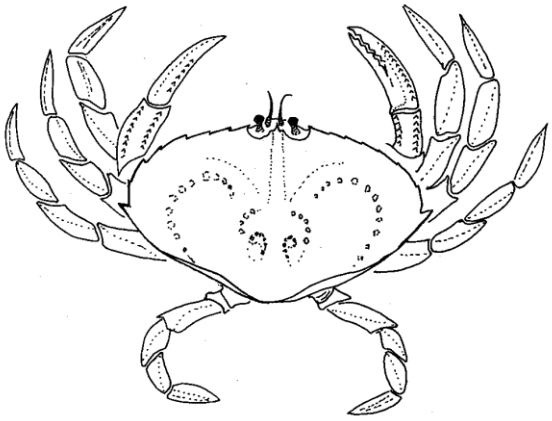
PACIFIC REGION

INTEGRATED FISHERIES MANAGEMENT PLAN

CRAB BY TRAP

APRIL 1, 2020 TO MARCH 31, 2021



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.

TABLE OF CONTENTS

1. OVERVIEW

1.1. Introduction

This Integrated Fisheries Management Plan (IFMP) for Crab by Trap covers the period April 1, 2020 to March 31, 2021.

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 harvester sectors and variances 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 19th 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 220 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 an aboriginal right to fish for any species, with the exception of Geoduck, within their court-defined fishing territories and to sell that fish. Their fishing territories are located within portions of Pacific Fishery Management Areas (PFMA) 25/125, 26/126, 124 and all of PFMA 24. As part of the implementation of that right, the Department released in 2019 the first Five Nations Multi-Species Fishery Management Plan (FMP), developed in consultation with the Five Nations. The FMP includes specific details about the Five Nations' right-based sale fishery, such as harvesting opportunities/access, licensing and designations, fishing area, gear, and fishery monitoring and catch reporting. For further information, the 2019/20 FMP can be found at: https://waves-vagues.dfo-mpo.gc.ca/Library/4079393x.pdf.

The implementation of the Five Nations' right-based sale fishery is an ongoing process. Aspects of the Five Nations' right-based sale fishery remain before the courts and management changes may be necessary following future decisions. As well, discussions are occurring with the Five Nations, including on the development of the 2020/21 FMP which may contain changes from last year's FMP. As a result, in-season management changes to this IFMP may occur. DFO will make efforts to advise stakeholders of any such changes in advance of their implementation.

In February of 2017, the Heiltsuk, Kitasoo/Xai'Xais, Nuxalk and Wuikinuxv Nations and the Department of Fisheries and Oceans signed a Letter of Intent (LOI) that commits the parties to working together to develop and undertake a collaborative process for identifying and recommending management objectives (starting with conservation and sufficient First Nation food, social, and ceremonial access) and measures that will achieve healthy crab populations and sustainable crab fisheries on the Central Coast. In-season management changes are expected to occur in Area B in 2020/2021 as an outcome of this process.

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 220 licence eligibilities distributed throughout the Pacific coast in seven management areas. For 2020/21, 31 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: https://www.pac.dfo-mpo.gc.ca/aquaculture/regs-eng.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 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 North Coast 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. As of 2019, recreational crab traps are required 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 2020, all active harvesters hired a service provider to meet biosampling, electronic monitoring, gear identification, and harvest logbook requirements for the 2020-2023 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:

https://www.dfo-mpo.gc.ca/acts-lois/index-eng.htm

More information on the SARA is available at:

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*;
- The *National Fishery Monitoring Policy;*
- 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 2020 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 seven crab management 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 two processors, one or more Indigenous advisors, one 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 within a region in BC, normally occurring in the summer, but can vary between regions depending on female softshell timing. Adult males usually moult during the spring, while adult females usually moult during the summer. Moult 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 prezoeae, 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 affects 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-nitzchia*) 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 can be requested from the local area resource manager.

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 maximizes 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

utilized designated observers to verify crab shell hardness. Analysis of this information helps to ensure that no major detrimental biological fishery changes are occurring.

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. Following which, the intention is to investigate the applicability of the methodology being developed in generating reference points for other CMAs.

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.

