring program to meet the objectives of collecting accurate and timely data on vessel activity and compliance with conditions of licence.

Electronic monitoring system equipment must accurately record vessel activity, identify trap-hauling activity, and accurately identify individual traps. A radio frequency identification (RFID) chip is required on each trap fished by licensed crab vessels (in addition to plastic tags) and harvesters must scan each trap as it is hauled on board. The detailed information on equipment and data collection requirements are provided in Annex 1.

Data delivery requirements consist of providing raw data as well as reports based on the analysis of these data, including potential violations of conditions of licence, and summary reports providing details of fishing activity for each vessel. The detailed information on data delivery requirements, including fields and formats required for raw data and summary reports, and the required timeliness of delivering these data and reports, is provided in Annex 1.

#### **3.1.2. At-Sea Observers**

Vessel owners/licence holders electing not to participate in the electronic monitoring programs must arrange for 100% at-sea observer designated by the Regional Director General for monitoring, and must ensure the program includes a method to accurately

monitor and report on all the detailed standards outlined in this document. At-sea observers must participate in a training program specific to crab trap monitoring, and must be designated under Section 39 of the *Fishery (General) Regulations*. Details on required information reports are provided in Annex 2. Contact a Resource Manager for more information (see Section 6).

### **3.1.3. Plastic Trap Tags**

In order to help ensure vessel trap limits are adhered to, each licence holder in Crab Areas B, E, G, H, I, and J shall purchase a limited number of new plastic trap tags for the 2019/20 fishing season. Each trap active in the fishery shall have an approved plastic trap tag attached to the trap. The tags shall indicate the licence year and have an identification number unique to each individual vessel. Each vessel will be issued a total number of tags equal to their trap limit plus 10% to allow for replacements. Extra replacement tags may only be used to replace lost tags. If the vessel master requires more replacement tags than the 10% allotted for lost traps, a request for more tags must be made to the local Area crab manager. The crab manager will then contact the service provider regarding issuing a complete new set of replacement tags. New replacement tags shall be marked with the letters “RP” and be a different colour than the original set issued. New replacement tags shall also indicate the licence year and be unique to each individual vessel. Old tags must be removed and replaced with the replacement tags at the first opportunity the gear is hauled. When trap tags are replaced, only the valid tag shall remain on the trap. All the old tags must be returned to the nearest DFO office within 21 days of the new tags being issued.

Trap tag inventory data must be reported to the Department following the specific data format and reporting timelines detailed in Annex 3. Information must be updated within 24 hours of tags being issued.

## **3.2. Catch Reporting**

### **3.2.1. Harvest Logbooks**

The goal of this program is to obtain accurate harvest and effort data in the commercial crab fishery. As a Condition of Licence, the vessel master/license holder 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 Aquatic Resources Research and Assessment Division’s Shellfish Data Unit. Licence holders must use a service provider to meet the requirement for provision of electronic data (see Annex 4).

### **3.2.2. Fish Slips**

The fish slip program is intended to collect economic data from the fishery. Service providers are not required in order to fulfill program requirements. Licence holders are responsible for ensuring fish slips are submitted. It is a Condition of 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. This includes all crab and octopus retained under authority of the licence. The written report shall be posted not later than seven days after the offloading and sent to:

Fisheries and Oceans Canada  
Regional Data Unit  
Suite 200 - 401 Burrard Street  
Vancouver, B.C., V6C 3S4  
(604) 666-3784

### **3.3. Biological Sampling**

The collection of biological data on crab populations is required in each licence area. Each licence holder must make arrangements for a designated Observer to collect and provide data according to the standards outlined in Annex 5. During a sampling event, the observer must be positioned in such a way as to accurately collect all required data. Generally, this means the observer will need to be onboard the commercial vessel while the samples are being removed from the commercial traps, in order to collect accurate gear information and ensure proper sampling by trap. Observers must have access to the traps being sampled if requested in order to collect necessary data on the fishing gear.

The intention of the sampling is to collect information on biological characteristics of crab populations which will be used to evaluate future management options. Data will help support development of management approaches in accordance with the Precautionary Approach, as well as help to determine soft-shell periods.

The biological information collected shall be entered into a Fisheries and Oceans Canada approved database and submitted to the Department in electronic form no later than seven (7) days following the end of the month when data were collected. Detailed requirements are outlined in Annex 5.

### **3.4. Hail Program – Licence Area ‘A’**

Vessels fishing within Licence Area ‘A’ during the 2019/20 season shall arrange to have hail information on fishing activity reported prior to leaving port when intending to haul fishing gear; prior to moving to a new fishing location; and a minimum of 2 hours prior to returning to port, (requirements under further review in 2019).

The data fields to be reported are detailed in Annex 6.

### **3.5. Registration of Unique Buoy Colour Designs**

Licence holders fishing within Licence Areas A, G, and the Tofino trap limit area of Licence Area E must register with the Department their unique colour buoy design for the 2019/20 fishing season. A colour photograph is required. Only the colour combination registered with the Department for a particular licence may be used during fishing.

Licence holders within Licence Area 'A' must make arrangements for the registry of their buoy with a service provider.

Licence holders within Licence Area 'G' must provide a colour photograph to their local DFO crab manager. See contact list in section 6.

Licence holders within the special Tofino trap limit area of Licence Area 'E' must register their buoy design with the local Tofino DFO office.

#### **4. MID-YEAR AND YEAR-END SUMMARY REPORTS**

As a condition of licence each licence holder is responsible for providing a report to the Department on fishing activity during the course of the season. In practice, it is expected that most licence holders will arrange with a service provider to prepare a summary report on their behalf that may be combined with other licence holders' information into a licence area report. A mid-year report must be completed by November 21, 2019 for the fishing period of April 1, 2019 to October 31, 2019. A year-end report shall be completed by April 30, 2020 covering the period of the entire fishing season. A copy of these reports shall be provided to the Department lead crab resource manager in electronic format by the required completion dates. A public copy of the report shall also be provided to licence holders for which the service provider is contracted to perform duties on their behalf. Confidential information on individual vessels may be provided to the Department. It is expected that no confidential fishing information on individual vessel's harvest or economic information will be shared or released in the public version of the report, nor will it be released to any party other than DFO or the authorized licence holder of record for that crab fishing licence.

Mid-year and year-end reports shall include:

- For each of the program elements (Electronic Monitoring, plastic trap tags, logbooks, and biological sampling), a description of duties performed by the service provider (excluding confidential information in the public version).
- Summary of program elements completed and not completed on behalf of licence holders.
- Summary of Incident/Occurrence Reports by month and occurrence type, excluding confidential information in public versions.
- Issues or problems encountered during the period.
- Recommendations to licence holders and the Department on possible management changes to the fishery, or changes to the monitoring programs.

## **5. PROGRAM EVALUATION CRITERIA**

The performance of the service providers in meeting the requirements of the monitoring programs will be evaluated against program criteria during the 2019/20 licence year. Service providers failing to meet a minimum level of performance in a particular program during the 2019/20 season may not be approved by the Department to perform those duties in 2020/21.

The Department is not responsible for third-party contracts or other arrangements between individual licence holders and service providers. It is the responsibility of licence holders to ensure that arrangements are in place to meet all DFO licence conditions for the 2019/20 commercial crab licence.

The Department reminds all licence holders that licence conditions and program designs may change in 2019/20 or subsequent years.

DFO performance evaluations against the evaluation criteria will continue in 2019/20 and feedback will be provided to both the service provider(s) and local area licence holder representative(s). Opportunities to improve performance will be documented during the first 8 months of the year.

### **5.1. Electronic Monitoring**

- Success of data collection and transmission / delivery within the specified timeframe
- Availability of updated raw data to DFO on a daily basis
- Documentation of equipment issues, malfunctions and repair as defined in Annex 1
- Rate of equipment malfunctions, and timeliness of equipment repair
- Timeliness and completeness of reporting occurrences (potential violations) as defined in Annex 1
- Timeliness and completeness of providing summary reports as defined in Annex 1
- Accuracy of RFID tag inventory, and timeliness of update and delivery to DFO

### **5.2. Biological Sampling**

The biological sampling program meets the minimum amount of sampling required by DFO Science. Therefore, DFO requires 100% sampling success by service providers. Sufficient flexibility has been built into the program to ensure all sampling targets can be met. DFO will be monitoring and evaluating service provider performance. Sampling success under 100% by a service provider will be considered unacceptable by DFO without reasonable explanation.

Service Providers are required to submit to the DFO monthly sampling summary reports, separate for commercial vessel and fishery independent sampling, for each Crab Management Area. Such reports should summarize the following:

- Sampling dates
- Names of vessels sampled

- Number of traps examined
- Total number of Dungeness crabs sampled
- Details regarding which sampling goals were not met and reasons why.

### 5.3. Harvest Logbooks

- Timeliness of data entry and delivery
- Accuracy of data transcription (measured in error rate per page)

### 5.4. Plastic Trap Tags

- Documentation and tracking of plastic tag issuance as required in Annex 3

## 6. CONTACT INFORMATION FOR MORE INFORMATION

Electronic Monitoring	Sylvia Humble	(250) 729-8367
Biological Sampling	Dan Curtis	(250) 756-7027
Harvest Logbook Data	Leslie Barton	(250) 756-7306
Area Resource Managers	Dillon Buerk, Prince Rupert	(250) 627-3477
	David Fogtmann, Comox	(250) 339-3799
	Mike Kattilakoski, Nanaimo	(250) 756-7315
	Marisa Keefe, Lower Fraser Area	(604) 666-6390



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This document provides information on the data requirements and specifications for programs collecting data for transfer to Fisheries and Oceans Canada, Pacific Region. The intended audience is both DFO staff and external groups involved in collecting, transferring or managing fisheries data.

- ▶▶ **Fishery(s):** Commercial Crab by Trap
- ▶▶ **Fishery Season:** 2019/20
- ▶▶ **Data Collection Program Name:** Electronic Monitoring (EM)
- ▶▶ **Associated Fishery Data Manager:** Resource Management - Invertebrates, South Coast Area

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## **Equipment and Data Collection Requirements**

### **1. EQUIPMENT REQUIREMENTS**

System equipment shall:

- Accurately monitor the vessel 24 hours per day, seven days per week while it is engaged in fishing. Fishing is defined as the entire period of time that traps are in the water.
- Accurately record and store data.
- Have Global Positioning System (GPS) capable of Wide Area Augmentation System (WAAS) differential GPS with typical position errors of less than three metres.
- For vessels within all Licence Areas except Area A:
  - automatically transmit the collected data to the approved service provider prior to midnight each day where possible, with a maximum of 14 days between successful transmissions to the service provider;
  - provide a feedback mechanism to indicate to the vessel master if the data has not been sent within the last 24 hours;
  - where requested for enforcement purposes, and where possible, automatically transmit the data to the service provider throughout the day as data are collected (with ability to make this change in transmission frequency via remote command by the service provider);
  - where cellular data transmission is not possible for a particular vessel due to remote location of its home port, alternative arrangements can be made for data delivery within a maximum of 14 days from data collection.
- Provide a feedback mechanism to indicate to the vessel master if the system is operational and functioning properly;
- Include an independent and reliable power supply capable of meeting program standards; and
- Be tamper-proof.

For vessels within all Licence Areas except Area A, if the collected data cannot be transmitted within 14 days since the last transmission, the vessel master shall notify the service provider as soon as possible (explanation is required in occurrence report: Table 8).

### **2. VESSEL ACTIVITY**

System equipment must accurately record vessel location, date, time, and speed (vessel position data) at a minimum frequency of every two minutes while the vessel is active (travelling, setting, or hauling traps). A higher frequency is required to identify trap hauling activity (see section 3) if a hydraulic sensor is not employed. If the vessel is within 50 metres of the southern Canada/USA international border and travelling at a speed of less than four knots, the equipment shall record data at a minimum of every 10 seconds.

While the vessel is not active (not engaged in travelling, setting, or hauling traps), equipment shall record vessel position data at a minimum of every 60 minutes.

As per conditions of licence, The vessel master is responsible for ensuring that their EM system is turned on before leaving port, and is left on until they return to port, in order to ensure the required data is recorded and delivered.

### **3. TRAP HAULING ACTIVITY**

The electronic monitoring program must accurately identify trap-hauling activity by one of two means:

- A hydraulic sensor that allows trap hauling activity to be identified independently of RFID chip scans. The equipment shall collect data every time the vessel is engaged in hauling traps; or
- If the vessel is travelling at a speed of less than four knots, the equipment shall collect vessel position data at a minimum of every 10 seconds.

### **4. TRAP IDENTIFICATION: RFID CHIPS**

The electronic monitoring program must accurately identify individual traps. A radio frequency identification (RFID) chip is required on each trap fished by licensed crab vessels. Vessel operators are required to scan every RFID chip as the trap is hauled onboard, with an RFID chip scanner to record RFID information from each trap hauled. System equipment shall provide a feedback mechanism to indicate to the vessel master if the scanner is functioning properly (RFID chips are successfully scanned and recorded).

All aspects of RFID chip procurement, distribution, administration, and data entry are the responsibility of the vessel owner/licence holder to arrange with the service provider. The service provider will enter the trap RFID chip inventory data into a database that they provide, and submit it to the Department within 24 hours of issuing chips. The database will contain all inventory data for all vessels within a licence area.

Vessel operators are required to use and scan only those RFID chips registered in the vessel's inventory for the current licence year. RFID chip inventories for each vessel must be updated at the beginning of each fishing season. For Licence Areas open to fishing year-round, the operator is responsible for arranging for the service provider to update the vessel's entire RFID chip inventory within the first 30 days of fishing for the 2019/20 licence year. Each vessel's RFID chip inventory will include three classifications of RFID chips (or four if traps are lost):

1. "Main": main set of RFID chips (actively fished traps), limited to the vessel's trap limit. The service provider will define the main chips based on the chips scanned at the beginning of the licence year/ season, until the trap limit has been reached. Any lost traps will be redefined as "lost", and new chips defined as "main" chips in the vessel's inventory only after the lost traps are identified as such.
2. "Spare": secondary set of RFID chips, limited to a maximum of 10% of the vessel trap limit. The service provider will define the spare chips to be those scanned over and above the trap limit, up to a maximum of 10% spare chips.
3. "Over-Limit": Any RFID chips scanned during the licence year over and above the 10% allowable inventory of spare chips will be defined as 'over-limit' chips.

4. "Lost": Any 'main' or 'spare' RFID chips not scanned in over 30 days will be defined as 'lost' chips and will no longer be deemed part of the valid inventory of RFID chips.

The RFID chip inventory for each vessel must be provided to DFO within seven days of the 30-day requirement for completing initial inventories for the licence year, and within 24 hours of updating the inventory during the fishing year.

The vessel master is responsible for ensuring that each trap is fitted with a working RFID chip, and must arrange with the service provider to replace any RFID chips that are no longer scanning successfully. As per conditions of licence, the vessel master is responsible for scanning the RFID chip on every trap they haul onboard,

When a trap is taken out of the water and replaced, the vessel master is responsible for switching the RFID chips so that all traps in the water are fitted with RFID chips in that vessel's inventory for the current licence year. When new traps and RFID chips are used to replace lost traps, the vessel master is responsible for removing the lost traps with the RFID chips from the water, if they are found, and communicating with the service provider to ensure that the vessel's RFID chip inventory is updated to identify the lost and replaced traps/ RFID chips.

## **5. VIDEO CAMERAS (AREAS A AND B)**

In Licence Areas A and B, the electronic monitoring program must accurately monitor fishing activity by camera as described below:

- EM equipment capable of collecting video data.
- Digital video recording of all deck activity while the vessel is outside of harbour limits. This shall be collected by a minimum of one camera. Multiple cameras may be required if vessels have more than one hauling station.
- While the vessel is travelling, setting, or hauling traps/gear, the equipment shall collect data at a minimum of every 10 seconds and video shall be recorded continuously at a frame rate and quality adequate to monitor onboard activities. Camera quality shall be sufficient such that unique buoy colours can be determined, by-catch species can be identified and activity such as gear tangles and line cutting can be observed.
- While the vessel is not engaged in travelling, setting, or hauling traps and the vessel is within harbour limits, video data collection is not required. If video data collection is disabled at the dock, the EM system must automatically restart video collection as the vessel departs harbour limits. Vessel tracking information must be continually collected at all time the vessel has gear deployed.
- Accurately identify trap-hauling activity using video recording of activity focused on the hauling stations in addition to the hydraulic sensor.

Potential violations identified (or "flagged") through a cursory review of EM data shall be investigated via review of video data, and details of observed occurrences (potential violations) shall be reported to the Department within 31 days of retrieving data indicating an occurrence.

In addition, for every vessel, a minimum of 10% of the video data collected while fishing will be reviewed. If the “flagged” video analysis comprises less than 10% of the fishing time, additional video will be selected at random (from periods of fishing) for review, to identify any violations of the conditions of licence. Where a compliance problem is identified, additional video data review over 10% must be conducted as needed to document the extent of the problem.

Video data for a suspected or observed violation shall be saved by the service provider for potential use in enforcement actions for at least one year; when the Department notifies the service provider of an investigation, the video data shall be saved by the service provider until the Department notifies them that the file is closed. Video data for which no suspected or observed violations have occurred is not required to be stored and is not required to be submitted to the Department.

For further details on video monitoring requirements in Areas A and B, contact the local area manager.

## Data Transfer Requirements

The electronic monitoring program is comprised of five types of data delivery processes. Data transfer requirements and format are described in the following five sections. All data submitted is subject to the *Privacy Act* and *Access to Information Act*.

For all tables, all fields are mandatory unless they are not applicable or values are unknown, in which case a null (blank) value is to be entered.

### 1. DAILY RAW DATA DELIVERY

The vessel owner / licence holder shall ensure the service provider provides the raw fishing data for each of the three fishing data types (vessel position data, hydraulic data if applicable, and RFID chip data), as well as a record of data transmission, as described below.