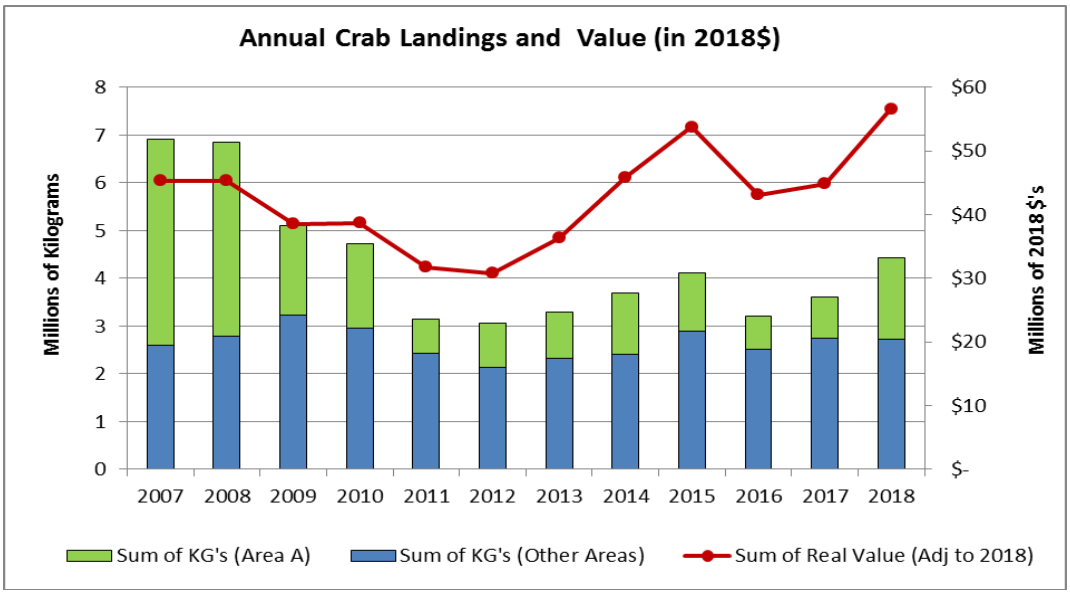
3.1 Commercial

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.

Between 2012 and 2015, the trend in this fishery was generally one of increasing volume and prices resulting in increasing landed values on a year-over-year basis. This has likely been caused by high demand from China which has created optimism in the industry and has perpetuated strong participation and low diversification into other fisheries by licence holders. In more recent years, landings declined in 2016 (from a peak in 2015), with an upward trend observed again in years 2017 and 2018. (Graph 1).

Catch and landed value for the last 12 years is shown in Graph 1 below, with landed value adjusted for inflation reported in 2018 constant Canadian dollars. The 2018 coast-wide commercial landed value is estimated to be $56.63M (2018 $'s) which slightly exceeds the last peak that occurred in 2015. Over the years 2012-2018, landed values have been partially buoyed by increases in the average price. Over the years 2014 and 2018 the average price increased by about 16.4%.

Graph 1



Source: Harvester logbook and sales slip data for years 2007-2018.
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 approximately 61% of the total coast-wide crab landings attributable to this area on average over the years 2007 and 2008. However, over 2009 to 2018 approximately 30% of the total cost-wide crab landings are attributable to this area (on average).

There is a high level of participation by the crab fleet, with approximately 92% of licenced vessels participating in 2018 (204 out of 220 licensed vessels). Additionally, it has been found that most crab vessels hold only crab licences.[1]

Viability and Market Trends

Between 2012 and 2018, the commercial crab fleet landed value averaged approximately $44.5M per year (in constant 2018 dollars).

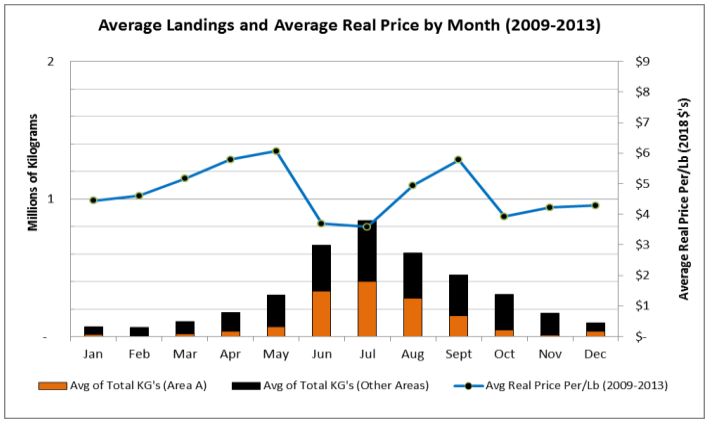
Graphs 2 and 3 below present the trends by monthly average landings (by area) and coast-wide average monthly price between 2009 and 2013, and between 2014 and 2018 (respectively). Although it varied year-to-year, in the years 2009 to 2013 the majority of the catch in the fishery occurred from June to August. However, in more recent years there has been a shift in harvest patterns with more landings occurring outside of these months, which may allow a larger proportion of crab to be sold in months when prices are higher. Typically, the average price is higher in the early part of the year, with a reduction taking place in early summer (May-June) as large quantities of crab hit the market. Price often recovers in late summer (August-September) and dips again in the fall as harvest declines.

Between the two time periods, the 5-year-average monthly price increased significantly. Over the two periods, there was a 37.47% increase in price on average (i.e. the average price over 2014 to 2018 is 37.47% greater than over 2009 to 2013). As noted previously, this higher price seems to be buoying the landed value of the fishery, especially when considering the lower harvest volumes in recent years.

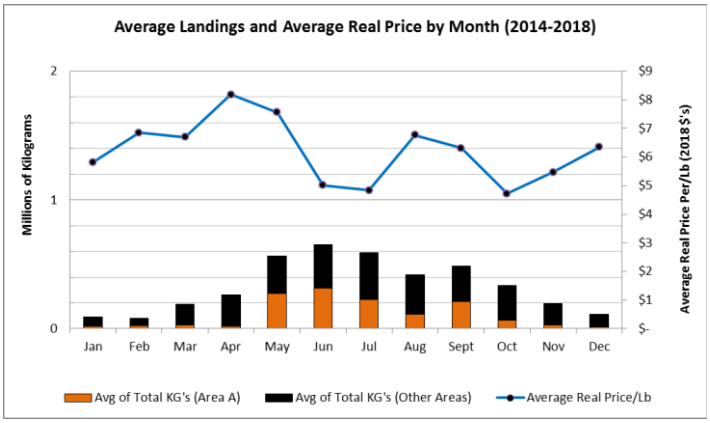
[1] Source: Diversification Tables DFO (Year 2018).

In the years 2014 to 2018 the proportion of total crab catch attributable to Area A in the months of June, July and August has decreased compared to the average over the period 2009 to 2013.

Graph 2



Graph 3



Source: Harvester logbook and sales slip data, years 2009-2018.

A recent study: "BC Fish Processing Employment" (2016)[2] reports that wild shellfish processing employment was 526 jobs in year 2016. [3] A 2010 study of the economics of BC's crab fishery reports that 43% of wild shellfish processing employment is related to crab (although a more recent estimate is not available. Based on estimates presented in GSGislason and Associates (2017), applied to crab landings in 2018, this processing labour would result in approximately $1.9M in wages.[4]

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[5]. In 2018, crab exports from British Columbia had a value of $159.1M, which is a 21% increase from 2017, and is 79% higher than the average over the 10-year period (from 2008-2017; $88.9M). Graph 4 (below) illustrates the export volume and average price of all crab exports from BC from 2008-2018 (in 2018$).

Over 2009 to 2013 the average real price of crab exports was $5.67 per pound (2018 $'s). The average price was $9.64 per pound over the period 2014 to 2018 (a 70% increase). Over 2014 to 2018 the quantity of crab exports increased by 21%; whereas the real price of crab exports increased by 29%. In 2018 the real price of crab exports was $9.86 (10% less than in 2016 which was a peak year for prices).

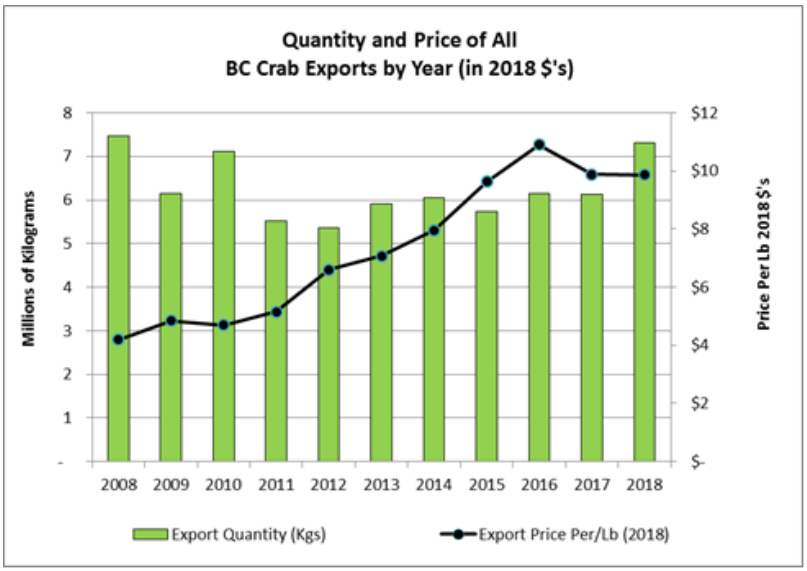
Graph 4

[2] British Columbia Fish Processing Employment (2016), (31/Aug/2018), p. 6

[3] Yonis (2010), p. 13.

[4] GSGislason & Associates (2017) estimates that the wages associated with crab processing is around $0.45 per kilogram. Applying this to the estimate for 2018 landings yields about $1.9M in processing wages.

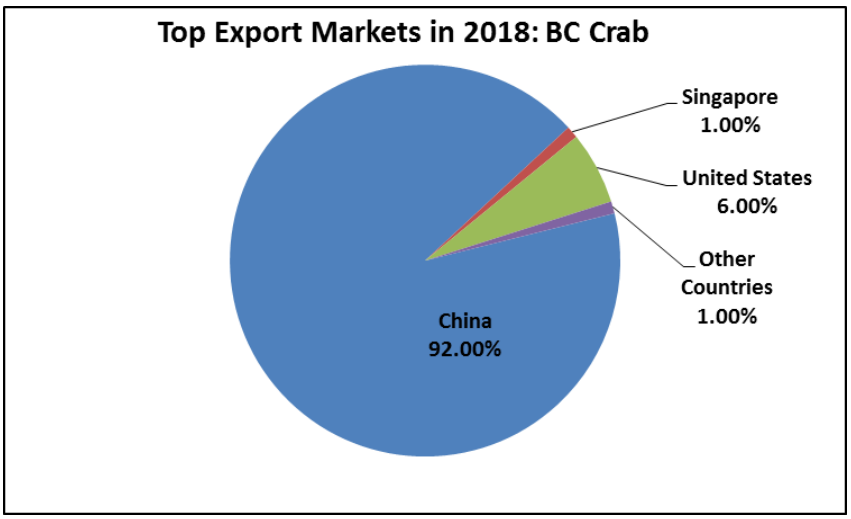
[5] BC Ministry of Agriculture - Agriculture, Seafood & Agrifood Snapshot 2016, 2017; https://www2.gov.bc.ca/gov/content/industry/agriculture-seafood/statistics/industry-and-sector-profiles



Source: Statistics Canada (EXIM) data.