- ▶▶ **Format:** Comma Separated Value (\*.csv).
- ▶▶ **Medium:**
  - DFO File Transfer Protocol (FTP) site (DFO's internet server for the exchange of files between DFO staff and external groups; site and login details will be provided)
- ▶▶ **Timeliness:**
  - For vessels in Area A, the licence holder shall ensure that the service provider retrieves and delivers to the Department all data from the vessel within 30 days of hard drive collection.
  - For vessels within all Licence Areas except Area A, raw data must be automatically transmitted to the approved service provider prior to midnight each day where possible, with a maximum of 14 days between successful transmissions to the service provider (as per section 1, Equipment Requirements, p. 3). If data cannot be delivered within 14 days, the vessel master shall notify the service provider as soon as possible (explanation is required in occurrence report: Table 8).
  - For vessels within all Licence Areas except Area A, all data received by the service provider shall be made available to DFO on a daily basis (no more than 24 hours after data received)
  - For vessels within all Licence Areas except Area A, where requested for enforcement purposes, and where possible, raw data for particular vessels must be accessible to the Department on a near real-time basis, throughout the day as data are collected (see Equipment Requirements, section 1)

Tables posted on FTP for DFO download shall be updated daily to meet the timeliness requirement of delivery within 24 hours of service provider receipt. These tables shall include all data to date for at least the current month (thus replacing previous versions of data files for the current month). Tables for previous months that have been updated in the past 30 days must also remain posted (i.e., tables for previous months that have not been updated with new data in the past 30 days are not required to be posted)

Table 1: Vessel position data

- ▶▶ **File Naming Conventions:** [licence area]\_TRACK\_[month: 2 digits]\_[year: 4 digits] (e.g., B\_TRACK\_01\_2019.csv)

Field Name	Description	Field Type/Size
Area	Licence Area (A, B, E, G, H, I, or J)	Text – 1 character, capital letter, no spaces
VRN	Vessel Registration Number	Integer
Datetime	Date and time of vessel location record	YYYY-MM-DDTHH:MM:SS (e.g. 2019-03-31T23:59:59) (corrected for UTC offset)
Latitude	Latitude (decimal degrees)	Decimal (e.g. 54.1923416)
Longitude	Longitude (decimal degrees)	Decimal, negative (e.g. -130.338375)
Heading	Heading (degrees)	Decimal (e.g. 222.1)
Speed	Speed (nautical miles per hour)	Decimal, one decimal place (e.g. 2.1)
Sat_num	Number of satellites used to acquire the position	Integer
Sat_quality	Satellite Quality <sup>1</sup>	Integer
HDOP	Horizontal Dilution of Precision <sup>2</sup> :	Decimal
EPE	Estimated Position Error <sup>3</sup> (metres)	Decimal

Table 2: Hydraulic data

► **File Naming Conventions:** [licence area]\_HYD\_[month: 2 digits]\_[year: 4 digits] (e.g., B\_HYD\_01\_2019.csv)

Field Name	Description	Field Type/Size
Area	Licence Area (A, B, E, G, H, I, or J)	Text – 1 character, capital letter, no spaces
VRN	Vessel Registration Number	Integer
Datetime	Date of hydraulic pressure record	YYYY-MM-DDTHH:MM:SS (e.g. 2019-03-31T23:59:59) (corrected for UTC offset)
Pressure	Hydraulic pressure	Integer
Latitude	Latitude (decimal degrees)	Decimal (e.g. 54.1923416)
Longitude	Longitude (decimal degrees)	Decimal, negative (e.g. -130.338375)
Heading	Heading (degrees)	Decimal
Speed	Speed (nautical miles per hour)	Decimal
Sat_number	Number of satellites used to acquire the position	Integer
Sat_quality	Satellite quality	Integer
HDOP	Horizontal Dilution of Precision	Decimal

<sup>1</sup> Satellite Quality is an indication of satellite fix type i.e. 0 = fix not available, 1 = Non-differential GPS fix is available, 2 = Differential GPS (WAAS) fix available, 6 = Estimated (definitions taken from Garmin GPS specifications)

<sup>2</sup> HDOP is a measure of the relative GPS receiver/satellite geometry and corresponding accuracy (GPS industry standard). Lowest value (1) represents the highest precision, and values >20 are considered poor.

<sup>3</sup> EPE is a measure of horizontal position error in meters (GPS industry standard).

Field Name	Description	Field Type/Size
EPE	Estimated Position Error (metres)	Decimal

Table 3: Trap RFID Chip Data.

- ▶▶ **File Naming Conventions:** [licence area]\_RFID\_[month: 2 digits]\_[year: 4 digits] (e.g., B\_RFID\_01\_2019.csv)

Field Name	Description	Field Type/Size
Area	Licence Area (A, B, E, G, H, I, or J)	Text – 1 character, capital letter, no spaces
VRN	Vessel Registration Number	Integer
Datetime	Date and time of RFID chip scan	YYYY-MM-DDTHH:MM:SS (e.g. 2019-03-31T23:59:59) (corrected for UTC offset)
Chip_num	Unique RFID chip identification number	Text
Latitude	Latitude (decimal degrees)	Decimal (e.g. 54.1923416)
Longitude	Longitude (decimal degrees)	Decimal, negative (e.g. -130.338375)
Heading	Heading (degrees)	Decimal
Speed	Speed (nautical miles per hour)	Decimal
Soak	Number of days since last scan of this RFID chip	Integer
Sat_num	Number of satellites used to acquire the position	Integer
Sat_quality	Satellite quality	Integer
HDOP	Horizontal Dilution of Precision	Decimal
EPE	Estimated Position Error (metres)	Decimal

## 2. DAILY TRAP SCAN LOCATION REPORTS

The vessel owner/licence holder shall ensure the service provider prepares daily trap scan location reports from the electronic data as described below. These reports are not required for Area A where fishing activity is monitored through a hail program.

Table 4: Summary of Trap Scans (RFID chip scans) by Sub Area and Date.

- ▶▶ **Format:** Microsoft Excel (\*.xlsx OR \*.xls)
- ▶▶ **Medium:** DFO FTP site or service provider website
- ▶▶ **Timeliness:**
  - Trap scan location reports shall be provided or updated within 24 hours of receiving data indicating RFID chip scans.
  - Table must be updated on a daily basis to include all trap haul location reports for the year to date.
- ▶▶ **File Naming Conventions:** Activity\_[year: 4 digits] (e.g., Activity\_2019.xlsx)

- ▶▶ **Special Requirements:** For each vessel and fishing date, at least one record is required; a separate record is required for each Sub Area<sup>4</sup> fished on a given fishing date.

Field Name	Description	Field Type/Size
Area	Licence Area (A, B, E, G, H, I, or J)	Text – 1 character, capital letter, no spaces
VRN	Vessel Registration Number	Integer
Year	Year of RFID chip scans	Integer (4 digits)
Month	Month of RFID chip scans	Integer (2 digits)
Day	Day of RFID chip scans	Integer (2 digits)
PFMA	Pacific Fishery Management Area <sup>4</sup> in which trap scans recorded on given date	Integer (e.g. 24)
Sub Area	Pacific Fishery Management Sub Area <sup>4</sup> in which trap scans recorded on given date	Integer (e.g. 9)
Chip_Scans	Number of RFID chips scanned in given Sub Area on given fishing date	Integer

### 3. DAILY EQUIPMENT STATUS REPORTS

The vessel owner / licence holder shall ensure the service provider reports all malfunctions or suspected malfunctions of EM equipment (e.g. GPS, scanner, hydraulics, data storage or transmission hardware, etc.), any repair or servicing of equipment, and any information relevant to equipment status (e.g. vessel is not fishing). EM system failures must be repaired as soon as possible after the date of detection. Data requirements are described below.

Table 5: Equipment Status

- ▶▶ **Format:** Microsoft Excel (\*.xlsx OR \*.xls)
- ▶▶ **Medium:** DFO FTP site or Service Provider website
- ▶▶ **Timeliness:**
  - Must be reported within 24 hours of the service provider becoming aware of any malfunction or required repair / servicing. Update record within seven days of occurrence to report Fishing Comments (see Special Requirements).
  - If, after initial report, the EM system is serviced, or the service provider acquires new information on the status of the malfunction, the record must be updated with details (or a new record added) within 24 hours.
  - Table must be updated with new records as per the above timelines, to include all equipment reports for the year to date.
- ▶▶ **Special Requirements:** If a malfunction has occurred, comment is required as to whether fishing continued while the EM system was not functioning properly (see Fishing Comments field).
- ▶▶ **File Naming Conventions:** Equipment\_[year: 4 digits] (e.g., Equipment\_2019.xls)

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<sup>4</sup> Areas and Sub Areas are described in the Pacific Fishery Management Area Regulations

<b>Field Name</b>	<b>Description</b>	<b>Field Type/Size</b>
Area	Licence Area (A, B, E, G, H, I, or J)	Text – 1 character, capital letter, no spaces
VRN	Vessel Registration Number	Integer
Vessel Name	Vessel Name	Text
Incident_ID	Unique identification number for this record	Integer
Date_of_Detection	Date on which the service provider became aware of the issue or required repair / servicing	Short Date (month/day/year, e.g. 12/31/16)
Mode_of_Detection	How the service provider became aware of the malfunction (i.e. reported by fisher, detected from data analysis)	Text
Date_of_Malfunction	Date on which the malfunction occurred If date is not known, enter 'unknown'	Short Date (month/day/year, e.g. 12/31/16) Or text: 'unknown'
Type_of_Malfunction	Select type from MALFUNCTION TYPE* table	Text
Date_of_Service	Date of repair or service	Short Date (month/day/year, e.g. 12/31/16)
Technician_Name	Name of person completing repair or service	Text
Description	Description of equipment issue or required service, and details of any repair or service completed.	Memo
Fishing_Comments	Confirmation of whether the vessel continued to fish (set or haul gear) without a fully functioning EM system (e.g., yes, no, unknown, or any relevant comment)	Memo
Record_Entry_Date	Date on which this record was first entered	Short Date (month/day/year, e.g. 12/31/19)
Record_Update	Date on which this record was last updated	Short Date (month/day/year, e.g. 12/31/19)

MALFUNCTION TYPES*
Hardware
Software
Hardware & Software
Sensor(s)
Camera
RFID Scanner
Other

#### 4. OCCURRENCE REPORTS

From the electronic data, the vessel owner / licence holder shall ensure the service provider prepares reports of occurrences (potential violations) as described below. All occurrences (including eight types defined below) must be reported in a summary table (Table 6), and detailed reports are required for each type of occurrence, as described under Table 7 through Table 14.

- ▶▶ **Format:** Microsoft Excel (\*.xlsx OR \*.xls). Table 7 through Table 14 are to be included as separate worksheets in an Excel workbook; worksheet names for each table are provided below.. Each sheet is to include all occurrences reported for the year to date.
- ▶▶ **Medium:** DFO FTP site or Service Provider website
- ▶▶ **File Naming Conventions:** [Licence Area]\_Occurrences\_2019.xls
- ▶▶ **Special Requirements:** DFO will provide direction to Service Providers on additional analysis that may be required for occurrence reporting and enforcement purposes.

Table 6: Occurrence Summary Data

- ▶▶ **Description:** This table provides a summary of occurrences by vessel and month, including all occurrences reported in Table 7 through Table 14.
- ▶▶ **Timeliness:** Table must be updated whenever a new occurrence is reported; to include all occurrences reported to date (see timeliness requirements for each type of occurrence).
- ▶▶ **Worksheet name:** Occurrence\_Summary

Field Name	Description	Field Type/Size
Area	Licence Area (A, B, E, G, H, I, or J)	Text – 1 character, capital letter, no spaces
VRN	Vessel Registration Number	Integer
Vessel Name	Vessel Name	Text
Year	Year of occurrence	Integer (4 digits)
Month	Month of occurrence	Integer (2 digits)
occurrence_Type	Type of occurrence reported. Use the name of the worksheet specified for each of the following occurrence tables	Text
Number_occurrences	Number of occurrences of this type of occurrence in the current month (number of records in specific occurrence table)	Integer

Table 7: Closed Area Occurrences

- ▶▶ **Description:** Occurrences are defined as any fishing inside a closed area boundary while the closure is in effect. Occurrences are to be reported by individual dates. Where fishing occurs inside an area that is closed seasonally, only those occurrences during the closed period are to be reported.

▶▶ **Timeliness:**

- For Areas A and B, report within 31 days of retrieving data indicating an occurrence, including comments/ verification of the occurrence.
- For all other Licence Areas, report within 24 hours of the service provider receiving data indicating an occurrence. Update record to provide verification/ comment within seven days of occurrence.

▶▶ **Worksheet name:** Closed\_Areas

Field Name	Description	Field Type/Size
Area	Licence Area (A, B, E, G, H, I, or J)	Text – 1 character, capital letter, no spaces
VRN	Vessel Registration Number	Integer
Vessel Name	Vessel Name	Text
Occurrence ID	Unique identification number for this incident (must be unique among all occurrence types)	Integer
Year	Year of occurrence	Integer (4 digits)
Month	Month of occurrence	Integer (2 digits)
Day	Day of occurrence	Integer (2 digits)
Closure Name	Closed area name	Text
Traps_less_50m	Number of RFID chips scanned less than 50 metres inside closure boundaries while closure in effect (excluding dock areas)	Integer
Traps_50_100m	Number of RFID chips scanned from 50 to 100 metres inside closure boundaries while closure in effect (excluding dock areas)	Integer
Traps_100m_plus	Number of RFID chips scanned) more than 100 metres inside closure boundaries while closure in effect (excluding dock areas)	Integer
Tracks_less_50m	Number of vessel positions less than 50 metres inside closure boundaries while closure in effect (while travelling below four knots, excluding dock areas)	Integer
Tracks_50_100m	Number of vessel positions from 50 to 100 metres inside closure boundaries while closure in effect (while travelling below four knots, excluding dock areas)	Integer
Tracks_100m_plus	Number of vessel positions more than 100 metres inside closure boundaries while closure in effect (while travelling below four knots, excluding dock areas)	Integer
Comments	Comments/ verification of occurrence, including a description of where the fishing occurred (how far inside the closure boundary, and a geographical description with place names if possible)	Memo

Field Name	Description	Field Type/Size
Record_Entry_Date	Date on which this record was first entered	Short Date (month/day/year, e.g. 12/31/19)
Record_Update	Date on which this record was last updated	Short Date (month/day/year, e.g. 12/31/19)

Table 8: Data Delivery Occurrences

- ▶▶ **Description:** Occurrences are defined as:
  - For Area A, raw data not provided to DFO within 31 days of data retrieval.
  - For all Licence Areas except Area A, raw data not delivered to service provider within 14 days since last data delivery.
- ▶▶ **Timeliness:**
  - Report in Table 8 within 24 hours of occurrence.
  - Update record to provide investigation/ comment within seven days of occurrence. Comments must be updated when the reason for the problem is discovered, and when action is taken.
  - When data received, update record with data receipt date and time, and total lag time (data fields: Next\_Date, Next\_Time, Delivery\_Lag\_Time).
- ▶▶ **Special Requirements:** If an equipment problem is indicated, it must also be reported in Table 5.
- ▶▶ **Worksheet name:** Data\_Delivery

Field Name	Description	Field Type/Size
Area	Licence Area (A, B, E, G, H, I, or J)	Text – 1 character, capital letter, no spaces
VRN	Vessel Registration Number	Integer
Vessel_Name	Vessel Name	Text
Occurrence_ID	Unique identification number for this incident (must be unique among all occurrence types)	Integer
Year	Year of occurrence	Integer (4 digits)
Month	Month of occurrence	Integer (2 digits)
Last_Date	Date of last data delivery	Short Date (month/day/year, e.g. 12/31/19)
Last_Time	Time of last data delivery	hh:mm:ss (e.g. 23:59:59)
Next_Date	Date of next data delivery (to be entered when data received)	Short Date (month/day/year, e.g. 12/31/19)
Next_Time	Time of next data delivery (to be entered when data received)	hh:mm:ss (e.g. 23:59:59)
Delivery_Lag_Time	Number of days between subsequent data receipt events (to be entered when data received).	Decimal (2 decimal places)

Field Name	Description	Field Type/Size
Comments	Comments must include an explanation or possible reason for the data delivery occurrence, and the action taken to retrieve data.	Memo
Record_Entry_Date	Date on which this record was first entered	Short Date (month/day/year, e.g. 12/31/19)
Record_Update	Date on which this record was last updated	Short Date (month/day/year, e.g. 12/31/19)

Table 9: Time Gaps

- ▶▶ **Description:** Occurrences are defined as any gap in vessel position data that is:
  - greater than one hour while in port; or
  - greater than 10 minutes while at sea.
- ▶▶ **Timeliness:**
  - For vessels in Area A, report occurrences within 31 days of retrieving data indicating a time gap, including investigation/ comments.
  - For all other Licence Areas, report within seven days of the service provider receiving data indicating a time gap, and update record to provide investigation/ comments within 15 days of receiving data for the end of the fishing month for that vessel.
- ▶▶ **Special Requirements:**
  - If an equipment problem is indicated, it must also be reported in Table 5.
  - If more than one type of gap (harbour or outside) occurs on a given day, two separate records are required.
  - False reports due to missing data that has since been delivered must be excluded.
- ▶▶ **Worksheet name:** Time\_Gaps

Field Name	Description	Field Type/Size
Area	Licence Area (A, B, E, G, H, I, or J)	Text – 1 character, capital letter, no spaces
VRN	Vessel Registration Number	Integer
Vessel_Name	Vessel Name	Text
Occurrence_ID	Unique identification number for this incident (must be unique among all occurrence types)	Integer
Year	Year of time gap	Integer (4 digits)
Month	Month of time gap	Integer (2 digits)
Day	Day of time-gap end (this may be later than the day of time-gap start, depending on the length of the gap)	Integer
Num_gaps	Number of time gaps ending on the given day	Integer

Field Name	Description	Field Type/Size
Max_previous_time	For the longest time gap ending on the given day: Date and time of last vessel position recorded before the interruption	YYYY-MM-DDTHH:MM:SS (e.g. 2019-03-31T23:59:59) (corrected for UTC offset)
Max_time_gap	Length (hours) of the longest time gap ending on the given day	Decimal (1 decimal place)
Min_time_gap	Length (hours) of the shortest time gap ending on the given day	Decimal (1 decimal place)
Avg_time_gap	Average length of the time gaps ending on the given day	Decimal (1 decimal place)
Total_time_gaps	Total length of all time gaps ending on the given day	Decimal (1 decimal place)
Event_type	Location of vessel when the gap commenced (“harbour” or “outside”)	Text
Comments	Comments must include an explanation or possible reason for the time gap, and the action taken to retrieve data. If an equipment problem is indicated, it must also be reported in Table 5.	Memo
Record_Entry_Date	Date on which this record was first entered	Short Date (month/day/year, e.g. 12/31/19)
Record_Update	Date on which this record was last updated	Short Date (month/day/year, e.g. 12/31/19)

Table 10: Weekly Trap Haul Occurrences

- ▶▶ **Description:** Occurrences are defined as any number of traps hauled more than the maximum number of times allowed in a calendar week<sup>5</sup>, when weekly trap haul restrictions are in effect in Licence Areas E, G, and H. Please see the IFMP for details of trap haul restrictions and their timing.
- ▶▶ **Timeliness:** Must be reported within 24 hours of the service provider receiving data from the given vessel indicating an occurrence (end of calendar week). Update record to provide verification/ comment within seven days of occurrence.
- ▶▶ **Worksheet name:** Weekly\_Hauls

Field Name	Description	Field Type/Size
Area	Licence Area (A, B, E, G, H, I, or J)	Text – 1 character, capital letter, no spaces
VRN	Vessel Registration Number	Integer
Vessel_Name	Vessel Name	Text

<sup>5</sup> A calendar week is described as 00:01 hours Sunday to 23:59 hours Saturday.

Field Name	Description	Field Type/Size
Occurrence_ID	Unique identification number for this incident (must be unique among all occurrence types)	Integer
Year	Year of occurrence	Integer (4 digits)
Month	Month of occurrence	Integer (2 digits)
Haul_Area_Code*	Portions of licence area E with specific trap haul restrictions. Required only for occurrences in Area E	Text
Stat_Week	Calendar week of the year (DFO to provide definitions of numbered weeks)	Integer, 2 digits
Traps_Hauled_2 times	Number of unique RFID chips scanned twice during the week, in the licence area or special area where the restriction applies	Integer
Traps_Hauled_3_ times_plus	Number of unique RFID chips scanned three or more times during the week, in the licence area or special area where the restriction applies	Integer
Comments	Comments/ verification of occurrence based on manual data review.	Memo
Record_Entry_Date	Date on which this record was first entered	Short Date (month/day/year, e.g. 12/31/19)
Record_Update	Date on which this record was last updated	Short Date (month/day/year, e.g. 12/31/19)

\* Codes defined as follows:

Haul Area Code	Description
COMMON_PLUS	PFMA 21, 22, 25, 26, 121, 123-1, 125, 126 (Common Areas, i.e. areas common to all sub-area licence Options); Sub Areas 20-1 to 20-5 (portion of the Sooke Option); and Sub Areas 27-1 to 27-6 and Area 127 (portion of the Quatsino Option).
SOOKE_20_1_2	Sub Areas 20-1 and 20-2 (portion of the Sooke Option).
SOOKE_20_3_5	Sub Areas 20-3 to 20-5 (portion of the Sooke Option).
SOOKE_20_6_7	Sub Areas 20-6 and 20-7 (portion of the Sooke Option).
TOFINO_23_24	Areas 23, 24, 123-2 to 123-9, and 124 (portion of the Tofino Option)

Table 11: Soak Limit Occurrences

- ▶▶ **Description:** Occurrences are defined as any number of traps soaked longer than 18 days, as indicated by the number of days between subsequent scans of RFID chips. Given that time between subsequent trap scans may exceed 18 days without a true soak time violation, “false” reports must be excluded for the following cases:
  - where these traps have been moved (last scanned in a different location, i.e. more than one kilometre away or in a different PFM Sub Area);
  - where the RFID chips have not previously been used, or have not been used for more than six months;
  - where the traps represent individual missed trap scans on a string of gear (i.e. the RFID chip that is “over soak” is within 100 metres of other RFID chips that were scanned more recently by the same vessel).
  
- ▶▶ **Timeliness:**
  - For vessels in Areas A and B, report occurrences within 31 days of retrieving data indicating an occurrence, including comments / verification of the occurrence.
  - For all other Licence Areas, report occurrences for each vessel within seven days of receiving data for the end of the fishing month for that vessel. Update record to provide verification/ comment within seven days of occurrence.
  
- ▶▶ **Special Requirements:**
  - If soak time occurrences are detected in multiple Sub Areas for a given vessel and date, they must be reported as separate records of soak time occurrences by date and Sub Area.
  - Any apparent soak time occurrences that are due to an EM equipment issue or malfunction (i.e. not recording or storing data while the vessel was hauling traps, or scanner malfunction) must also be reported in Table 5.
  - False reports due to missing data that has since been delivered must be excluded or corrected.
  
- ▶▶ **Worksheet name:** Soak\_Limit

Field Name	Description	Field Type/Size
Area	Licence Area (A, B, E, G, H, I, or J)	Text – 1 character, capital letter, no spaces
VRN	Vessel Registration Number	Integer
Vessel_Name	Vessel Name	Text
Occurrence_ID	Unique identification number for this incident (must be unique among all occurrence types)	Integer
Year	Year of occurrence	Integer (4 digits)
Month	Month of occurrence	Integer (2 digits)
Day	Day of occurrence	Integer (2 digits)
PFMA	Pacific Fishery Management Area in which the Occurrence was detected.	Integer
Sub Area	Pacific Fishery Management Sub Area in which the occurrence was detected.	Integer
Soak_19_29_days	Number of trap hauls (RFID chip scans) on this date, that show between 19 and 29 days since last scan, excluding “false” reports of soak occurrences*	Integer
Soak_30_days_plus	Number of trap hauls (RFID chip scans) on this date, that show 30 or more days since last scan, excluding “false” reports of soak occurrences*	Integer
Comments	Comments/ verification of occurrence based on manual data review, including a description of the incident (numbers of traps, locations, dates, and soak times).	Memo
Record_Entry_Date	Date on which this record was first entered	Short Date (month/day/year, e.g. 12/31/19)
Record_Update	Date on which this record was last updated	Short Date (month/day/year, e.g. 12/31/19)

\* “false” reports to be excluded are defined above (see Description)

Table 12: Trap Limit Occurrences

- **Description:** Occurrences are defined as:
- Number of traps fished (unique RFID chips scanned) in the month is in excess of the trap limit per vessel for the licence area, or for areas within Licence Areas A, B, and E where specific trap limits apply. Please see the IFMP for details on area-specific trap limits and their timing.
  - For areas where specific trap limits are in effect only during specific months, occurrence reports must include only those incidents where vessels exceed the area-specific trap limits during the months when the limits are in effect.

▶▶ **Timeliness:**

- For vessels in Areas A and B, report occurrences within 31 days of retrieving data for the end of the fishing month for that vessel, including comments / verification of the occurrence.
- For all other Licence Areas, report occurrences for each vessel within seven days of receiving data for the end of the fishing month for that vessel, and update record to provide verification/ comments within 15 days of receiving data for the end of the fishing month for that vessel.
- The numbers of traps reported on the initial trap limit occurrence report must be updated within 15 days of receiving data for the end of the fishing month for each vessel, so that the numbers of traps fished in the month are accurately reported for these occurrences.

▶▶ **Worksheet name:** Trap\_Limit

Field Name	Description	Field Type/Size
Area	Licence Area (A, B, E, G, H, I, or J)	Text – 1 character, capital letter, no spaces
Trap_Area_Code*	Areas within Licence Areas A, B, and E where trap limits differ from licence area trap limits	Text
VRN	Vessel Registration Number	Integer
Vessel_Name	Vessel Name	Text
Occurrence_ID	Unique identification number for this incident (must be unique among all occurrence types)	Integer
Year	Year of occurrence	Integer (4 digits)
Month	Month of occurrence	Integer (2 digits)
Day	Day of occurrence	Integer (2 digits)
Traps_total	Number of actively fished traps (unique RFID chips scanned) in the current month. This number should equal the sum of the number of traps reported in the categories below.	Integer
Traps_main	Number of unique RFID chips scanned in the current month that are categorized as “main” in this vessel’s RFID chip inventory	Integer
Traps_spare	Number of unique RFID chips scanned in the current month that are categorized as “spare” in this vessel’s RFID chip inventory	Integer
Traps_over_limit	Number of unique RFID chips scanned in the current month that are categorized as “over-limit” in this vessel’s RFID chip inventory.	Integer

Field Name	Description	Field Type/Size
Traps_lost	Number of unique RFID chips scanned in the current month that have not been scanned in over a month	Integer
Comments	Comments/ verification of occurrence based on manual data review	Memo
Record_Entry_Date	Date on which this record was first entered	Short Date (month/day/year, e.g. 12/31/19)
Record_Update	Date on which this record was last updated	Short Date (month/day/year, e.g. 12/31/19)

\* Codes for these specific areas are defined as follows:

Trap Area Code	Description
A_MCINTYRE	McIntyre Bay (see IFMP for timing of trap limit)
B_NASS	Nass Estuary (during seasonal opening)
E_SOOKIE_20_6	Sub Area 20-6
E_SOOKIE_20_7	Sub Area 20-7
E_TOFINO	Area 24 inclusive
E_TOFINO_OUTSIDE	See description in Section 2.7.2 (Area B to J Trap Allocations) of Appendix 3: Commercial Harvest Plan
E_QUATSINO	Sub Areas 27-7 to 27-11
None	Areas that do not have a trap code (whole licence area)

Table 13: Non-Inventory traps

- ▶▶ **Description:** Occurrences are defined as any RFID chips scanned that are registered to another vessel's RFID inventory.
- ▶▶ **Timeliness:**
  - For vessels in Areas A and B, report occurrences within 31 days of recording data indicating an occurrence, including comments/ investigation of the occurrence.
  - For all other Licence Areas, report occurrences for each vessel within 24 hours of receiving data indicating an occurrence, and update record to provide verification/ comments within 15 days of receiving data for the end of the fishing month for that vessel.
- ▶▶ **Worksheet name:** Non\_Inventory\_Traps

Field Name	Description	Field Type/Size
Area	Licence Area (A, B, E, G, H, I, or J)	Text – 1 character, capital letter, no spaces
VRN	Vessel Registration Number	Integer
Vessel_Name	Vessel Name	Text
Occurrence_ID	Unique identification number for this incident (must be unique among all occurrence types)	Integer

Field Name	Description	Field Type/Size
Year	Year of occurrence	Integer (4 digits)
Month	Month of occurrence	Integer (2 digits)
Day	Day of occurrence	Integer (2 digits)
Registered_VRN	VRN of vessel to which the scanned RFID chips were registered.	Integer
Registered_Vessel	Name of vessel to which the scanned RFID chips were registered.	Integer
Comments	Comments/ verification of occurrence, based on manual data review	Memo
Record_Entry_Date	Date on which this record was first entered	Short Date (month/day/year, e.g. 12/31/19)
Record_Update	Date on which this record was last updated	Short Date (month/day/year, e.g. 12/31/19)

Table 14: Fishing without scanning RFID chips on traps

- ▶▶ **Description:** Full reporting of fishing without scanning RFID chips is required, based on analysis of RFID chip and hydraulic / vessel position data for each vessel. All incidents of apparent fishing activity without associated chip scans must be reported.
- ▶▶ **Timeliness:**
  - For vessels in Areas A and B, report occurrences within 31 days of recording data indicating an occurrence, including description / verification of the occurrence in the “Description” field.
  - For all other Licence Areas, report occurrences for each vessel within seven days of receiving data indicating an occurrence, and update record to provide verification/ comments within 15 days of receiving data for the end of the fishing month for that vessel.
- ▶▶ **Special Requirements:**
  - Occurrences must be listed and detailed by date and PFM Sub Area. If a vessel fails to scan RFID chips in multiple PFM Sub Areas on a given day, these incidents must be reported as separate records by PFM Sub Area.
  - If a scanner problem is indicated, it must also be reported as an equipment malfunction in Table 5.
  - Descriptions are required for significant occurrences, including any detail on attempts to contact the harvester to resolve the problem, and communications with the harvester.
  - False reports due to missing data that has since been delivered must be excluded.
- ▶▶ **Worksheet name:** Non\_Scanning

Field Name	Description	Field Type/Size
Area	Licence Area (A, B, E, G, H, I, or J)	Text – 1 character, capital letter, no spaces
VRN	Vessel Registration Number	Integer

Field Name	Description	Field Type/Size
Vessel_Name	Vessel Name	Text
Occurrence_ID	Unique identification number for this incident (must be unique among all occurrence types)	Integer
Year	Year of occurrence	Integer (4 digits)
Month	Month of occurrence	Integer (2 digits)
Day	Day of occurrence	Integer (2 digits)
PFMA	Pacific Fishery Management Area in which the occurrence was detected.	Integer
Sub Area	Pacific Fishery Management Sub Area in which the occurrence was detected.	Integer
Description	Description of the extent of the occurrence (apparent # strings or traps fished and not scanned), and details of fishing locations. Communications with the harvester (attempted or successful) must be documented here.	Memo
Record_Entry_Date	Date on which this record was first entered	Short Date (month/day/year, e.g. 12/31/19)
Record_Update	Date on which this record was last updated	Short Date (month/day/year, e.g. 12/31/19)

## 5. MONTHLY EM DATA SUMMARY REPORTS

From the electronic data, the vessel owner / licence holder shall ensure the service provider prepares monthly reports as described below.

▶▶ **Format:**

- Microsoft Excel (\*.xlsx OR \*.xls).
- Table 15 through Table 18 are to be included as separate worksheets in an Excel workbook, with worksheet names provided below for each table. Each table shall include a record for each vessel in each licence area, for each month of the year to date.

▶▶ **Medium:** DFO FTP site or Service Provider website

▶▶ **Timeliness:**

- For vessels in Area A, monthly summary tables to be delivered within 31 days of the end of the month in which fishing occurred.
- For all other Licence Areas, monthly summary tables to be delivered within 15 days of the end of the month in which fishing occurred.
- Records for previous months must be updated if and when data for those months are received late, to provide up-to-date summary statistics for each month of the year to date.

▶▶ **File Naming Conventions:** EM\_Summary\_2019.xls

Table 15: Summary of electronic monitoring status.

- ▶▶ **Special Requirements:** All licensed vessels must be listed in this table for each month of the year
- ▶▶ **Worksheet Name:** EM\_Status

Field Name	Description	Field Type/Size
Area	Licence Area (A, B, E, G, H, I, or J)	Text – 1 character, capital letter, no spaces
Year	Year	Integer (4 digits)
Month	Month of the year	Integer (2 digits)
VRN	Vessel Registration Number	Integer
Vessel	Vessel name	Text
Active_Hours	Total number of hours the electronic monitoring system was required to be collecting information per month (based on the number of hours in the month)	Integer
Working_Hours	Total number of hours the electronic monitoring system was collecting information per month.	Integer
Time_Gaps	Total time gaps: number of hours the electronic monitoring system was not collecting information per month	Integer
Active_Tracks	Number of vessel positions recorded while in “active” mode (travelling)	Integer
Sleep_Tracks	Number of vessel positions recorded while in “sleep” mode (at port)	Integer
Average_Active_Track_Time	Average time between recorded positions while in “active” mode (minutes)	Integer
Average_Sleep_Track_Time	Average time between recorded positions while in “sleep” mode (minutes)	Integer
Track_Days	Total number of days on which vessel position data were collected	Integer
Hyd_Days	Total number of days on which hydraulic data were collected	Integer
RFID_Days	Total number of days on which RFID chip scan data were collected	Integer
Last_Data_Date	Last day of the month on which track data were present. If blank, no data were submitted.	Integer

Table 16: Summary of total numbers of trap RFID chips scanned

▶▶ **Worksheet Name:** Traps\_Fished

Field Name	Description	Field Type/Size
Area	Licence Area (A, B, E, G, H, I, or J)	Text – 1 character, capital letter, no spaces
Year	Year	Integer (4 digits)
Month	Month of the year	Integer (2 digits)
VRN	Vessel Registration Number	Integer
Vessel_Name	Vessel Name	Text
Trap_Limit	total trap allocation	Integer
Unique_Traps_Month	Number of actively fished traps (unique RFID chips scanned) in the current month	Integer
Unique_Traps_Year	Cumulative number of traps fished (unique RFID chips scanned) in the current year to date	Integer
Traps_main	Number of unique RFID chips scanned in the current month classified in the vessel's current inventory as "main"	Integer
Traps_spare	Number of unique RFID chips scanned in the current month classified in the vessel's current inventory as "spare"	Integer
Traps_over_limit	Number of unique RFID chips scanned in the current month classified in the vessel's current inventory as "over-limit"	Integer
Traps_lost	Number of unique RFID chips scanned in the current month that have not been scanned in over a month	Integer
Traps_non_inventory	Number of unique RFID chips scanned in the current month that are registered to another vessel	Integer

Table 17: Summary of trap hauls and soak time

▶▶ **Worksheet Name:** Soak\_Time

Field Name	Description	Field Type/Size
Area	Licence Area (A, B, E, G, H, I, or J)	Text – 1 character, capital letter, no spaces
Year	Year	Integer (4 digits)
Month	Month of the year	Integer (2 digits)
VRN	Vessel Registration Number	Integer
Vessel Name	Vessel Name	Text

Field Name	Description	Field Type/Size
Haul Count	Total number of trap hauls (RFID chip scans) in the fishing month	Integer
Soak_18_days_less	Number of trap hauls (RFID chip scans) showing 18 days or less since last scan, in the fishing month.	Integer
Soak_19_22_days	Number of trap hauls (RFID chip scans) showing between 19 and 22 days since last scan, in the fishing month, excluding “false” reports of soak occurrences*	Integer
Soak_23_29_days	Number of trap hauls (RFID chip scans) showing between 23 and 29 days since last scan, in the fishing month, excluding “false” reports of soak occurrences*	Integer
Soak_30_days_plus	Number of trap hauls (RFID chip scans) showing 30 or more days since last scan, in the fishing month, excluding “false” reports of soak occurrences*	Integer
Number_hauls_excluded	Number of trap hauls showing more than 18 since last scan, in the fishing month, that were excluded (not reported in the last two categories)*	Integer

\* “false” reports to be excluded are defined under Table 11: Soak Limit Occurrences (see Description).

Table 18: Summary of monthly trap haul frequency

▶▶ **Worksheet Name:** Haul\_Frequency

Field Name	Description	Field Type/Size
Area	Licence Area (A, B, E, G, H, I, or J)	Text – 1 character, capital letter, no spaces
Year	Year	Integer (4 digits)
Month	Month	Integer (2 digits)
VRN	Vessel Registration Number	Integer
Vessel	Vessel name	Text
Unique Traps Month	Number of actively fished traps (unique RFID chips scanned) in the current month	Integer
5_times_less	Number of traps hauled (scanned) 5 times or less during the month	Integer
6_15_times	Number of traps hauled more than 5 times and up to 15 times during the month.	Integer
16_30_times	Number of traps hauled more than 15 times and up to 30 times during the month.	Integer
31_times_plus	Number of traps hauled 31 times or more during the month.	Integer

## 6. EM HARD DRIVE TRACKING (AREAS A AND B)

From the electronic data, the vessel owner / licence holder shall ensure the service provider prepares reports as described below.

- ▶▶ **Format:**
  - Microsoft Excel (\*.xlsx OR \*.xls).
  - Table 19 and 20 are to be included as separate worksheets in an Excel workbook, with worksheet names provided below for each table. Each table shall include a record for each vessel in each licence area, for each month of the year to date.
- ▶▶ **Medium:** DFO FTP site or Service Provider website
- ▶▶ **Timeliness:**
  - Data shall be made available to DFO on a daily basis.
- ▶▶ **File Naming Convention:** EM\_Hard Drive Tracking\_2019.xls

Table 19: Summary of hard drive installation, removal and replacement on vessels

- ▶▶ **Worksheet Name:** Hard\_Drive\_Tracking

Field Name	Description	Field Type/Size
Hard_Drive_Acti on	Indicate whether hard-drive was installed, replaced or removed using Hard Drive Action* from table below	Text
Hard- drive_Unique_Id entifier	Unique identification number of hard-drive	Integer
Date_of_Action	Date of hard drive installation, removal or replacement on vessel	Short Date (month/day/year, e.g. 12/31/19)

<b>HARD DRIVE ACTION*</b>
<b>Install</b>
<b>Replace</b>
<b>Remove</b>

Table 20: Manual Analysis (Areas A and B)

- ▶▶ **Description:** In cases where a vessel’s hydraulic sensor or RFID scanner was not working, resulting in inability to identify potential violations via an automated process, “Manual” analysis of the EM and video data is required to identify violations. A minimum of 10% of the video data must be reviewed. If non-compliance is apparent, additional video must be reviewed as necessary to document the problem.