Graph 5 below shows the distribution of crab exports from BC to its biggest export markets. The top markets for BC crab exports in 2018 were China, the United States, and Singapore. These markets accounted for around 99% of all crab exports from BC to the world market.

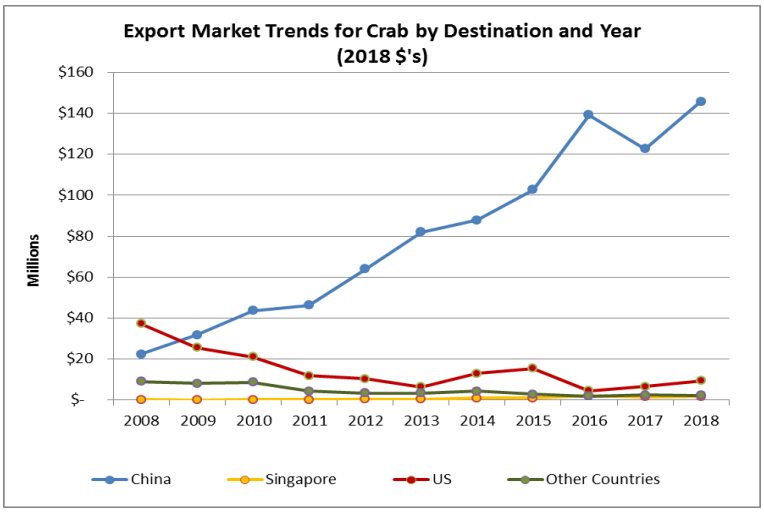
Graph 5



Source: Statistics Canada (EXIM Data)

The China export market for crab has been steadily increasing over the past 10 years. Graph 6 (below) presents export market trends for crab from BC over years 2008 to 2018. Historically, most exported crab was destined to the USA, but in 2009 China surpassed the USA as the biggest importer of crab from BC. Additionally, with the introduction of certain tariffs between China and the USA in 2018, it is expected that Canadian crab exports to China could potentially become more competitive in the future. Upon initial investigation, there does not seem to be significant evidence of this around the time these tariffs were implemented.

Graph 6



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 majority (73%) are Canadian residents, with the remainder being visitors to Canada (27%) (non-residents). These activities provide a range of social, cultural, and health benefits to the participants as well as contribute directly and indirectly to economic activity.[6]

The National Survey of Recreational Fishing in Canada[7], 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.

The National Survey of Recreational Fishing in Canada (2015) reports the direct expenditures made by all anglers in BC tidal waters (including: package deals, food & lodging, transportation costs, fishing services, fishing supplies, and other expenditures) totalled $370.27M (in 2015), with an additional $207.86M expended (on major purchases and investments attributed to recreational fishing by all anglers including: fishing equipment, camping equipment, boating equipment, special vehicles, land and/or buildings, and other).[8] According to the 2015 survey resident anglers make up the majority of anglers in BC's tidal waters. Of the total direct expenditures (residents and non-residents), it is estimated that approximately 20% can be attributed to recreational

6 Survey of Recreational Fishing in Canada, 2015, DFO, p. 16.

7 Fisheries & Oceans Canada, multiple years.

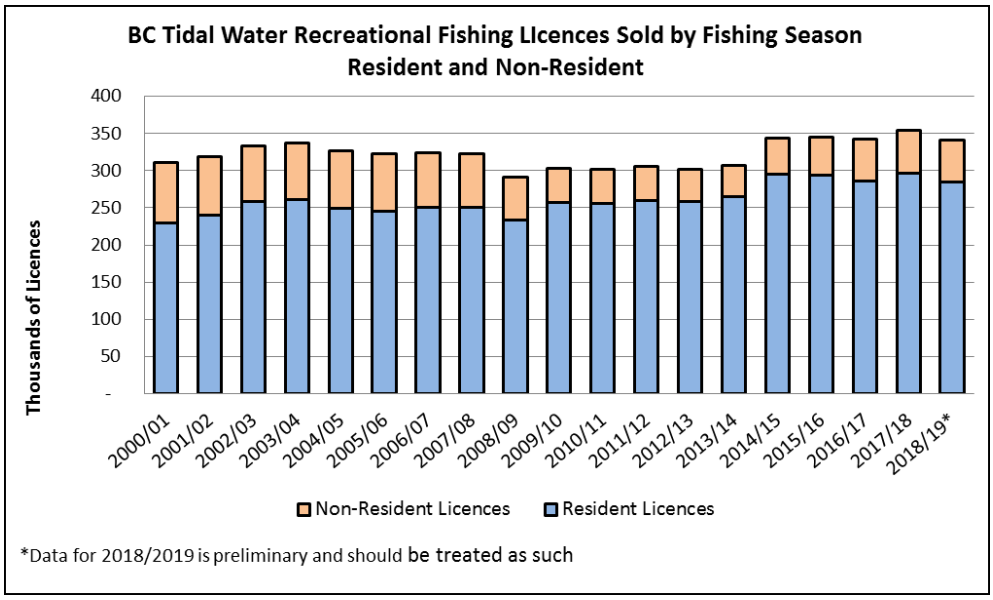
8 Source: Survey of Recreational Fishing in Canada, DFO, p. 19-20.