- ▶▶ **Special Requirements:** EM review must be completed within 30 days of the end of the fishing month, including EM reviews that are greater than 10% video footage reviews. In addition, all equipment problems must be reported in Table 5
- ▶▶ **Worksheet Name:** Manual\_Analysis

Field Name	Description	Field Type/Size
Hard-drive_Unique_Identifier	Unique identification number of hard-drive	Integer
EM_Hard-drive_Start_Date	Date of hard-drive installation	Short Date (month/day/year, e.g. 12/31/19)
EM_Hard-drive_End_Date	Date of hard-drive removal	Short Date (month/day/year, e.g. 12/31/19)
10%_Manual_Review	Rationale for 10% manual analysis	Text
Date_of_10%_Manual_Review	Date of 10% manual analysis	Short Date (month/day/year, e.g. 12/31/19)
Greater_Than_10%_Manual_Review	Rationale for greater than 10% manual analysis	Text
Date_of_Greater_Than_10%_Manual_Review	Date of greater than 10% manual analysis	Short Date (month/day/year, e.g. 12/31/19)
Comments	Comments must include details of why EM review occurred as well as equipment malfunction information or occurrence information as appropriate	Memo

## 7. COMPLIANCE REVIEW LETTERS

Vessel Compliance Review Letters must summarize individual vessel compliance for each month the vessel is active. These reports must document all non-compliance occurrences that have been verified via review of EM and video data. From the electronic data, the vessel owner / licence holder shall ensure the service provider prepares reports which are sent to both the vessel owner/licence holder and DFO Crab Lead Manager for each month as described below.

- ▶▶ **Format:**
  - Microsoft Word (\*.docx or \*.doc) or Adobe (\*.pdf).
- ▶▶ **Medium:** Emailed to DFO Crab Lead Manager and licence holders, and any other requested DFO staff.
- ▶▶ **Timeliness:**
  - Vessel Compliance Review Letters will be generated within 15 days of EM hard drive review for Area A, and within 30 days of the end of the month for Areas B - J.
- ▶▶ **File Naming Convention: (vessel name) (period of review).xls**
- ▶▶ **Content – Area A**
  - Name and email of the licence holder(s) to whom the Compliance Review Letter is being sent.
  - Name of vessel master
  - Port of offload
  - Unique Reference number for the compliance letter
  - Hails
    - Letters will use TRIP STATUS terminology from Annex 6 and indicate how many hails were missed during the review period. For example: “Vessel X had 10 trips during this review period, and missed 1 hail during this time”.
    - Compliance review periods will always begin with a ‘START’ TRIP STATUS.
  - Trap hauling and scanning: (scan attempted – RFID not read, failure to scan, gear tangle, hauling strays, hauling other vessels gear and retaining catch, total number of gear hauls, and retaining prohibited species).
  - Traps fished over allocated trap threshold (including traps scanned and traps not scanned as identified above)
  - Oversoaked traps
  - Fishing in Closures
  - Time gaps at the dock. Must include data type (vessel position) and both start location and end location in latitude & longitude for each time gap.
  - Time gaps while fishing. Must include data type (vessel position, hydraulic, RFID chip, or video) and both start location and end location in latitude & longitude for each time gap.
  - Prohibited species (species retained, number retained, GPS location, date and time)
  - Any other infractions observed
- ▶▶ **Content – Areas B, E, G, H, I, and J:**

- Name and of the licence holder(s) to whom the Compliance Review Letter is being sent.
- Name of vessel master
- Main Port of offload
- Unique Reference number for the compliance letter
- Fishing in Closures- provide verification including number of traps scanned, hauling traps without scanning (for Area B include the number of traps hauled based on video data review) and geographical description of where the fishing occurred inside the closure).
- Total number of unique traps scanned in the month
- Failure to scan traps – description of fishing without scanning verified via EM data, (and video footage review for Area B). Details should include date, PFM Subarea, and a description of the approximate number of traps not scanned. For Area B, details based on video data review should include: number of strings reviewed, number of traps hauled and not scanned in each string, scan attempted – RFID not read, failure to scan, gear tangle, hauling other vessels gear and retaining catch). Communications with the harvester (or attempts to contact) to try to resolve the problem must be included in the description.
- Traps fished over allocated trap threshold (including traps scanned and traps not scanned as identified above for Area B) in the licence area as a whole, and in specific trap limit areas within the licence area (e.g. Nass, Sooke, Inside Tofino, Outside Tofino, Quatsino).
- Hauling other vessels gear - include non-inventory RFID-chips scanned, and the vessel to which the chips are registered (for Area B, include any retaining of catch from other vessels gear, based on video review).
- Oversoaked Traps (provide comment on the last fishing date, how long traps were soaked, verification of the occurrence based on manual review of EM and video data).
- Fishing in Closures (provide verification including number of traps scanned, number of traps hauled, and geographical description of where the fishing occurred inside the closure).
- Time gaps at the dock. Must include data type (vessel position) and both start location and end time and location in latitude & longitude for each time gap.
- Time gaps while fishing. Must include data type (vessel position, hydraulic, RFID chip, or video) , both start location and end time and location in latitude & longitude for each time gap, and explanation or comment on why the gap may have occurred, such as evidence of turning the EM system off. .
- Data delivery occurrences: cases where vessel position, hydraulic, or RFID chip data were not delivered within 14 days, including explanation, follow up, and resolution.
- Prohibited species (species retained, number retained, GPS location, date and time)
- Any other infractions observed



<b>Project Name:</b>	PacFISH Information Management Framework
<b>Document Title:</b>	DFO Data Transfer Specifications: At-sea Observers
<b>Author:</b>	
<b>Organization:</b>	Fisheries and Oceans Canada
<b>Version:</b>	1.0
<b>Date:</b>	December 11, 2018

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This document provides information on the data requirements and specifications for programs collecting data for transfer to Fisheries and Oceans Canada, Pacific Region. The intended audience is both DFO staff and external groups involved in collecting, transferring or managing fisheries data. All data submitted becomes the exclusive property of Fisheries and Oceans Canada

- ▶▶ **Fishery(s):** Commercial Crab by Trap
- ▶▶ **Fishery Season:** 2019/20
- ▶▶ **Data Collection Program Name:** At-Sea Observers
- ▶▶ **Associated Fishery Data Manager:** Resource Management – Invertebrates, Pacific Region

### Data Transfer Requirements

On each fishing day, information shall be recorded in the following two tables.

- ▶▶ **Format:** Microsoft Excel (\*.xls or \*.xlsx)
- ▶▶ **Medium:** DFO ftp site or Email to Local Area Crab Manager
- ▶▶ **Timeliness:** The observer shall prepare information reports within seven days of fishing activity. Data recorded for the week should be appended into each table (i.e. one of each of Table 1 and Table 2 is submitted for the week)

Table 1: Daily Fishing Trip Information

► **File Naming Conventions:** [VRN]\_Trip\_[Date of weekly data delivery] (e.g. 311288\_Trip\_06\_30\_2019)

Field Name	Description	Field Type/Size
Area	Licence Area (A, B, E, G, H, I, or J)	Text, 1 char, no spaces
VRN	Vessel Registration Number	Integer
Vessel_Name	Name of Vessel	Text
Vessel_Mast_Name	Name of Vessel Master	Text
Observer_Name	Name of Onboard Observer	Text
Conf_Log	Confirmation of a valid logbook on board	Memo
Conf_Log_current	Confirmation that logbooks are up to date	Memo
Conf_fish_activ	Confirmation that the vessel fishing activity location report is up to date (Licence Area A only)	Memo
Fish_activ_verf_num	Fishing activity location report verification number (Licence Area A only)	Integer
Crabs_retained	An estimate of the total number of crabs retained on board the vessel from all the traps hauled on this date	Integer
Crabs_released	An estimate of the total number of crabs released by the vessel from the traps hauled on this date	Integer
Octopus_num	Total number of Octopus caught in all the traps hauled on this date	Integer
Num_traps	Total number of traps hauled on this date	Integer

Table 2: Trap Information

► **File Naming Conventions:** [VRN]\_Trap\_[Date of data delivery] (e.g. 311288\_Trap\_06\_30\_2019)

Field Name	Description	Field Type/Size
VRN	Vessel Registration Number	Integer
Date	Date of fishing	Short Date (month/day/year)
Latitude	Latitude (decimal degrees) of trap (where traps are on a string, record this field only for the first and last trap on the string)	Decimal (e.g. 54.1923416)

<b>Field Name</b>	<b>Description</b>	<b>Field Type/Size</b>
Longitude	Longitude (decimal degrees) of trap (where traps are on a string, record this field only for the first and last trap on the string)	Decimal, negative (e.g. -130.338375)
Conf_tag	Confirmation of plastic tag on trap	Memo
Tag_num	Plastic tag number	Integer
Conf_buoy	Confirmation that buoys labeled with VRN and proper colours (where traps are on a string, record this field only for the first and last trap on the string)	Memo



<b>Project Name:</b>	PacFISH Information Management Framework
<b>Document Title:</b>	DFO Data Transfer Specifications: Plastic Trap Tags
<b>File Number:</b>	
<b>Author:</b>	Sylvia Humble
<b>Organization:</b>	Fisheries and Oceans Canada
<b>Version:</b>	1.0
<b>Date:</b>	December 11, 2018

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This document provides information on the data requirements and specifications for programs collecting data for transfer to Fisheries and Oceans Canada, Pacific Region. The intended audience is both DFO staff and external groups involved in collecting, transferring or managing fisheries data. All data submitted becomes the exclusive property of Fisheries and Oceans Canada.

- ▶▶ **Fishery(s):** Commercial Crab by Trap
- ▶▶ **Fishery Season:** 2019/20
- ▶▶ **Data Collection Program Name:** Plastic Trap Tags
- ▶▶ **Associated Fishery Data Manager:** Resource Management – Invertebrates, South Coast Area

### Plastic Trap Tag Issuance

All aspects of plastic trap tag procurement, distribution, administration, and data entry are the responsibility of the vessel owner/licence holder to arrange with the service provider. The service provider will issue plastic trap tags to licence holders at least two weeks in advance of the beginning of the 2019/20 fishing season for each licence area, where contracts are in place with licence holders. See Commercial Harvest Plan for procedures for issuing spare plastic tags (when a number of traps up to 10% of the vessel trap limit are lost) and replacement plastic tags (when a number of traps over 10% of the trap limit are lost).

### Data Transfer Requirements

The service provider shall notify the DFO Licence Area crab manager via email when replacement plastic tags are requested by a licence holder. In addition, the following data shall be reported.

- ▶▶ **Format:** data will be entered directly into a DFO website application. Please note that DFO may be updating the Department’s Fisheries Operating System data delivery system during the 2019/20 licence year. In the event of changes, a new data delivery mechanism may be required.
- ▶▶ **Medium:** Direct data entry into the approved Departmental Database.
- ▶▶ **Timeliness:** within 24 hours of issuing the crab trap tags
- ▶▶ **Data Ownership:** All data submitted becomes the exclusive property of Fisheries and Oceans Canada.

## Data Transfer Format

Please note that all trap tag data are to be entered into the web-based Fishery Operation System. The Departmental database specifications and screen shot below will provide an overview of the data to be entered. For fields that are not applicable, a null (blank) value is to be entered.

The following table describes the fields to be entered on the FOS web application:

Field Name	Description	Mandatory?	Form Type
Item Type	Item Type is always "Trap Tag" (select this option from form)	Y	Drop down
Licence	Licence tab number (select from licence search form)	Y	Licence search
Item Number	Numbers printed on the series of plastic tags issued (e.g. 001-300)	Y	Textbox
Quantity Issued	Number of tags issued on this date	Y	Textbox
Primary Tag Colour <sup>1</sup>	Colour of primary tags (enter if issuing primary tags at this time)	N	Drop down
Extra Tag Colour <sup>2</sup>	Colour of extra tags (enter if issuing extra tags at this time)	N	Drop down
Effective Date	Date on which the tags will be valid (e.g. the latter of Jan. 1 or issue date)	Y	Date picker
Invalid Date	Date on which the tags will become	Y	Date picker

Field Name	Description	Mandatory?	Form Type
	invalid (e.g. Dec. 31)		
Issuer's Name	Issuer's Name	Y	Textbox
Comments	Any relevant information (e.g. number of primary vs. extra tags, Item Numbers specific to each)	N	Textbox

**<sup>1</sup> Primary Tag Colour Options**

ORANGE
WHITE
YELLOW
PINK
RED
GREY
GREEN
BLUE-DARK
BEIGE
BLUE-LIGHT
BLACK
PURPLE
GOLD
BROWN
FL.PINK
BURGUNDY

**<sup>2</sup> Extra Tag Colour Options**

ORANGE
WHITE
YELLOW
PINK
RED
GREY
GREEN
BLUE-DARK
BEIGE
BLUE-LIGHT
BLACK
PURPLE
GOLD
BROWN
FL.PINK
BURGUNDY



<b>Project Name:</b>	<b>PacFish Information Management Framework</b>
<b>Document Title:</b>	<b>Crab Harvest Log Program (Paper) Data Specifications</b>
<b>File Number:</b>	
<b>Author:</b>	Leslie Barton, Sandra Bassett
<b>Organization:</b>	Fisheries and Oceans Canada
<b>Version:</b>	1.0
<b>Date:</b>	October 31, 2017 revised

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This document provides information on the data requirements and specifications for programs collecting data for transfer to Fisheries and Oceans Canada, Pacific Region. The intended audience is both DFO staff and external groups involved in collecting, transferring or managing fisheries data, including Service Providers hired by harvesters or harvester associations to support compliance with Conditions of Licence.

## Tombstone

- ▶▶ **Fishery(s):** Commercial Crab
- ▶▶ **Fishery Season:** 2019/20
- ▶▶ **Data Collection Program Name:** Shellfish Crab Harvest Log Program (paper-based)
- ▶▶ **Associated Fishery Data Service:** Shellfish Data Unit

## Document Change History

<i>Author</i>	<i>Date</i>	<i>Description of Change</i>
Lorne Collicutt	Sept 7, 2011	First draft of template
Leslie Barton	October 20, 2011	Addition of specifics for crab harvest log program
Leslie Barton	Jan 5, 2012	Review and inclusion of Service Provider accumulated instructions
Leslie Barton	Feb 3, 2012	Incorporated G. Jorgensen edits
Sandra Bassett	Jan 14, 2015	Addition of trap information, data collected on harvest logs commencing 2015
Sandra Bassett	October 15, 2015	Incorporated edits to harvest logs and data specification.

## Data Transfer Requirements

- ▶▶ **Format:** MS Access 2010 (or earlier version) database file following the prescribed data transfer format (below) + hardcopy (paper) from which electronic data were transcribed.
  - A separate file must be created for each calendar year.
  - Hardcopy (paper) must be sorted by Vessel Registration Number (VRN) (ascending), with multiple pages for a single vessel paper clipped together. For any given vessel with multiple pages for the batch, the pages should be sorted in chronological order.
  - Hardcopy (paper) must be separated by calendar year.
  - Hardcopy (paper) must be accompanied by a batch summary report, consisting of the batch number/id, a listing of the VRN's contained in the batch, sorted in ascending order, with a count of records associated with each VRN. The total number of records associated with the batch must also be provided.
- ▶▶ **Conduit:** Data transfer to DFO to be effected via the DFO Contractor Data Exchange FTP site or other FTP service approved by the Shellfish Data Unit. Service Provider is to notify Shellfish Data Unit via email each time a file is posted to an FTP site.
- ▶▶ **Medium:** In the absence of data transfer via FTP, contact the Shellfish Data Unit to determine an acceptable physical medium for data transfer.
- ▶▶ **Hardcopy delivery:** All deliveries of hardcopy and physical media must be via courier service, in-person or by a Shellfish Data Unit approved alternative. The mailing address is:
  - Fisheries and Oceans Canada
  - Shellfish Data Unit
  - Pacific Biological Station
  - 3190 Hammond Bay Road,
  - Nanaimo, BC, V9T 6N7
- ▶▶ **Timeliness:** Within three weeks of the date of receipt of hardcopy by the Service Provider.
- ▶▶ **Data Ownership:** All data submitted becomes the exclusive property of Fisheries and Oceans Canada.
- ▶▶ **File Naming Conventions:** Files should be named such that the Service Provider, Fishery, Origin (paper-based [P]) Unique Batch number and year (YYYY) are all present in the file name (e.g. ABCCo\_Crab\_P\_B389\_2017).
- ▶▶ **Special Requirements:**
  - The electronic version must be a true and accurate transcription of the hardcopy data. Each record will represent, gear within a Pacific Fisheries Management Sub-Area, where all traps have the same soak time and depth.
  - The database file submitted must consist of only one table named 'new\_logs', with the fields and field characteristics as shown in the

‘DATA TRANSFER FORMAT’ section in this document. Regardless of the table design and relationships defined by the external group or Service Provider system for proprietary purposes, data transferred to DFO must be extracted in a manner which conforms to the design described in the ‘DATA TRANSFER FORMAT’ section.

- To support consistency in interpretation of harvest log content, Shellfish Data Unit will review harvest logs received from harvesters in advance of the harvest logs being sent to the Service Provider for electronic data capture. Any modifications to the content of harvest log undertaken by the Shellfish Data Unit will be indicated using red pen.

## Data Transfer Format

More extensive descriptions of data fields marked with an asterisk are available following the table.

Note: When data is missing on the harvest logs, key the value from the column ‘Value if N/A or Unknown’

Field Name	Description	Mandatory	Field Type/Size	Value if N/A or Unknown	Validation Rules
CFV	Vessel Registration Number (VRN) of Vessel	Yes	Long Integer		
FIN	Vessel Master Fisher Identification Number (FIN)		Long Integer	Null	
YEAR	Year of fishing event	Yes	Integer		
PAGE_NUM	Page Number	Yes	Long Integer		
FISHING_METHOD	*Fishing Method	Yes	Text – 1 character	U	
BAIT_METHOD	*Bait Attachment: Jars, Clips or Cages	Yes	Text – 1 character	U	
BAIT_CODE	*Bait code for type of bait used	Yes	Text – 3 characters	UNK	
DEPTH_UNIT	*Depth Unit	Yes	Text – 1 character	U	
WEIGHT_UNIT	*Weight Unit	Yes	Text – 1 character	U	
NUM_TRAP1	Number of traps - Trap type 1		Integer	Null	
FRAME1	*Frame – Trap Type 1		Text – 2 characters	Null	
DIAMETER1	Diameter in inches - Trap type 1		Byte	Null	
HEIGHT1	Height in inches – Trap type 1		Byte	Null	
MESH1	*Mesh – Trap type1		Text – 2 characters	Null	
RING_SIZE1	Escape Ring size in mm - Trap type 1		Integer	Null	

<b>Field Name</b>	<b>Description</b>	<b>Mandatory</b>	<b>Field Type/Size</b>	<b>Value if N/A or Unknown</b>	<b>Validation Rules</b>
NUM_TRAP2	Number of traps - Trap type 2		Integer	Null	
FRAME2	*Frame – Trap type 2		Text – 2 characters	Null	
DIAMETER2	Diameter in inches - Trap type 2		Byte	Null	
HEIGHT2	Height in inches – Trap type 2		Byte	Null	
MESH2	*Mesh – Trap type2		Text – 2 characters	Null	
RING_SIZE2	Escape Ring size in mm - Trap type 2		Integer	Null	
NUM_TRAP3	Number of traps – Trap type 3		Integer	Null	
FRAME3	*Frame – Trap type 3		Text – 2 characters	Null	
DIAMETER3	Diameter in inches – Trap type 3		Byte	Null	
HEIGHT3	Height in inches – Trap type 3		Byte	Null	
MESH3	*Mesh – Trap type 3		Text – 2 characters	Null	
RING_SIZE3	Escape Ring size in mm - Trap type 3		Integer	Null	
LINE_NUM	Line Number	<b>Yes</b>	Integer or byte		
MONTH	Month of fishing event	<b>Yes</b>	Integer or byte	0	1-12
DAY	Day of fishing event	<b>Yes</b>	Integer or byte	0	Valid calendar day (1-31)
SOAK_DAYS	* Soak Time in Days		Integer or byte	0	
SOAK_HOURS	* Soak Time in Hours		Integer	0	

<b>Field Name</b>	<b>Description</b>	<b>Mandatory</b>	<b>Field Type/Size</b>	<b>Value if N/A or Unknown</b>	<b>Validation Rules</b>
LAT_DEG	*Degrees of Latitude		Integer or byte	Null	
LAT_MIN	*Minutes of Latitude		Single (floating point)	Null	
LONG_DEG	*Degrees of Longitude		Integer or byte	Null	
LONG_MIN	*Minutes of Longitude		Single (floating point)	Null	
STAT_AREA	*Statistical Area		Integer or byte	0	Valid PFM Area from PacFish Data Standard list
SUB_AREA	*Statistical Sub-area		Integer or byte	0	Valid PFM Sub-area from PacFish Data Standard list
MIN_DEPTH	Minimum Depth reported		Integer	0	
MAX_DEPTH	Maximum Depth reported		Integer	0	
SPECIES_CODE	* Species Code	<b>Yes</b>	Text – 3 characters		Valid PacCode from PacFish Data Standard list
CATCH_NUMBER	Number of crabs landed		Integer	0	
WEIGHT	Total landings		Integer	0	
NUM_TRAPS	Number of traps pulled		Integer	0	
OCT_NUM_REL	Number of Octopus Released		Integer	Null	
OCT_WGT_REL	*Weight of Octopus Released		Single Float	Null	
OCT_NUM_KPT	Number of Octopus Kept		Integer	Null	
OCT_WGT_KPT	*Weight of Octopus Kept		Single Float	Null	
PBS_CODE	*Usability /Remarks		Integer or byte	0	
REC_STATUS	*Status of Record	<b>Yes</b>	Integer or byte		0,1,2

## Fishing Method

Use the following codes to report what the traps are attached to.  
Enter 'G' for Ground Lines, 'S' for Singles (individually buoyed), 'B' for Both, 'U' if Unknown.

## Bait Fastener

Use the following codes to report how bait is held: 'J' for Jars or Containers, 'K' for Cages, 'C' for Clips or Hooks, 'V' for various (more than one selected), 'B' for Bags, 'O' for other (none of the above), or 'U' for unknown.

## Bait Type

Use the following codes for the type of bait most commonly used:

<b>QID</b> ----- Squid	<b>TIN</b> ----- Tinned Fish	<b>SAL</b> ----- Salmon (all species + heads + frames)
<b>GEO</b> ----- Geoducks	<b>ZOR</b> ----- Razor Clams	<b>FRA</b> ----- Fish Frames (not Salmon)
<b>HER</b> ----- Herring	<b>CLA</b> ----- Clams	<b>AST</b> ----- Fish Paste
<b>OCT</b> ----- Octopus	<b>DOG</b> ----- Dogfish	<b>EUL</b> ----- All Smelt species
<b>ROC</b> ----- Whole Rockfish	<b>XXX</b> ----- Experimental	<b>MIX</b> ----- Mixed Fish Species (and offal and scraps)
<b>KKK</b> ----- Hake	<b>UNK</b> ----- Unknown	
<b>PEL</b> ----- Pellets	<b>YYY</b> ----- Other	

A mixture of two baits listed above can be coded as first code letter (**W**) with first code letter. For example, squid and razor clams would be coded as **QWZ**. A mix of herring and squid would be coded as **HWQ**. For a mixture of greater than 2 types of bait, use the most dominant/common type (if possible) with mixed fish species (and offal and scraps) e.g. **HWM**, (see exception codes below).

## Bait Type – additional codes

These codes are for rarely encountered bait types and should **not be used in mixture situations** as described in the previous paragraph.

**PIL** ----- Pilchards      **TBT** ----- Turbot      **KOD** ----- Codfish      **TUN** ----- Tuna

In the event that these items are indicated as mixed with another bait type, code as 'bait type from common list above' (**W**) with 'Y' (other), e.g. Clam with codfish = **CWY**

## Bait Type – exception codes

Codes for 3 way mixtures include:

**HCQ** ----- Herring with clam and squid      **HDB** ----- Herring with dogfish and gurdy

## Depth Unit

Enter 'M' for depths in Meters, or 'F' for Fathoms, 'U' if Unknown.

## Weight Unit

Enter 'P' for weights reported in Pounds, 'K' for weights reported in Kilograms, 'M' for weights reported in Mixed units e.g. crab in Kilograms and octopus in Pounds or vice versa (this is mainly to be consistent with the prawn fishery and may not get used), 'U' if Unknown.

## Frame Type

Use the following codes for the type of Frame most commonly used:

'SS' = Stainless, 'MS' = Rubber Wrapped Iron, 'RS' = Rubber Wrapped Iron with Stainless top,  
'OT' = Other, 'UN' = Unknown

## Mesh Type

Use the following codes for the type of Mesh most commonly used:

'SS' = Stainless, 'NW' = Synthetic, 'BO' = Both, 'UN' = Unknown

## Soak Time (Days or Hours)

Fish harvesters have an option to report Soak Times in one of two ways, either as days for soaks of 1 or more days, or hours for soaks of less than a day. Use only one and enter 0 in the other. Sometimes fish harvesters will report something like 1 day, 4 hours, which can be recorded as 28 hours. Sometimes fish harvesters will report 1 day 24 hours, which is interpreted to mean the fish harvester has reported the same time in both places, and is recorded as 1 day, 0 hours.

## Latitude/Longitude Position Fields

The latitude and longitude data are to be entered as degrees and decimal minutes. For instance, for latitude of 49 degrees, 10 minutes, 15 seconds, you would enter 49 in the LAT\_DEG field and 10.25 in the LAT\_MIN field (15 divided by 60 gives 0.25 minutes). Values for longitude are entered as positive values.

## Statistical Area / Sub-Area

This is the Pacific Fisheries Management Area (PFMA) and Sub-Area as specified in the *Fisheries Act*, Pacific Fishery Management Area Regulations, 2007.

## Species Codes

Use the following Hart codes for crab species type being reported.

<u>Species</u>	<u>Species Code</u>	<u>Species</u>	<u>Species Code</u>	<u>Species</u>	<u>Species Code</u>
Dungeness	XKG	Brown (Golden) King	VMC	King (Unidentified)	VIA
Red Rock	XLA	Red King	VNH		

## Weight of Octopus Released

The total or combined weight of all octopus released in a string or group of traps.

## Weight of Octopus Kept

The total or combined weight of all octopus retained in a string or group of traps.

## PBS Code

Use default value of 0 or use code 99 to indicate that the data entry person has a problem (interpretation or other) with the record. Data entry person is to use pencil to write '99' in the PBS Code column of the paper log and include a sticky note affixed to the log page with a brief description of the issue. The sticky note must project up from the page such that it is easily seen. Example problems: 'handwriting hard to interpret', 'damage to page', etc.

Occasionally Shellfish Data Unit staff will enter a numeric code in the PBS Code column of the harvest log (identified by red pen). These codes are to be transcribed to the electronic version of the data.

## Status of Record

Use the following codes for the status of each record.

<u>Status</u>	<u>Code</u>
Record <b>Newly Submitted</b> to Shellfish Data Unit	0
Record has been <b>Previously Submitted</b> and is <b>Unchanged</b>	1
Record has been <b>Edited</b> and <b>Re-submitted</b> to Shellfish Data Unit	2

**British Columbia Commercial Crab Fishery  
Biological Sampling Program**

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## 1. Introduction

The objective of a biological sampling program in the commercial Dungeness Crab (*Metacarcinus magister*) trap fishery is to collect biological data on target and non-target catch. The commercial fishery is managed with a minimum size limit (165 mm carapace width point-to-point), non-retention of females and soft shell crabs, and in certain areas there are seasonal closures to protect moulting male crabs. The fishery targets large male Dungeness crabs. Non-target catch or bycatch include discarded Dungeness crabs such as sublegal males, females, and soft crabs, and species other than Dungeness crabs.

For management purposes, the British Columbian (BC) coast is divided into seven crab management areas (CMAs) (Fig. 1).

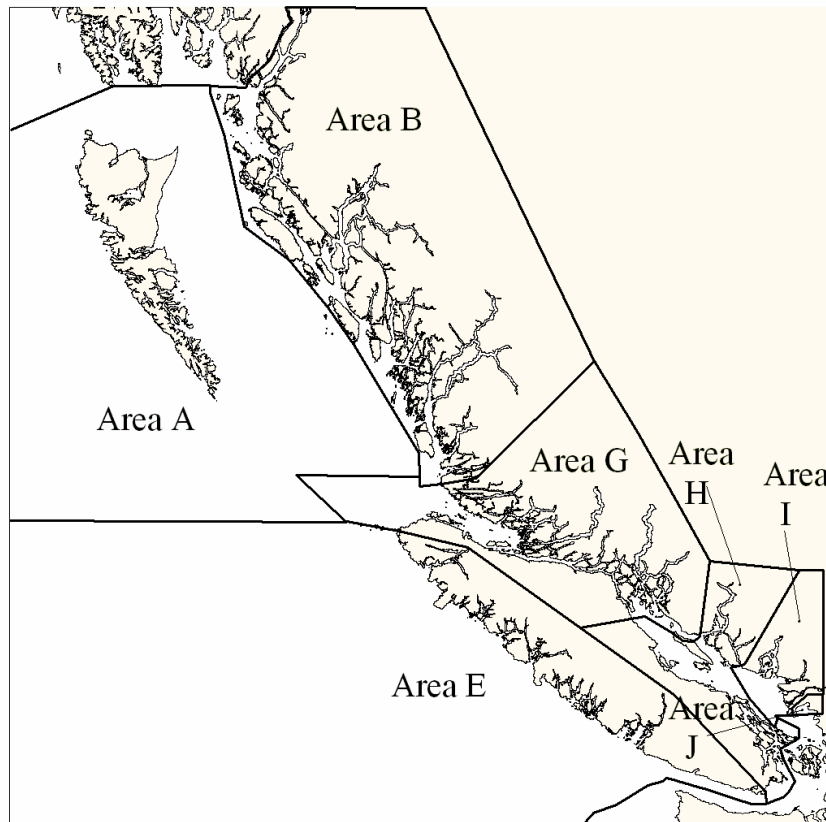


Figure 1. Crab Management Areas (CMAs) in British Columbia.

A particular commercial vessel must choose and fish in only one CMA for a three year period. Not all management measures are consistent between CMAs.

Management concerns in crab fisheries include: unbalanced allocation between sectors, excessive handling mortality, over-exploitation, and unknown moult timing in certain

areas. Ecosystem-based management policies falling under the Sustainable Fisheries Framework, including the Precautionary Approach, Managing Bycatch, Sensitive Benthic Areas and Forage Species policies, will guide management direction in the future and the types of biological information required. The crab biological sampling program will continue to evolve as Science, Fisheries Management, First Nations and Stakeholders work together to ensure BC's crab resources remain healthy and the fisheries sustainable and economically prosperous.

There are two important documents that compliment this one. The crab survey manual by Dunham et al. (2011) provides much detail about the collection of crab biological information and it should be used in conjunction with this document. The Crab By Trap Integrated Fisheries Management Plan (IFMP) provides additional detail regarding management of various crab fisheries (Fisheries and Oceans Canada 2019). Please contact the appropriate Area Manager to obtain copies.

## **2. Crab Biological Sampling Program**

The crab biological sampling program has two components:

- 1) commercial catch sampling,
- 2) fishery independent (standardized) sampling.

Please note sampling programs vary depending on the CMA. The department's (DFO) goal is to move toward a consistent coast-wide biological sampling program.

Catch sampling on commercial vessels is done by trained, certified observers during the commercial fishing season throughout the CMA to gather catch information on target and bycatch species and to monitor gear compliance. Commercial catch sampling should be spread equitably throughout the duration of the fishing season.

Fishery independent sampling using standardized trap gear tracks changes in crab abundance, especially females and sublegal males, over time at particular locations scattered throughout the coast. Standardized trap gear means the fishing gear is similar in terms of trap type, bait type, and soak time. Fishing standardized gear allows trap catches to be compared between different locations and time periods. Standardized sampling is done by service providers, DFO, First Nations, and other groups.

There is interest by certain groups, primarily First Nations, to conduct their own crab stock assessment surveys in local areas. In anticipation of this, DFO Marine Ecosystems and Aquaculture Division (MEAD) has produced a crab survey protocols manual that will help to standardize crab surveys done by various parties (see Dunham et al. 2011).

## **2.1 Area A**

### **2.1.1 *Commercial catch sampling***

Four sampling events on four different vessels are required during the fishing season. A sampling event should occur once every two months beginning within one month of the fishery opening in the summer and another event in February/March or upon consultation with the Department. A certified observer will live aboard a commercial vessel for a fishing trip (3-6 days in duration) and collect crab biological data from approximately every sixth trap that is hauled.

### **2.1.2 *Fishery independent standardized sampling***

At present, fishery independent standardized sampling is not required in Area A.

## **2.2 Areas B to J**

### **2.2.1 *Commercial catch sampling***

Sampling occurs throughout each management area and is to be carried out according to the following requirements:

1. Sample size:
  - Minimum 200 crabs collected per month.
  - Minimum 50 crabs or 10 traps sampled per vessel during a sampling event.
  - Each trap sampled must be sampled in its entirety.
  
2. Sampling frequency:
  - >6 month fishing season: number samples = 2 × number vessels.
  - ≤6 month fishing season: number samples = 1 × number vessels.
  - Every vessel must be visited at least once during the fishing season by the service provider (twice in areas where the fishing season is more than 6 months).
  - Vessel sampling should be spread as equitably as possible throughout all months of the fishing season (Table 1).

The above requirements are to be met within the service provider’s control. If the requirements cannot be met, justification must be provided at the time of data delivery.

Table 1. Number of vessels to be sampled each month during the fishing season to collect crab biological data, assuming that all vessels licensed for an area are active.

Date	Area B	Area E	Area G	Area H	Area I	Area J
January		6	2	10		
February		6	2	10		
March	5	7	3	10		
April	5	7	3	10		
May	5	7	3	10		
June	6	7	3	10	4	
July	6	7	3	11	4	5
August	6	7	3	11	4	5
September	5	7	3	10	4	5
October	5	7	3	10	3	5
November	5	6	3	10	3	4
December		6	3	10		
Total	48	80	34	122	22	24

Please refer to Table 2 for area specific commercial vessel crab biological sampling requirements.

Table 2. Fishery independent and commercial vessel crab biological sampling program requirements, assuming that all vessels licensed for an area are active.

Area	Sampling Type	Index Site	Fishing Season (months)	No. Boats	Visits Per Boat	Sampling Events Per Year
B	Indep	Skeena River (4-12, 15)				5
	Comm		9	22	2	44
E	Indep	Tofino (24-6, 8, 9)				6
	Comm		12	37	2	74
G	Indep	Village Is (12-6, 26)				6
	Comm		12	16	2	32
H	Indep	Sidney (19-5, 6)				6
	Comm		12	59	2	118
I	Indep	Fraser River (28, 29)				DFO <sup>a</sup>
	Comm		5.5	21	1	21
J	Indep	Boundary Bay (29-8)				DFO <sup>a</sup>
	Comm		4.5	23	1	23

<sup>a</sup>DFO has been conducting research surveys on the Fraser River delta for approximately 20 years. Trap surveys are done twice a year, pre- and post commercial fishery. In the event DFO cannot continue to conduct such surveys, the service provider will be requested to collect fishery independent data in the future.

### 2.2.2 *Fishery independent standardized sampling*

Sampling is to occur at index sites (one site per crab management area). The service provider must respect any commercial crab fishing closures currently existing in index site subareas as outlined in the 2019/20 Crab by Trap IFMP. Sampling is to be carried out in accordance with the following requirements:

1. Sample size
  - Minimum 200 crabs per sampling event.
  - Each trap sampled must be sampled in its entirety.

## 2. Sampling Frequency:

- Minimum one sampling event for every two month block during the fishing season (Jan/Feb, Mar/Apr, May/June, July/Aug, Sept/Oct, Nov/Dec); 6 sampling events per year. Ideally sampling should occur in the middle of each two month block and be consistently spaced throughout the year.
- Sampling occurs  $\geq 4$  weeks apart at each site.

## 3. Standardized Fishing

- Standardized fishing gear and practices are to be employed in accordance with the details outlined in Dunham et al. (2011).
- Standardized fishing gear is briefly defined as:
  - i. commercial style circular stainless traps 90 centimetres (36 inches) diameter by 26 centimetres (10 inches) high with two opposing tunnels, each with a single set of triggers. The frames are steel, rubber wrapped on the bottom ring, and covered by stainless steel mesh with approximately 6 centimetre (2½ inch) squares or diamonds.
  - ii. existing escape ports are closed with rot cord.
  - iii. two large herring torn in half are placed in a 500 millilitre bait jar with small (one millimetre in diameter) holes in the lid and sides. The bait jar is suspended not touching the ground in the center of the trap.
  - iv. traps are soaked overnight between 16 and 28 hours, as close to 24 hours as possible.

Please refer to Table 2 for area-specific fishery independent crab biological sampling requirements. Note there are only five fishery independent sampling events required in Area B because the commercial fishery is closed December thru February. No fishery-independent sampling is required in Areas I and J in 2019 because DFO conducts research surveys there.

The above requirements are to be met within the service provider's control. If the requirements cannot be met, justification must be provided at the time of data delivery.

### **3. Crab Biological Information**

Biological sampling must be conducted by DFO employees or DFO certified at-sea observers who have participated in a training program for crab biological sampling. Observers must be designated under Section 39 of the *Fishery (General) Regulations*. Direction of observers on the grounds will be done by the service provider in conjunction with the local crab fishery manager and vessel masters (Fisheries and Oceans Canada 2019).