http://www.dfo-mpo.gc.ca/stats/rec/can/2015/doc/2015-rec-fish-eng.pdf?

shellfish harvesting. Most of the direct expenditures, major purchases, and package expenditures are 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[9]. (Fisheries & Oceans Canada, 2010).

Expenditures by non-residents also add money to the provincial economy, beyond the expenditures directly attributable to their fishing experience.[10] While opportunities for recreational fishing in BC's tidal waters attract international anglers[11], they are arriving in smaller numbers (Graph 7), 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.

Graph 7



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

3.3 First Nations

First Nations are interested in fisheries related economic opportunities. There are 31 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

[9] Based on 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.

[10] 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.

[11] 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).

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/idex-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

References

Ministry of Agriculture. "Agriculture and Seafood Industry and Sector Profiles." *British Columbia Fish Processing Employment 2016*, Province of British Columbia. Last retrieved January 16, 2019 from https://www2.gov.bc.ca/gov/content/industry/agriculture-seafood/statistics/industry-and-sector-profiles

Ministry of Agriculture. "Agriculture and Seafood Industry and Sector Profiles." *2016 Seafood Industry Year in Review*, Province of British Columbia. Last retrieved January 16, 2019 from https://www2.gov.bc.ca/gov/content/industry/agriculture-seafood/statistics/industry-and-sector-profiles

Ministry of Agriculture. "Agriculture and Seafood Industry and Sector Profiles." *Agriculture, Seafood & Agrifood Snapshot, multiple years*, Province of British Columbia. Last retrieved January 16, 2019 from https://www2.gov.bc.ca/gov/content/industry/agriculture-seafood/statistics/industry-and-sector-profiles

DFO. Multiple years. The Survey of Recreational Fishing in Canada. Prepared by Fisheries and Oceans Canada. Last retrieved January 16, 2019 from http://www.dfo-mpo.gc.ca/stats/rec/canada-rec-eng.htm

BC Stats. 2013. British Columbia's Fisheries and Aquaculture Sector, 2012 Edition. Pp 60. Last retrieved January 16, 2019 from https://www2.gov.bc.ca/gov/content/data/statistics/business-industry-trade/industry/fisheries-aquaculture

British Columbia Fish Processing Employment (2016) (31/August/2016). https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/agriculture-and-seafood/statistics/industry-and-sector-profiles/employment/2016_british_columbia_seafood_processing_employment.pdf

DFO. Tidal Recreational Licence Statistics: *Annual Comparison of Recreational Licence Sales.* Last retrieved December 2, 2018 from http://www.pac.dfo-mpo.gc.ca/fm-gp/rec/licence-permis/Stats/99tocurrent-eng.html

Nelson, Stuart. 2011. Pacific Commercial Fishing Fleet: Financial Profiles for 2009. Prepared for Fisheries and Oceans Canada, Pacific Region. June. Pacific Commercial Fishing Fleets Financial Profiles Series, 2011-4. 160 pp.

Yonis, Ramzi. 2010. The Economics of British Columbia's Crab Fishery: Socio Economic Profile, Viability, and Market Trends. Statistical and Economic Analysis Series. Publication. No.1-4 iv + 20 p.

GSGislason & Associates Ltd. 2017. Linkages Between Seafood Harvesting and Processing. Prepared for Fisheries and Oceans Canada. Vancouver, Canada. August. Last retrieved January 20, 2019 from http://waves-vagues.dfo-mpo.gc.ca/Library/40652816.pdf

Miller JJ, Maher M, Bohaboy E, Friedman CS and McElhaney P (2016) Exposure to low pH reduces survival and delays development in early life stages of Dungeness crab (*Cancer magister*). Busch DS, McElhany P (2016) Estimates of the Direct Effect of Seawater pH on the Survival Rate of Species Groups in the California Current Ecosystem. PLoS ONE 11(8): e0160669. doi:10.1371/journal.pone.0160669.

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 2020/2021.

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.

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-especes/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 2020/21 in some areas, FSC "best practices" educational brochures distributed by First Nations to their membership, 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 rates 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, implemented 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 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 2020.

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. However, the area selection for the 2020-2023 period have helped to mitigate these concerns.

The Department has, and will, continue to conduct educational outreach to improve harvester compliance with commercial crab fishery monitoring programs. For 2020/21, 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.