To ensure data quality, DFO Science suggests two people, one of whom is a certified observer, should work together to collect crab biological data. Typically one person (the observer) holds and measures the crabs; the other person records biological data either on waterproof data sheets or electronically.

Trap catches must be sampled separately and not combined with other trap catches to ensure catch per unit effort (CPUE) can be estimated. All species of crabs caught in each trap should be described with respect to species, sex, shell condition, injuries, mating marks, various other observations, and the maximum carapace width exclusive of spines (notch-to-notch) measured. Although the crab fisheries target Dungeness crabs, the information is applicable to all species of crabs with the exception of King crabs (Golden King, *Lithodes aequispinus*; Red King, *Paralithodes camtschaticus*; Puget Sound King, *Lopholithodes mandtii*) where length is substituted for the width measurement. Please refer to Dunham et al. (2011) for more details regarding the collection of crab biological information. Normally all crabs in all traps are measured during research sampling, or all crabs in selected traps when commercial sampling. The information for individual crabs is recorded by trap. Traps that are selected and empty should not be ignored; they should be recorded as empty traps.

Collecting crab biological data provides information about: sex composition, injury rates, size structure, discard ratios, Catch Per Unit Effort (CPUE), soft shell periods, mating periods, egg production, larval release times, and year-to-year variation and trends.

Bycatch is an important component of all fisheries and needs to be documented. Observers are responsible for identifying and recording all bycatch species caught in traps.

### **4. Recording Crab Survey Information**

When recording crab biological data in the field, the following forms should be completed for every group/string of traps (singles or ground lines):

- a) Fishing Gear Header Form
- b) Crab Biological Data Form
- c) Bycatch Form.

The Fishing Gear Header Form provides general information about each string. This form is linked to the Crab Biological Data Form where individual trap and crab data are recorded. The Bycatch Form is where catch data of species other than crabs are recorded.

#### **4.1 Fishing Gear Header Form**

For each group of traps, information such as general location, date, GPS position, details about the fishing gear, depth, and soak time is collated on the Header Form and will be linked to all traps and crabs in the sample. Please refer to Appendix 1 for form fields and codes. The Fishing Gear Header Form is called “Headers” in Access.

#### **4.2 Crab Biological Data Form**

Individual trap catch information for a particular group of traps is recorded on the Crab Biological Data Form along with individual crab biological data. Relevant crab biological information includes species, sex, shell condition, injuries, mating marks, observations, and size. Please refer to Appendix 2 for form fields and codes. The Crab Biological Data Form is based on the underlying “LF” table in Access.

#### **4.3 Bycatch Form**

Bycatch is pooled for all traps sampled in a particular string and recorded on the Bycatch Form. Please refer to Appendix 3 for form fields and codes. The Bycatch Form is called “ByCatch” in Access.

### **5. Data Delivery**

Complete data (header, biological, and by-catch forms) shall be made available to the Shellfish Data Unit in an acceptable electronic format (Microsoft Access 2010 or earlier) via the DFO Contractor Data Exchange FTP site within seven days following the end of the month when data were collected. Please note electronic data are the responsibility of the service provider and any data lost before they have been safely stored in the Shellfish Data Unit will have to be collected again by the service provider.

## 6. References

Dunham, J.S., Phillips, A., Morrison, J., and Jorgensen, G. 2011. A manual for Dungeness crab surveys in British Columbia. Can. Tech. Rep. Fish. Aquat. Sci. 2964: viii + 68 p.

Fisheries and Oceans Canada. 2019. Pacific Region Integrated Fisheries Management Plan. Crab by Trap. April 1 2019 to March 31, 2020.

## 7. Appendix 1: Fishing Gear Header Form (Headers in Access)

**Vessel** – name of the vessel being sampled.

**VRN** – Vessel Registration Number, aka CFV.

**Vessel Master** – name.

**Observer name or identification** – name and contact information.

**Source** – source of fishing, either commercial vessel or service provider. See listed codes.

**Stat Area** – Pacific Fishery Management Area (e.g. 17).

**Subarea** – Pacific Fishery Management Subarea (e.g. 13).

**Geographic Location (GeogLoc)** – general location where sampling is being conducted (e.g. Departure Bay). Include, if applicable, the index site – a predetermined sampling location based on concentrated commercial fishing effort (e.g. Sidney). Must be a text field.

**Set Number** – unique identifier for each group of traps. Should start at 01 and be consecutive.

**Set Year** (e.g. 2019)

**Set Month** – month when the trap gear was set. Months are numbered 1 to 12 (e.g. 08 would be August).

**Set Day** – day when the trap gear was set. Days are numbered 1 to 31 (e.g. 22).

**Set Time** – time when traps entered the water. Use the 24-hour clock (e.g. 10:15).

**Haul Year** (e.g. 2019).

**Haul Month** – month when the trap gear was hauled (e.g. 08 would be August).

**Haul Day** – day when the trap gear was hauled (e.g. 23).

**Haul Time** – time when traps were hauled. Use the 24-hour clock (e.g. 09:25).

**Start Latitude Degrees** – GPS position at one end of the string. Record in degrees.

**Start Latitude Minutes** – GPS position at one end of the string. Record in minutes and thousandths of minutes (e.g. 12.579).

**Start Longitude Degrees** – GPS position at one end of the string. Record in degrees.  
**Start Longitude Minutes** – GPS position at one end of the string. Record in minutes and thousandths of minutes (42.681).  
**End Latitude Degrees** – GPS position at other end of the string. Record in degrees.  
**End Latitude Minutes** – GPS position at other end of the string. Record in minutes and thousandths of minutes.  
**End Longitude Degrees** – GPS position at other end of the string. Record in degrees.  
**End Longitude Minutes** – GPS position at other end of the string. Record in minutes and thousandths of minutes.  
**Fix Type** – How was position determined? See listed codes.  
**Min Depth** – minimum depth gear fished in a set. Record in meters.  
**Max Depth** – maximum depth gear fished in a set. Record in meters.  
**Soak Hours** – time between the Set Time and Haul Time, rounded to the nearest hour (e.g. 21 hours).  
**Bait Code** – type of bait used in traps. See listed codes.  
**Fishing Method** – are trap gear set on ground lines or as singles? See listed codes.  
**Number Traps in String** – total number of traps fished on the string being sampled (e.g. 15).  
**Trap Spacing** – spacing between traps in meters.  
**Number Traps Sampled** – number of traps sampled from the entire string (e.g. 5).  
**Gear Code** – describes the type of traps being fished. On commercial vessels all samples should come from the same trap type. See listed codes.  
**Trap Height** – height of trap measured in inches.  
**Trap Dimensions** – diameter of trap measured in inches.  
**Mesh Type** – distinguish between stainless and synthetic mesh traps. See listed codes.  
**Ring Number** – number of escape rings on the trap (e.g. 2).  
**Ring Size 1** – diameter of one escape ring in millimetres.  
**Ring Size 2** – diameter of the second escape ring in millimetres.  
**Corresponding page number from Commercial Crab Harvest Log** (integer)  
**Comments** – record anything about the set that may influence how someone will interpret the data (e.g. lost 2 traps in the set or lots of juvenile flatfish in the traps, etc.).

## Fishing Gear Header Form Codes

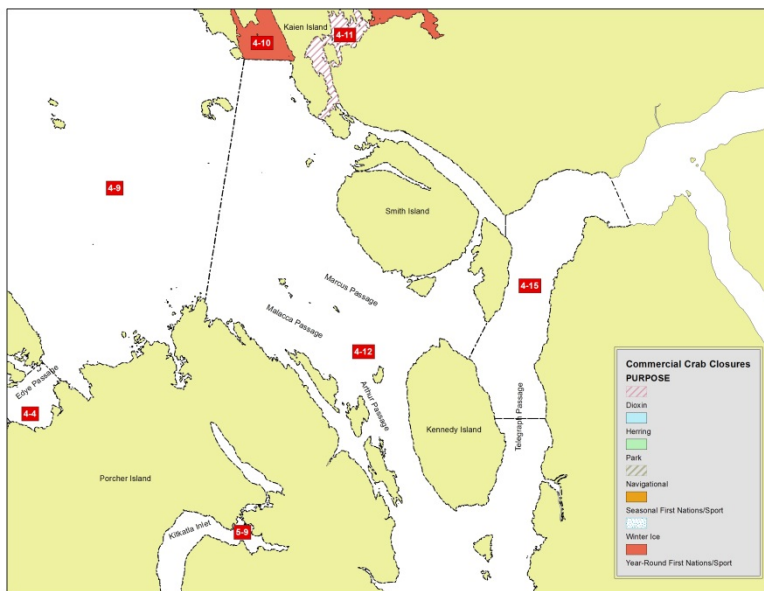
*Source*

Code	Description
IL	Independent index length
CL	Commercial index length

*Index Sites*

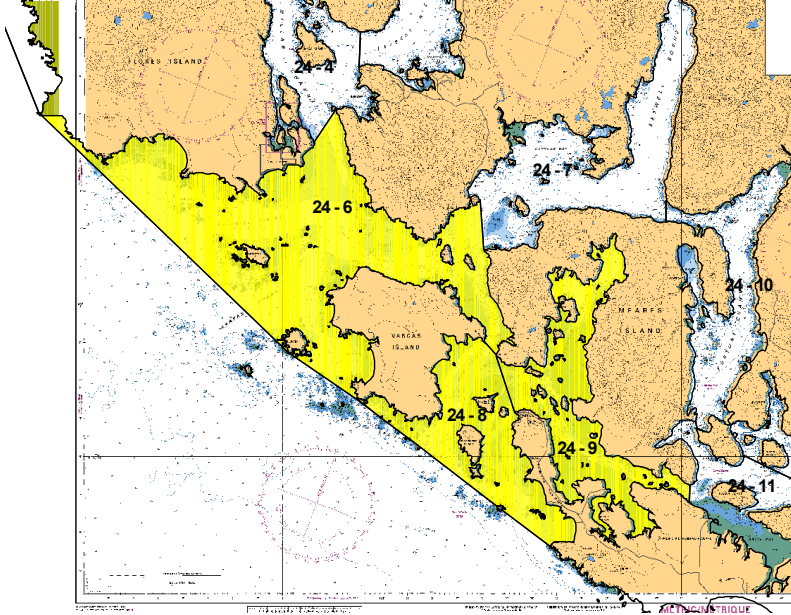
Area B

Skeena River mouth (northern portion of PFMA 4-12 around Smith Island and 4-12, -15 around Kennedy Island).



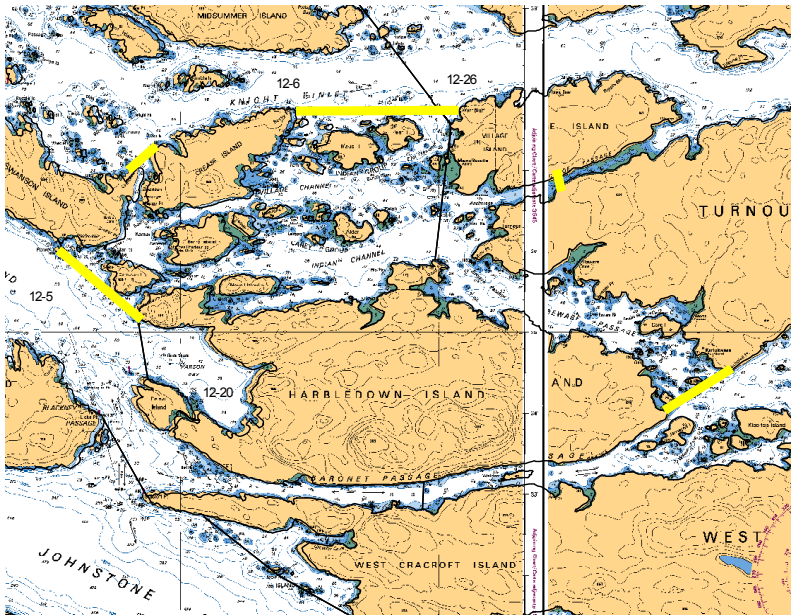
Area E

Tofino (PFMAs 24-6, -8, -9)



Area G

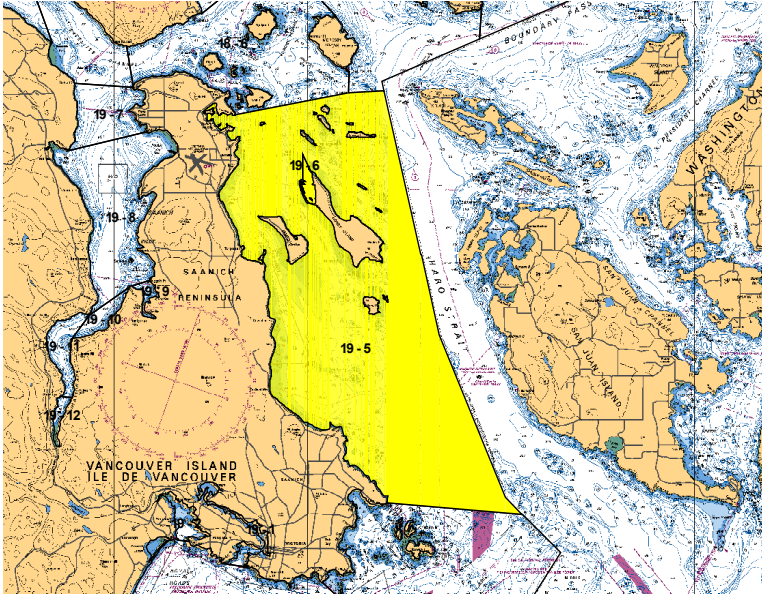
Village and Indian Channel, and Beware Passage (portions of PFMA 12-6, -26). Includes Indian and Carey Groups. Enclosed by the following islands: Village, Crease, Swanson, Compton, Harbledown, and Turnour.



## Area H

Sidney (PFMAs 19-5, -6)

Please note sampling shall not occur around Sidney Spit (19-6) and a portion of Cordova Channel (19-5) which are closed to commercial fishing.



## *Fix*

Code	Description
C	Chart
D	Differential GPS
G	GPS
L	Loran
W	WAAS

*Bait*

<b>Code</b>	<b>Description</b>
CLA	Clams
DOG	Dogfish
EUL	Eulachons (not smelt)
XXX	Experimental
FRA	Fish Frames (not salmon)
AST	Fish Paste
GEO	Geoducks
KKK	Hake
HER	Herring
MIX	Mixed Fish Species (and offal and scraps)
OCT	Octopus
YYY	Other
PEL	Pellets
ZOR	Razor Clams
SAL	Salmon (all species and heads and frames)
QID	Squid
TIN	Tinned Fish
UNK	Unknown
ROC	Whole Rockfish

A mixture of two baits listed above can be coded as first code letter (W)ith first code letter. For example, squid and herring would be coded as QWH. A mix of herring and hake would be coded as HWK. For a mixture with more than two types of bait, use the most dominant/common type (if possible) with “mixed fish species (and offal and scraps)” e.g. HWM (see exception codes below).

Additional codes for rarely encountered bait types include:

<b>Code</b>	<b>Description</b>
KOD	Codfish
PIL	Pilchards
TBT	Turbot

These codes should not be used in mixture situations as described in the previous paragraph. In the event these items are indicated as mixed with another bait type, code as “bait type from common list above” (W)ith “Y”(other), e.g. Clam with codfish = CWY.

Exception codes for three way mixtures include:

<b>Code</b>	<b>Description</b>
HCQ	Herring with clams and squid
HDB	Herring with dogfish and gurdy

*Fishing Method*

<b>Code</b>	<b>Description</b>
S	Single
G	Ground line

*Gear Code*

<b>Code</b>	<b>Description</b>
70	Commercial Crab Trap with regulation escape ports
71	Circular Crab Traps, 40" × 12" light rubber wrapped steel frame, synthetic mesh, open ports
71A	Circular Crab Traps, 40" × 12" steel rubber wrapped frame, stainless mesh, 2 soft mesh tunnels, no escape ports
72	42" diameter circular Crab Trap, ocean type, Hecate Strait heavy steel frame
73	Tanner Crab Trap, commercial, square pyramidal large top loading traps (with 120 mm escape ring), 2.75" mesh
73H	Tanner Crab Trap, commercial, square pyramidal large top loading traps, 120 mm escape ring mounted HIGH, 2.75" mesh
73L	Tanner Crab Trap, commercial, square pyramidal large top loading traps, 120 mm escape ring mounted LOW, 2.75" mesh
73M	Tanner Crab Trap, commercial, square pyramidal large top loading traps, 120 mm escape ring mounted MIDDLE, 2.75" mesh
74	Tanner Crab Trap, square pyramidal research trap, no escape ring, 2.75" mesh
75	Research Crab Trap, inlet type, 36" diameter, escape ports open, stainless (same as code 76 but with ports open)
76	Research Crab Trap, inlet type, 36" diameter, no escape ports, stainless, regular survey traps used by DFO
80	Crab Ring
82	Conical Nesting Snow Crab Trap, top loading, 48" × 18" with A1 mesh
82A	Conical Nesting Snow Crab trap, side loading, 48" × 18" with 2" synthetic mesh
83	Service Provider Dungeness Crab trap, 36" diameter × 10" high, stainless, no escape ports
99	Unknown or Other

*Mesh Type*

<b>Code</b>	<b>Description</b>
SS	Stainless
NW	Synthetic

## 8. Appendix 2: Crab Biological Data Form (LF in Access)

**Vessel** – name of the vessel being sampled.

**VRN** – Vessel Registration Number, aka CFV.

**Haul Year** (e.g. 2019)

**Haul Month** – month when trap gear was hauled (e.g. 08).

**Haul Day** – day when trap gear was hauled (e.g. 23). This field relates the Data Form to the Header Form.

**Set Number** – unique identifier for each group of traps. This field relates the Data Form to the Header Form. Should start at 01 and be consecutive.

**Geographic Location (GeogLoc)** – general location where sampling is being conducted (e.g. Departure Bay). Include, if applicable, the index site – a predetermined sampling location based on concentrated commercial fishing effort (e.g. Sidney). Must be a text field.

**Trap Number** – consecutive, starting at 01.

**Trap Usability** – identifies circumstances that may influence trap catch. See listed codes. Normally the trap usability code = 0 (no problems with the trap).

**Species** – codes for various crab species captured in the trap. See listed codes (e.g. XKG for Dungeness Crab, or 848 for an empty trap).

**Sex** – male or female. See listed codes.

**Shell Condition** – an indicator of shell hardness and age. See listed codes.

**Injury** – codes for various injuries. See listed codes. Leave blank if no injuries are observed.

**Claws Missing** – number of missing claws. Note injuries that occur during sampling are not recorded. Can be 1 or 2. Leave blank if claws are intact.

**Legs Missing** – number of missing legs. Note injuries that occur during sampling are not recorded. Can be 1 to 8. Leave blank if legs are intact.

**Marks** – mating marks on the insides of the claws on older shell males. See listed codes. Leave blank if no mating marks are observed.

**Observation** – a list of a variety of observations. See listed codes. Leave blank if not applicable.

**Notch Width** – width of the crab measured in millimetres, notch-to-notch, excluding the spines (e.g. 158).

### Notes

**Durometer** – a device designed to measure shell hardness (e.g. 70). Only required in the Area A sampling program.

## Biological Data Form Codes

### *Trap Usability*

<b>Codes</b>	<b>Description</b>
0	Trap is fishing normally, no problems. This is the default.
1	Hole in trap.
2	Trap malfunction (triggers open, trap upside down, lid sprung, etc.)
3	No bait.
4	Freshly dead fish in trap causes unusual attraction.
5	Trap contents stolen by someone else.
6	Cannibalism event. Crabs in trap have been dismembered and eaten by other crabs. Most common with soft shell crabs. Shell and body parts show claw marks, meat incompletely extracted. Marked difference from octopus predation.
7	Octopus predation. Remains of dismembered shells present, but some parts may be intact with all the meat gone. Octopus enzymes dissolve all the meat. Few to no live crabs in the trap.
8	Octopus in trap. Usually empty shells and a notable absence of live crabs.
11	Live fish in trap.
12	Starfish in trap. Sometimes starfish, especially sunflower stars, smother the bait and reduce attraction. Crabs may not enter or the starfish kills and eats them. Record this usability code only if there is a noticeable effect in trap catch.
15	Functional trap empty. Nothing wrong with the trap, but no crabs caught. Note when code 15 is used, 848 should be entered as the species code.

*Species (crab)*

<b>Code</b>	<b>Common Name</b>	<b>Scientific Name</b>
VMI	Brown Box	<i>Lopholithodes foraminatus</i>
XKG	Dungeness	<i>Metacarcinus magister</i>
VMC	Golden King	<i>Lithodes aequispinus</i>
XKE	Graceful	<i>Cancer gracilis</i>
ZCA	Graceful Decorator	<i>Oregonia gracilis</i>
XMB	Green	<i>Carcinus maenas</i>
XAF	Helmet (Horse)	<i>Telmessus cheiragonus</i>
VAC	Hermit sp.	Family Paguridae
ZGE	Longhorn Decorator	<i>Chorilia longipes</i>
ZDF	Northern Kelp	<i>Pugettia producta</i>
ZBA	Pacific Lyre	<i>Hyas lyratus</i>
VMJ	Puget Sound King	<i>Lopholithodes mandtii</i>
VNI	Red King	<i>Paralithodes camtschaticus</i>
XLA	Red Rock	<i>Cancer productus</i>
VIF	Scaled	<i>Placetron wossnessenskii</i>
ZGC	Sharp Nose	<i>Scyra acutifrons</i>
ZAF	Southern Tanner	<i>Chionoecetes bairdi</i>
VLC	Spiny Lithode	<i>Acantholithodes hispidus</i>
VSA	Squat Lobster	Family Galatheidae
848	Only used with Trap Usability = 15. Signifies no crabs caught.	

*Sex*

<b>Code</b>	<b>Description</b>
1	Male
3	Female
4	Female with eggs
5	Female spent (eggs hatching)

### *Shell Condition*

<b>Code</b>	<b>Description</b>
1	New hard shell. No deflection on underside of carapace with heavy pressure from thumb. Very little claw wear and tips of claws are sharp and hooked. Few signs of wear or abrasions on carapace. May have barnacles, but these may be small.
2	New springy soft shell. Evident by slight shell deflection with heavy pressure on underside of carapace. Little epiphytic growth, fouling, or abrasion. Barnacles, if present, will be small. Underside of carapace still has dense orange or yellowish hair.
3	New crackly soft shell. Shell is easily deformed by finger pressure. Usually there is bright orange downy hair on underside of carapace.
4	New plastic soft shell. Shell is extremely soft. Crab has moulted within the past few days.
5	Moulting crab. The shell has split at the suture line at the back; however, the crab has not yet exited the old shell. Generally this stage lasts only one day. Shell conditions 4 and 5 indicate a moult is in progress and tend to be rare in data because crabs often avoid traps when moulting. The exception is in abandoned traps which act as a refuge for moulting crabs.
6	Old hard shell. Shows claw wear and often barnacle encrustation or other fouling growth. In exposed conditions the shell may appear clean and bright, but the claws will show signs of wear. Carapace spines will also be blunted as may be tips of walking legs.
7	Very old hard shell. Much claw wear, fouling growth. Males typically show old mating marks which have worn through claw; may have shell disease; tips of walking legs may be black or rotting off. Crab is lethargic and likely will not moult again or may soon die.
8	Between a new (code 1) and old (code 6) hard shell. Shell shows signs of wear, especially on teeth and tips of claws, but the crab is still relatively clean and vigorous. Typically the shell is hard, although prior to a moult the shell will soften slightly. Many crabs with this code indicate a moult is imminent.
9	Carapace in trap. Possible reasons include: a newly moulted crab was so soft it managed to squeeze out of the trap, a crab was cannibalized or devoured by an octopus, or a crab died and washed out of the trap as it was hauled to the surface.

### *Injuries*

Code	Description
1	Deformed shell. Occurs at time of moult. Often misshapen shell or point rounded. Cannot obtain an accurate width measurement and should not be used for shell width analysis.
2	Hole or crack in shell.
3	Torn abdomen.
4	Regenerating claw(s).
5	Regenerating leg(s).
6	Regenerating both claw(s) and leg(s).
7	Multiple injuries. Record when more than one injury code is required.
8	Shell disease. Black spots on legs, claws, and underside of shell.
9	Dead. Crab died in the trap. Likely to occur with moulting, soft-shell, or very old shell crabs. May also be the result of octopus predation or amphipod kill. Even if sex is not apparent (due to missing body) measure the crab anyway. Ensure the shell is actually from a dead crab and not from a new moult. If this were the case, the gills and usually the lower portion of the shell will be attached and there will be a very soft crab of larger size in the sample.

#### *Missing Claw(s) and/or Leg(s)*

- Record the number of missing claws and/or legs. Only older injuries, those missing limbs where the stump end has a black sheath covering it, are recorded.

#### *Mating Marks*

Code	Description
1	Old (yellow)
2	New (white)

#### *Observations*

Code	Description
1	Moulting pair. When a moulted shell and the new crab are linked in the same trap. Data are recorded as if they are two separate crabs. The moulted shell is shell 9, the new crab is shell 4 and a 1 is entered for both crabs in the observation column.
2	Mating pair. Record in similar manner as for a moulting pair.
3	Limb bud. A fleshy miniature limb extruded sometime before a moult takes place. The bud indicates the crab is planning to moult as opposed to skip moulting. Record with the appropriate injury code.
4	Pink joints. Possible indication of microsporidia infection in the musculature.

## 9. Appendix 3: ByCatch Form (ByCatch in Access)

**Vessel** – name of the vessel being sampled.

**VRN** – Vessel Registration Number, aka CFV.

**Haul Year** (e.g. 2019)

**Haul Month** – month when trap gear was hauled (e.g. 08).

**Haul Day** – day when trap gear was hauled (e.g. 23).

**Set Number** – unique identifier for each group of traps. Should start at 01 and be consecutive. This field relates the By-Catch Form to Header and Data Forms.

**Geographic Location (GeogLoc)** – general location where sampling is being conducted (e.g. Departure Bay). Include, if applicable, the index site – a predetermined sampling location based on concentrated commercial fishing effort (e.g. Sidney). Must be a text field.

**Species** – species captured other than crabs. See listed codes. Note this list is not exhaustive. Please contact the Data Unit for questions about bycatch codes.

**Number Caught** – total number of each species other than crabs collected from the set (all traps pooled).

**Weight** – collective weight in kilograms of each species other than crabs collected from the set (all traps pooled). Can be estimated if no scale is available.

**Weight Estimated?** – Is the weight estimated and not measured using a scale? Enter “Y” for yes and “N” for no.

ByCatch Form Codes

Cephalopods	Code	Common Name	Scientific Name
	98E	Pacific Giant Octopus	<i>Enteroctopus dofleini</i>
	98D	Octopus	Order Octopoda
	98G	Red Octopus	<i>Octopus rubescens</i>
	98F	Smooth Skin Octopus	<i>Benthoctopus leioderma</i>
	91G	Stubby Squid	<i>Rossia pacifica pacifica</i>
Echinoderms	Code	Common Name	Scientific Name
	4PD	Bat Star	<i>Asterina miniata</i>
	4RA	Blood Star	<i>Henricia leviuscula</i>
	5HA	Brittle Stars	Class Ophiuroidea
	4XF	Fish-Eating Star	<i>Stylasterias forreri</i>
	6BB	Green Urchin	<i>Strongylocentrotus droebachiensis</i>
	4OC	Leather Star	<i>Dermasterias imbricata</i>
	4GD	Rainbow Star	<i>Orthasterias koehleri</i>
	4HC	Mud Star	<i>Ctenodiscus crispatus</i>
	4ZC	Giant Pink	<i>Pisaster brevispinus</i>
	4ZA	Purple Star	<i>Pisaster ochraceus</i>
	4GD	Sand Star	<i>Luidia foliolata</i>
	6NA	Sea Cucumbers	Class Holothuroidea
	4AB	Sea Lilies	Class Crinoidea
	4GA	Sea Stars	Class Asteroidea
	4TA	Sun Star	Family Solasteridae
	4XE	Sunflower Star	<i>Pycnopodia helianthoides</i>
	4JD	Vermillion Star	<i>Mediaster aequalis</i>
Flatfish	Code	Common Name	Scientific Name
	596	Pacific Sanddab	<i>Citharichthys sordidus</i>
	625	Slender Sole	<i>Lyopsetta exilis</i>
Rockfish	Code	Common Name	Scientific Name
	407	Copper	<i>Sebastes caurinus</i>
	410	Darkblotched	<i>Sebastes crameri</i>
	414	Greenstriped	<i>Sebastes elongatus</i>
	424	Quillback	<i>Sebastes maliger</i>
	442	Yelloweye	<i>Sebastes ruberrimus</i>

Bycatch Form codes

Roundfish	Code	Common Name	Scientific Name
	455	Sablefish	<i>Anoplopoma fimbria</i>
	225	Pacific Hake	<i>Merluccius productus</i>
	467	Lingcod	<i>Ophiodon elongatus</i>
	319	Northern Ronquil	<i>Ronquilus jordani</i>
	222	Pacific Cod	<i>Gadus macrocephalus</i>
	228	Pollock Walleye	<i>Theragra chalcogramma</i>
	230	Red Brotula	<i>Brosmophycis marginata</i>
	461	Kelp Greenling	<i>Hexagrammos decagrammus</i>
	466	Whitespotted Greenling	<i>Hexagrammos stelleri</i>
Sculpins	Code	Common Name	Scientific Name
	519	Blackfin	<i>Malacocottus kincaidi</i>
	499	Buffalo	<i>Enophrys bison</i>
	508	Dusky	<i>Icelinus burchami</i>
	521	Great	<i>Myoxocephalus polyacanthocephalus</i>
	502	Red Irish Lord	<i>Hemilepidotus hemilepidotus</i>
	491	Roughback	<i>Chitonotus pugetensis</i>
	522	Sailfin	<i>Nautichthys oculofasciatus</i>
	472	Sculpins	Family Cottidae
	497	Spinyhead	<i>Dasycottus setiger</i>
	513	Spotfin	<i>Icelinus tenuis</i>
	518	Pacific Staghorn	<i>Leptocottus armatus</i>
	510	Threadfin	<i>Icelinus filamentosus</i>
Selachii	Code	Common Name	Scientific Name
	044	Spiny Dogfish	<i>Squalus acanthias</i>
	066	Spotted Ratfish	<i>Hydrolagus coliei</i>

## 10. Appendix 4: Data Entry Database Field Descriptions

Sampling data are to be supplied to DFO in an electronic format consisting of a Microsoft Access database file (Version 2010 or earlier) containing at least three tables with the following names (in bold): **Headers** (this is all data collected on the Fishing Gear Header Form; Appendix 1), **LF** (this is all data collected on the Crab Biological Data Form; Appendix 2) and **ByCatch** (this is all data collected on the ByCatch Form; Appendix 3).

Filenames should indicate, at least: sampling year, batch number or ID, and who the Service Provider is.

For compatibility purposes, all fields listed here must be included and named as indicated, whether they contain data or not. Other tables, such as look-up tables, may be included at the service provider's discretion. Additional fields may be added to the three main tables as well at the service provider's discretion.

Sample Tables/Database may be obtained from the Shellfish Data Unit at DFO.

**Field Names and Data Typing for Table 'HEADERS' (see Appendix 1)**

<b>Item</b>	<b>Field Name</b>	<b>Type</b>	<b>Size</b>
Artificial number, index key and link to Dependent tables LF and ByCatch	<b>Key</b>	LongInteger	4
Source of the data (code)	<b>Source</b>	Text	2
Set Number, or Sample Number	<b>SetNum</b>	Integer	2
Year when gear Hauled.	<b>Year</b>	Integer	2
Month when gear Hauled.	<b>Month</b>	Byte	1
Day when gear Hauled	<b>Day</b>	Byte	1
Trap soak time in hours.	<b>Soak_hrs</b>	Integer	2
Soak time days (where applicable).	<b>Soak_days</b>	Byte	1
Hours of soak, Same thing as "Soak_hrs", Included for historic compatibility.	<b>HoursSoak</b>	Integer	2
Minimum depth in meters.	<b>MinDepth</b>	Integer	2
Maximum depth in meters	<b>MaxDepth</b>	Integer	2
PFMA Statistical Area,	<b>StatArea</b>	Byte	1
PFMA Statistical Sub-Area.	<b>SubArea</b>	Byte	1
Sub-Sub-Area (Not Used, included for historic database compatibility only)	<b>Locality</b>	Byte	1
Chart Reference for where the Set was Located (for cross-reference purposes)	<b>GeogLoc</b>	Text	50
Integer Degree of Latitude at start of string.	<b>StartLatDeg</b>	Integer	2
Decimal Minutes of Latitude at start of String (recorded to 3 decimal places, e.g. 23.975)	<b>StartLatMin</b>	Single	4
Integer Degree of Longitude at start of string.	<b>StartLongDeg</b>	Integer	2
Decimal Minutes of Longitude at start of String (recorded to 3 decimal places e.g. 42.468)	<b>StartLongMin</b>	Single	4
Integer Degrees of Latitude, end of string.	<b>EndLatDeg</b>	Integer	2
Decimal Minutes of Latitude, end of string.	<b>EndLatMin</b>	Single	4
Integer Degrees of Longitude, end of string.	<b>EndLongDeg</b>	Integer	2
Decimal Minutes of Longitude, end of string.	<b>EndLongMin</b>	Single	4
How position was obtained. G = GPS, etc.	<b>FixType</b>	Text	1
Who took the sample and did the measuring.	<b>SamplerCode</b>	Byte	1
Who entered this set into the computer form or onto the hardcopy form.	<b>CoderCode</b>	Byte	1
Unused – for historic compatibility only.	<b>VesselCode</b>	Integer	2
VRN (CFV) of commercial boat sampled (or Vessel ID of service provider boat where doing Independent Lengths)	<b>CFV</b>	Long Integer	4
3 character code for type of bait used.	<b>BaitCode</b>	Text	3

<b>Item</b>	<b>Field Name</b>	<b>Type</b>	<b>Size</b>
Distance in meters between traps on string.	<b>TrapSpacing</b>	Integer	2
Unused – for historic compatibility only.	<b>FrameType</b>	Text	2
Code for type of Mesh on the traps.	<b>MeshType</b>	Text	2
Unused – for historic compatibility only.	<b>TrapShape</b>	Byte	1
Trap diameter (or length of side if square), in Inches.	<b>TrapDimension</b>	Byte	1
Trap Height in Inches.	<b>TrapHeight</b>	Byte	1
Number of escape port rings (where exist)	<b>RingNumber</b>	Byte	1
Size in MM of diameter of escape ports	<b>RingSize</b>	Byte	1
Size in MM of diameter of escape ports (if ports exist of different size than RingSize).	<b>RingSize2</b>	Byte	1
Unused – for historic compatibility only.	<b>TriggerNumber</b>	Byte	1
Code how bait is normally attached	<b>BaitMethod</b>	Text	1
Code, Groundlines or Single traps used ?	<b>FishingMethod</b>	Text	1
Number of traps in the string (where known)	<b>NumTrapsInString</b>	Byte	1
Number of traps Sampled in this set.	<b>NumTrapsSampled</b>	Byte	1
Total number of Dungeness crabs sampled in this string.	<b>NumCrabsSampled</b>	Integer	2
Number of legal size male Dungeness crabs sampled in this string.	<b>NumLegalMales</b>	Integer	2
Number of sub-legal size male Dungeness crabs sampled in this string.	<b>NumSubLegalMales</b>	Integer	2
Number of female Dungeness crabs sampled in this string.	<b>NumFemales</b>	Integer	2
Unused – for historic compatibility only.	<b>VaxCode</b>	Byte	1
Unused – for historic compatibility only.	<b>CardCode</b>	Byte	1
Unused – for historic compatibility only.	<b>YearSet</b>	Byte	1
Unused – for historic compatibility only.	<b>MonthSet</b>	Byte	1
Unused – for historic compatibility only.	<b>DaySet</b>	Byte	1
Any relevant Comment noted by Sampler or Coder.	<b>Comment</b>	Text	1
Flag whether data has been uploaded to main DFO database (always = NO)	<b>Uploaded</b>	Yes/No	1

**Field Names and Data Typing for Table 'LF' (see Appendix 2)**

<b>Item</b>	<b>Field Name</b>	<b>Type</b>	<b>Size</b>
Link to Header table key field	<b>Hkey</b>	Long Integer	4
Counter to create a unique index key with, possibly indicates line number on H/C page.	<b>Line</b>	Integer	2
Code Sex of crab sampled	<b>Sex</b>	Byte	1
Width measurement type, (should always be N=notch to notch)	<b>WidthType</b>	Text	1
Unused – for historic compatibility only.	<b>WidthSpine</b>	Byte	1
Width in mm, notch to notch (rounded down to the nearest mm)	<b>WidthNotch</b>	Byte	1
Code for Shell Hardness.	<b>Shell</b>	Byte	1
Code for Injuries.	<b>Injury</b>	Byte	1
Number of Claws missing, (except where caused by sampling)	<b>ClawsMissing</b>	Byte	1
Number of Legs Missing, (except where caused by sampling)	<b>LegsMissing</b>	Byte	1
Code Mating marks	<b>Marks</b>	Byte	1
Code Unusual information about the crab.	<b>Observation</b>	Byte	1
Order in which the sampled traps are pulled in the string, '1' is the first trap in string.	<b>TrapNum</b>	Byte	1
Code type of Trap being Sampled	<b>GearCode</b>	Text	4
Code problems/malfunction with the trap (Default is "0" if trap is OK).	<b>TrapUsability</b>	Byte	1
Pacific Region Species Code XKG = Dungeness, XLA = Red Rock, etc.	<b>Species</b>	Text	3