Due to continued low compliance rates in the Area J commercial crab fishery, the Department is considering the implementation of mandatory video monitoring as an addition to the existing management measures in Area J as early as the 2021/22 season. The Department is seeing recurrently low compliance rates in issues such as logbook reporting, fishing over the international US boundary, failing to scan RFID chips on traps, and exceeding trap limits in place in the fishery.

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 Strategic Framework) in 2012. The Strategic 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 Strategic 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

The Department has drafted the risk assessment for the coastwide recreational Crab fishery. A summary and key findings from the draft risk assessment for this fishery are highlighted in Appendix 12. Comments on the findings from all resource users are welcome and the risk assessment for the Recreational fishery are available on request. Comments and requests for the full risk assessments can be made to Dillon Buerk (Dillon.Buerk@dfo-mpo.gc.ca). Comments on the draft risk assessments will be incorporated where possible. Following this, the recreational crab

risk assessment will be finalized in the 2021/22 season. Risk assessments for Indigenous FSC crab fishery and the commercial crab fishery will be undertaken in the future.

4.4.1 National Fishery Monitoring Policy

The national *Fishery Monitoring Policy* has recently been finalized and is now available at: http://www.dfo-mpo.gc.ca/reports-rapports/regs/sff-cpd/fishery-monitoring-surveillance-des-peches-eng.htm. This policy aims to bring consistency in the development, delivery and evaluation of monitoring programs for all federally-managed wild capture fisheries in Canada, and will supersede the existing Pacific Region Strategic Framework. The Department will be working to transition over to the national policy in the coming months.

To discuss the national *Fishery Monitoring Policy* with regional staff, please contact Dan Leus at Dan.Leus@dfo-mpo.gc.ca or (250) 756 -7147. We welcome your feedback and questions, as your contributions and participation are valuable to the implementation of this national policy.

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

The Government of Canada has made a strong commitment towards addressing marine pollution issues, especially in the area of plastic waste. Recent milestones include Canada's G7 commitment to the 2015 Oceans Plastic Charter and the 2018 Charlevoix Blueprint for Healthy Oceans, Seas and Resilient Coastal Communities. The Minister's mandate letter (August 28th, 2018) commits the Minister to implement, with support from the Environment and Climate Change Canada

(ECCC) Minister, the provisions of both the G7 Oceans Plastic Charter and the Charlevoix Blueprint. For the DFO Fisheries Management Program there are two key areas of focus with respect to marine pollution:

- Abandoned, lost or otherwise discarded fishing gear (ALDFG), also referred to as ghost fishing gear (GG). The department has signed (Sept. 2018) on to the Global Ghost Gear Initiative (GGGI), which commits DFO to taking concrete steps toward addressing ghost gear issues.
- Implementing fishing vessel-based marine litter management programs.

For more information on combatting marine litter please visit: https://www.dfo-mpo.gc.ca/species-especes/mammals-mammiferes/ghostgear-equipementfantome/index-eng.html.

For more information on Canada's Zero Plastic Waste Strategy, *The Sustainable Fisheries Solutions and Retrieval Support Contribution Program* has officially been launched and is now accepting expressions of interest and applications.

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. The national standard for e-logs has been finalized, and service providers are currently developing e-logs for the Pacific crab fishery.

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: https://www.dfo-mpo.gc.ca/fisheries-peches/aboriginal-autochtones/aarom-pagrao/index-eng.html

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 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/

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. Direct bilateral consultation between DFO and individual First Nations is also available upon request.

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

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 2020, iREC will continue to randomly request, (via email) licence holder activity and catch information.

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 2020/21.

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: https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry.html

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:

SARA Listing process for Pacific Coast and Western Pacific Grey Whale populations

The Grey Whale is a medium- to large-sized baleen cetacean. As of 2017, the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) recognizes three Grey Whale populations in Canadian Pacific waters. The Eastern North Pacific population, currently Special Concern under SARA, was split into two populations. A broader North Pacific Migratory population, which migrates from winter breeding grounds in Mexico to summer feeding areas in the Bering Sea and Arctic waters, was assessed as Not at Risk. A small population which over-winters in Mexico and resides and feeds in British Columbia waters in summer and fall, the Pacific Coast Feeding Group, was assessed as Endangered. A new Western Pacific population was also assessed as Endangered as individuals from this population were recently shown to migrate through British Columbia waters to breeding areas in Mexico.

The two COSEWIC-assessed Endangered Grey Whale populations are under consideration for SARA listing. In-season changes to manage threats to these populations may be considered as part of the listing process. Consultations on these proposed changes and the potential impacts of SARA listing will be held in 2020. For further information, please contact the SARA Program at SARA.XPAC@dfo-mpo.gc.ca.

https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry.html

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-especes/shark-requin/conduct_shark-conduite_requin-eng.html

Code of conduct for Basking Sharks: http://www.pac.dfo-mpo.gc.ca/fm-gp/species-especes/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 2020—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 obtained by contacting your Regional Fisheries Coordinator or the DFO Marine Mammal Unit (MMU) (Contact: Julia McKenzie, Regional Manager, Marine Mammals; Julia.MacKenzie@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).

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).

5.8 Oceans and Habitat Considerations

5.8.1 Canada's Marine and Coastal Areas Conservation Mandate

In October 2017, the Government of Canada announced that it had reached its first milestone of protecting 5% of marine and coastal areas. On August 1st 2019, the government announced that Canada had surpassed its 2020 marine conservation target of 10 percent. To date, Canada has established 14 MPAs under the Oceans Act, three National Marine Conservation Areas, one marine National Wildlife Area and 59 marine refuges. These areas protect 13.81% of Canada's marine and coastal areas. 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. More information on the background and drivers for Canada's marine conservation targets is available http://www.dfo-mpo.gc.ca/oceans/conservation/index-eng.html.

5.8.2 Marine Protected Areas (MPAs)

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

5.8.3 Endeavour Hydrothermal Vents (EHV) MPA

The EHV MPA was designated in 2003. The hydrothermal vents lie in waters 2,250 m deep and 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. All commercial groundfish fisheries are restricted within the EHV MPA. More information can be found online at: https://www.dfo-mpo.gc.ca/oceans/mpa-zpm/endeavour/index-eng.html

5.8.4 SGaan Kinghlas-Bowie Seamount (SK-B) MPA

The SK-B MPA (180 km west of Haida Gwaii) was designated in 2008 and was established to conserve and protect the unique biodiversity and biological productivity of the area's marine ecosystem, including 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). The Board (in consultation with the SK-B Advisory Committee) recently finalized the SK-B MPA Management Plan which guides the conservation and protection of the SK-B ecosystem. In 2018, the Government of Canada and the Haida Nation closed all bottom-contact fishing at SK-B MPA as a precautionary management approach to protect sensitive benthic habitats, resulting in the MPA being closed to all commercial fishing activities. More information can be found online at: http://www.dfo-mpo.gc.ca/oceans/mpa-zpm/bowie-eng.html

5.8.5 Hecate Strait/ Queen Charlotte Sound Glass Sponge Reefs MPA

The Hecate Strait and Queen Charlotte Sound Glass Sponge Reefs Marine Protected Area (Hecate MPA) was designated under the *Oceans Act* in February 2017 to conserve the biological diversity, structural habitat and ecosystem function of the glass sponge reefs. The Hecate MPA Regulations are available online at: http://www.dfo-mpo.gc.ca/oceans/mpa-zpm/hecate-charlotte/index-eng.html. The Hecate MPA 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, covering an area of approximately 2,410 square kilometers. The Hecate MPA zoning approach involves different management measures within each zone. Under the Hecate MPA Regulations, each glass sponge reefs Core Protection Zone (CPZ) is closed to all commercial, recreational, and Aboriginal fishing. Anchoring, cable installation, maintenance and repair are also prohibited in the CPZ. The Vertical Adaptive Management Zone (VAMZ) and Adaptive Management Zone (AMZ) is 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. For more detail on the fishery closure within the Hecate MPA, review Fishery Notice FN0198 found here: https://notices.dfo-mpo.gc.ca/fns-sap/index-eng.cfm?DOC_ID=194216&ID=all&pg=view_notice. Scientific research or monitoring or educational activities are allowed in the Hecate MPA if a proponent submits an activity plan to DFO and it receives Ministerial approval. Additional maps and shapefiles of the Hecate MPA are available at: https://open.canada.ca/data/en/dataset/a1e18963-25dd-4219-a33f-1a38c4971250. For further detail on the ecological significance or management plan for the MPA, visit our website at: http://www.dfo-mpo.gc.ca/oceans/mpa-zpm/hecate-charlotte/index-eng.html

5.8.6 Offshore Pacific Area of Interest

In May 2017, DFO announced a new Area of Interest (AOI) with the intention of making it a MPA by 2020. The proposed MPA extends from the toe of the continental slope to the westward boundary of Canada's Exclusive Economic Zone (EEZ) in the southern portion of the Offshore

Pacific Bioregion. On average, the proposed MPA would be approximately 150 km away from the west coast of Vancouver Island, and would have an approximate area of 132,964 km^2. The conservation objective for the proposed MPA is to conserve, protect and enhance understanding of unique seafloor features including seamounts and hydrothermal vents and the marine ecosystems they support. 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

5.8.7 Offshore Pacific Seamounts and Vents Closure

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^2 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. Specific details of the closure can be found in the Fishery Notice.

More information on the Offshore Pacific seamounts and vents closure can be found on the internet here: http://www.dfo-mpo.gc.ca/oceans/oeabcm-amcepz/refuges/offshore-hauturiere-eng.html

5.8.8 Northern Shelf Bioregion MPA Network

The Province of BC, the Government of Canada and 16 First Nations are working together to develop a Network of marine protected areas for the Northern Shelf Bioregion which 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 the Pacific North Coast Integrated Management Area. The planning process is being developed under the policy direction outlined in the National Framework for Canada's Network of MPAs as well as the Canada-British Columbia MPA Network Strategy.