**Field Names and Data Typing for Table 'ByCatch' (see Appendix 3)**

<b>Item</b>	<b>Field Name</b>	<b>Type</b>	<b>Size</b>
Link to Header table key field	<b>H_key</b>	Long Integer	4
Counter to create a unique index key with,	<b>Line</b>	Integer	2
Pacific Region Species Code	<b>Species</b>	Text	3
Weight caught in Kilograms	<b>Weight</b>	Single	4
Is the Weight Estimated (Yes) or was it Actually Weighted (No).	<b>Estimated</b>	Yes/No	1
Number of individuals of this species	<b>Num_Caught</b>	Integer	2
Unused – for historic compatibility only.	<b>Num_per_kg</b>	Integer	2



<b>Project Name:</b>	PacFISH Information Management Framework
<b>Document Title</b>	DFO Data Transfer Specifications: Hail Program
<b>Author:</b>	
<b>Organization:</b>	Fisheries and Oceans Canada
<b>Date:</b>	December 11, 2018

This document provides information on the data requirements and specifications for programs collecting data for transfer to Fisheries and Oceans Canada, Pacific Region. The intended audience is both DFO staff and external groups involved in collecting, transferring or managing fisheries data. All data submitted becomes the exclusive property of Fisheries and Oceans Canada

- ▶▶ **Fishery(s):** Commercial Crab by Trap
- ▶▶ **Fishery Season:** 2019/20
- ▶▶ **Data Collection Program Name:** Hail Notification (Area A)
- ▶▶ **Associated Fishery Data Manager:** Resource Management – Invertebrates, Pacific Region

### Rationale

The Commercial Crab trip hail program is integral to the following activities:

- ▶▶ Downloading of vessel hard drive data
- ▶▶ Electronic monitoring system maintenance and upgrades
- ▶▶ Immediate information on time, effort, and fleet distribution
- ▶▶ Fishery-dependent biosampling objectives
- ▶▶ Seasonal soft-shell closure decisions

### Data Transfer Requirements

- ▶▶ **Format:** Microsoft Access (\*.mdb or \*.accdb) or Microsoft Excel (\*.xls or \*.xlsx)
- ▶▶ **Medium:** DFO ftp site or Email to Local Area Crab Manager
- ▶▶ **Timeliness:**
  - The vessel master shall arrange to have a fishing activity report entered into the database:
    - (a) prior to leaving port when intending to haul trap gear;
    - (b) prior to moving to a new location; and
    - (c) as soon as practical once fishing activities have been completed for each fishing trip, and prior to returning to port.
  - All data shall be made available to DFO no more than 24 hours after the data has been received by the service provider.
- ▶▶ **File Naming Conventions:** Area\_Hail\_2019

The following information shall be recorded for each fishing activity report:

FIELD NAME	DESCRIPTION	FIELD TYPE/SIZE
CONFIRM_NUM	Confirmation Number	Number
TRIP_COMPLETE	Trip completed?	YES OR NO
FISHING_COMPLETE	Fishing completed?	YES OR NO
CALL_DATE	Date call made	Short Date (month/day/year, e.g. 12/31/18)
CALL_TIME	Time call made	Short Time (e.g. 23:59)
CALLER_IDENTIFICATION	Caller's Fisher Identification Number	Integer
VESSEL_NAME	Name of Vessel	Text
VESSEL_VRN	VRN # of Vessel	Text
VESSEL_MASTER_NAME	Vessel Master's Name	Text
VESSEL_MASTER_FIN	Vessel Master's Fisher Identification Number	Integer
TRIP_STATUS	Trip Status <sup>1</sup>	Text
TRIP_TYPE	Type of Trip <sup>2</sup>	Text
PFMA	PFMA <sup>3</sup>	Number
PFM_SUB_AREA	PFM Subarea <sup>3</sup>	Number
COMMENTS	Comments	Memo
HAIL_OP	Hail Operator	Memo

<sup>1</sup> TRIP STATUS
START FISHING (FOR THE SEASON)
START TRIP
END TRIP
LOCATION CHANGE
UPDATE
CANCEL
END FISHING (FOR THE SEASON)

<sup>2</sup> TRIP TYPE
COMMERCIAL
COMMERCIAL W/ SAMPLING
SAMPLING

<sup>3</sup> Areas and Sub Areas are described in the Pacific Fishery Management Area Regulation. The hail operator shall provide additional sub-areas intended to be fished during the same trip.

## **Appendix 10: Area A Soft Shell Sampling Guidelines**

### Guidelines for Closing and Opening the Commercial Dungeness Crab Fishery

Prepared by DFO Science Branch Crab Program, (Expert Advice) January 9, 2014

The purpose of this document is to provide guidelines to fishery managers and industry regarding closing and opening the Dungeness crab fishery in Area A based on the existing soft shell sampling program. Goals of the soft shell program include:

- a) protecting soft shell male Dungeness crabs in Hecate Strait during the spring moulting period from fishery related injuries and mortality, and
- b) providing a mechanism to extend the fishing season beyond set closing and opening dates as outlined in the Crab By Trap Integrated Fisheries Management Plan (IFMP) as there is considerable variability in the timing of the major spring moult.

### Relevant Documents

There are three additional documents that complement this one:

- 1) Protocols for the Area A soft shell sampling program - provides program details to charter vessels.
- 2) The Crab By Trap IFMP - provides details regarding management of various crab fisheries.
- 3) The crab survey manual – provides details about the collection of crab biological information (Dunham, J.S., Phillips, A., Morrison, J., and Jorgensen, G. 2011. A manual for Dungeness crab surveys in British Columbia. Can. Tech. Rep. Fish. Aquat. Sci. 2964: viii + 68 p.).

Please contact the Area A Crab Manager for copies of these documents.

### Soft Shell Program Sampling

- Sampling begins mid-February to ensure initial crab biological data are collected and analyzed before the March 1 fishery closure date as outlined in the IFMP.
- Sampling should occur approximately every 2 weeks, and ideally should continue until both fishery closing and opening dates are determined. Sampling can also be suspended during the closure period.
- A minimum 5 sites should be sampled. Core sites consistent with previous years are #2, 3, 4, 5, and 7 in Hecate Strait. Sites may be moved at times of low crab abundance to find crab in other locations. Sites should be spread out as much as logistically possible throughout the fishing area.
- A minimum 15 traps should be set at each site, 75 traps in total over the 5 sampling locations. If crab abundance is high at a particular site and subsampling fewer traps is possible, then those 'extra' traps may be allocated elsewhere.

- For detailed sampling protocols, please refer to the Protocols document listed above.

### Dungeness Crab Biological Data

- Biological data are collected by trap.
- Biological data are collected from individual Dungeness crabs for all crab types (legal male, sublegal male, female). Legal male crabs are  $\geq 154$  mm carapace width notch-to-notch; sublegal male crabs are  $< 154$  mm carapace width notch-to-notch.
- Crab biological data includes: sex, shell condition (see Table 1), injuries, mating marks, carapace width notch-to-notch. Please refer to the crab survey manual listed above for more details.
- Sample size per site should be a minimum 50 legal size male Dungeness crabs. If fewer legal crabs are collected during a sampling event, please refer to options outlined in the “sampling when crab abundance is low” section.
- Bycatch (i.e., those species captured in traps other than Dungeness crabs) should be identified to species and numbers and weights (kg) recorded for each species per trap.
- For the purpose of determining moult timing, crab biological data should be summarized by sampling site, date, proportions of legal male crabs in each shell condition code, total number of legal male crabs sampled, number of traps sampled.
- Once the charter vessel has returned to port after a sampling event, copies of raw data sheets must be provided to DFO and the service provider immediately, with data summaries provided to all interested parties within 3 days.

### Guidelines for Closing and Opening the Fishery

The following management guidelines are based closely on those previously used in Area A (Appendix A). These guidelines are to assist in the interpretation of the results from the soft shell sampling program.

Rationale for changes from the previous guidelines are:

- provides additional clarity and context for opening and closing decisions.
- shell condition 3 (crackly soft) should be included in the closing guidelines since crabs in shell condition 4 (plastic soft) and 5 (moulting) are often absent in test traps.
- closing guidelines were made to complement existing opening guidelines, which already incorporate crabs in shell condition 3.
- opening guidelines have essentially been left unchanged.

### *Closing*

**Greater than or equal to 5% legal male crabs with very soft shells (shell codes 5, 4, 3).**  
This indicates the start of the male moult period.

A decreasing trend in the proportion of old shell (shell codes 8, 6, 7) legal male crabs may also signal the onset of the moulting period.

When 35% or more of the legal male crabs have soft shells (shell codes 5, 4, 3, 2), consideration should be given to closing the fishery quickly as this situation can be interpreted as being in the middle of the major moult.

*Opening*

**Less than 5% legal male crabs with very soft shells (shell codes 5, 4, 3).**

An increasing trend in the proportion of new hard shell (shell code 1) (and possibly springy soft; shell code 2) legal male crabs may also signal the end of the moulting period.

When more than 65% of the legal male crabs have hard shells (shell codes 1, 8, 6, 7), the fishery can open as this situation can be interpreted as being the end of the major moult period.

Sampling when crab abundance is low

If crab abundance is low and the moult signal unclear, then sample size can be increased by:

- 1a) leaving traps at a particular site in anticipation of more crabs moving into the area.
- 1b) selecting new sampling sites and moving traps.
- 2) pooling data for all sampling sites by date.
- 3) using male crabs >143 mm notch width to determine moult timing.

Table 1. Dungeness crab shell condition codes.

Shell Code	Shell Description	Time Since Last Moul	Shell Plasticity	Shell Age
5	Moulting	0	Soft	New
4	Plastic soft	Few days		
3	Crackly soft	1 week to 1 month		
2	Springy soft	1 to 3 months		
1	New hard	3 to 6 months	Hard	Old
8	Transition	6 to 12 months		
6	Old hard	12 to 24 months		
7	Very old hard	>24 months		
9	Shell only			

## Appendix A

### Previous closing and opening guidelines in Area A

#### *Closing*

An increasing trend in the percentages of shell code 6 and 7 coupled with:

- greater than 1% of crabs in shell code 5 (actually in the process of moulting)

And/or

- greater than 3% of crabs in shell code 4 (newly moulted, plastic soft)

#### *Opening*

- greater than 65% of crabs in shell code 1 and 6 (hard shell)
- less than 5% in shell codes 3 and 4 (crackly soft and plastic soft)

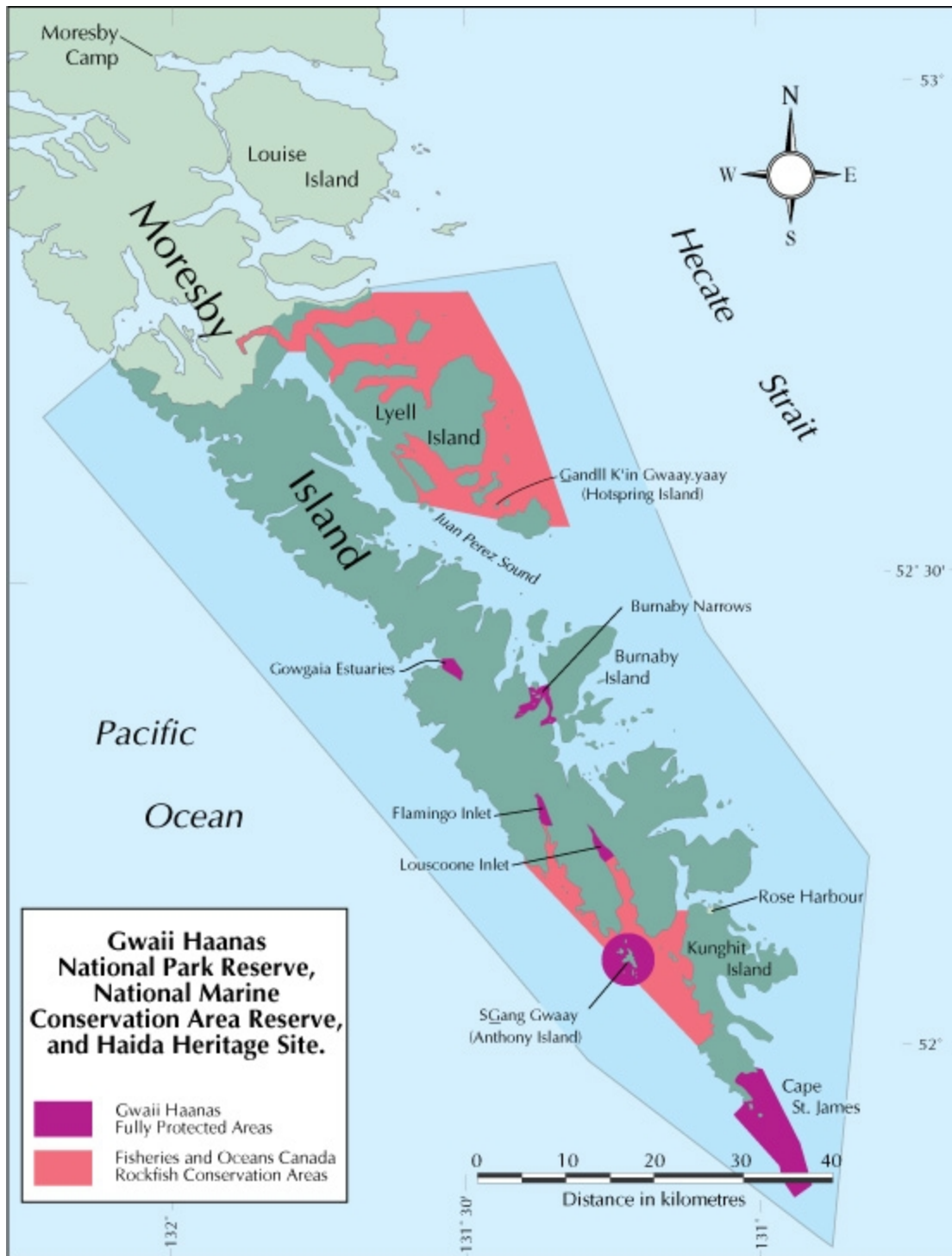
## **Appendix 11: Fishery Closures for Gwaii Haanas National Marine Conservation Area**

### **GWAII HAANAS NATIONAL MARINE CONSERVATION AREA**

A new management plan for the Gwaii Haanas National Park Reserve, National Marine Conservation Area Reserve, and Haida Heritage Site was approved by Canada and the Haida Nation in November 2018, following an extensive consultation process. The final zoning plan includes several areas of strict protection, where commercial and recreational fishing will be prohibited (see Management Plan in weblink below). The implementation of these closures may take some time. However, steps are being taken to undertake this work and each closure will be communicated via Fishery Notice as it is implemented.

Users of the Gwaii Haanas marine area should be aware that adjacent land is managed under the authority of the Canada National Parks Act and its regulations and, as specified in the Gwaii Haanas Agreement (1993), 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). There are specific requirements for visiting the terrestrial portion of Gwaii Haanas, and advanced planning is necessary. Please contact the Gwaii Haanas administration office at 1-877-559-8818 for further information or see IFMP section 5.8.

The Gwaii Haanas Gina 'Waadluxan KilGuhlGa Land-Sea-People Management Plan available here: <https://www.pc.gc.ca/en/pn-np/bc/gwaiihaanas/info/consultations>.



**Figure 1.** Gwaii Haanas National Marine Conservation Area Reserve and Haida Heritage Site (Current closures)

Until the new zoning plan is implemented and communicated through subsequent Fishery Notices, the following commercial and recreational closures remain in effect.

(1) Burnaby Narrows

Those waters of Subareas 2-13 and 2-16 inside a line commencing at 52°23.049 minutes N and 131°23.438 minutes W east to 52°23.077 minutes N and 131°22.908 minutes W, following the southern shoreline of Kat island east to 52°23.107 minutes N and 131°22.274 minutes W, then east to 52°23.295 minutes N and 131° 21.34 minutes W, following the western shoreline of Burnaby Island south to 52° 20.951 minutes N and 131°20.509 minutes W, then west to 52°20.733 minutes N and 131°21.072 minutes W, and then north following the eastern shoreline of Moresby Island back to the point of commencement. [Burnaby Narrows]

(2) Louscoone Estuary

Those waters of Subareas 2-33 and 2-34 north of a line drawn from 52°11.836 minutes N and 131°15.658 minutes W east to 52°12.271 minutes N and 131°14.594 minutes W. [Louscoone Estuary]

(3) Flamingo Estuary

Those waters of Subarea 2-37 north of a line drawn from 52°14.456 minutes N and 131°22.234 minutes W southeast to 52°14.246 minutes N and 131°21.489 minutes W. [Flamingo Estuary]

(4) Gowgaia Estuary

Those waters of Subarea 2-41 east of a line drawn from 52°24.944 minutes N and 131°32.138 minutes W southeast to 52°24.238 minutes N and 131°32.024 minutes W. [Gowgaia Estuary]

(5) Cape Saint James

Those waters of Subareas 2-19, 102-3, 130-3 and 142-1 inside a line commencing at 51°56.523 minutes N and 131°01.522 minutes W, southwest to 51°55.627 minutes N and 131°02.574 minutes W, then southeast to 51°52.5 minutes N and 130°57.919 minutes W, then south to 51°51.676 minutes N and 130°57.805 minutes W, the southeast to 51°50.349 minutes N and 130°56.442 minutes W, then northeast to 51°51.062 minutes N and 130°54.717 minutes W, then north to 51°53.888 minutes N and 130°55.608 minutes W, then northwest to 51°58.671 minutes N and 130°59.464 minutes W, and then west to 51°58.743 minutes N and 131°00.606 minutes W, and then following the southern shore of Kunghit Island west to the point of commencement. [Cape Saint James]

(6) SGang Gwaay

Those waters of Subareas 2-31 and 142-1 inside a 3km radius from the centre point on Anthony Island located at 52°05.655 minutes N and 131°13.178 minutes W. [SGang Gwaay]

## **APPENDIX 12: STRAIT OF GEORGIA AND HOWE SOUND GLASS SPONGE REEF CONSERVATION AREAS**

Effective April 1<sup>st</sup>, 2019 all commercial, recreational and First Nations food, social and ceremonial (FSC) bottom-contact fishing activities for prawn, shrimp, crab and groundfish, as well as the use of downrigger gear for recreational salmon trolling (restricted via Condition of Licence) are prohibited within portions of Subareas 28-2 and 28-4 to protect nine Howe Sound glass sponge reefs, as marine refuges. This includes prohibition of the following fishing activities:

- prawn and crab by trap
- shrimp and groundfish by trawl
- groundfish by hook and line
- use of downrigger gear in recreational salmon trolling

These new closures are in addition to the nine areas closed to all commercial, recreational and Indigenous FSC bottom-contact fishing activities in the Strait of Georgia and Howe Sound in 2015.

The following maps show the new closure areas that prohibit bottom contact fisheries as well as use of downriggers, plus the earlier closures implemented in 2015.

For specific coordinates for these closures see Section 5.7.2.1. of Appendix 3.

More information is available at <http://www.dfo-mpo.gc.ca/oceans/ceccsr-cerceef/closures-fermetures-eng.html> or by contacting Deirdre Finn at 604-666-2606.