A draft MPA network design, which consists of a map of areas proposed for conservation as well as potential management measures for proposed sites, was shared with First Nations, who are currently not part of the collaborative governance arrangement, and with members of the Network Advisory Committees in February 2019. Various sectors are engaged in a review of the draft network design; the deadline for input is January 30, 2020. Thereafter, the governance partners will consider all input received and anticipate sharing a revised network design with sectors and the general public for further review in late Fall 2020. Following endorsement of a MPA Network Action Plan, implementation of sites is anticipated to occur over time and there will be additional site specific assessment and consultation prior to introduction of regulatory measures.

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

5.8.9 Race Rocks Area of Interest

Race Rocks, an area off Rocky Point, south of Victoria (currently designated as a Provincial Ecological Reserve), has been identified as an area of interest.

5.9 Other Marine Conservation Initiatives

Strait of Georgia and Howe Sound Glass Sponge Reef Marine Refuges

All commercial, recreational and FSC bottom-contact fishing activities for prawn, shrimp, crab and groundfish are prohibited within 17 areas in Howe Sound and the Strait of Georgia to protect glass sponge reefs, as marine refuges.

This includes prohibitions 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 (restricted via Condition of Licence in eight of the 17 areas)

Nine areas were closed to all commercial, recreational and FSC bottom-contact fishing activities in 2015 (2016 for FSC), followed by an additional eight areas in 2019. Nine remaining areas in Howe Sound require ground-truthing to assess their ecological significance and management measures may be considered in the future.

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. As of May 1, 2019, South Moresby and Lyell Island RCAs have been superseded and replaced by the strict protection zones of the Gwaii Haanas National Marine Conservation Area Reserve. There are currently 162 RCAs.

DFO is undertaking a multi-year review of the conservation effectiveness of RCAs in order to determine whether some RCAs can meet the Other Effective Area Based Conservation Measures criteria. 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 have been selected for the first phase of engagement to align with the MPA network planning process in that area. Engagement in other bioregions will occur in subsequent years. Further information on RCAs and the boundary proposals are available online at: http://dfo-mpo.gc.ca/rockfish-conservation or for further information on this, please contact DFO.RCA-ACS.MPO@dfo-mpo.gc.ca.

5.9.1 National Marine Conservation Area Reserves (NMCARs)

Gwaii Haanas

Gwaii Haanas National Park Reserve, National Marine Conservation Area Reserve and Haida Heritage Site is a 5000 km^2 land-and-sea protected area in the southern part of Haida Gwaii (formerly the Queen Charlotte Islands) approximately 100 kilometres off the north coast of British Columbia. The Haida Nation designated the area a Haida Heritage Site in 1985. The terrestrial part of Gwaii Haanas was designated a National Park Reserve by the Government of Canada soon after,

and Canada and the Haida Nation have been managing the area cooperatively since 1993. In 2010, the Gwaii Haanas marine area was designated a National Marine Conservation Area Reserve.

Gwaii Haanas is managed by the Archipelago Management Board (AMB), a cooperative body made up of three representatives of the Council of the Haida Nation and three representatives of the Government of Canada (Fisheries and Oceans Canada (1) and Parks Canada (2)). The AMB is guided by the *Gwaii Haanas Agreement* (1993) and the *Gwaii Haanas Marine Agreement* (2010) which describes how Canada and the Haida Nation will manage Gwaii Haanas cooperatively.

In November 2018, following an extensive consultation process, a new management plan for Gwaii Haanas was approved by Canada and the Haida Nation. The Gina 'Waadluxan KilGuhlGa Land-Sea-People plan includes a shared vision, guiding principles based on Haida cultural values, goals and objectives and zoning for the land and the sea. The plan will be in place for the next decade.

To develop the zoning plan, key ecological and cultural features were identified using a range of ecological data and traditional knowledge. A set of design considerations, which included minimizing socio-economic impacts, was used to develop an initial zoning proposal. This proposal was reviewed with stakeholder groups including the commercial and recreational fishing sectors and major changes were made to the zoning plan based on advice the AMB received.

The final zoning plan includes several areas of strict protection where commercial and recreational fishing is prohibited. The zoning plan can be found at: https://www.pc.gc.ca/en/pn-np/bc/gwaiihaanas/%20info/%20consultations/gestion-management-2018.

A monitoring plan will be developed to assess the effectiveness of zoning in achieving ecological and cultural objectives. Regular monitoring within and outside of strict protection zones will illustrate ecosystem responses and facilitate adaptive management of the Gwaii Haanas marine area.

Implementation of the Land-Sea-People plan will also involve cooperative management of fisheries using an ecosystem-based management framework and monitoring activities will be supported through partnerships. For more information on Gwaii Haanas and the Archipelago Management Board, visit www.parkscanada.gc.ca/gwaiihaanas.

Users of the Gwaii Haanas marine area should be aware that, as specified in the *Gwaii Haanas Agreement*, 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 Gwaii Haanas terrestrial area and advanced planning is necessary. Please contact the Gwaii Haanas administration office at 1-877-559-8818 for further information.

Southern Strait of Georgia NMCAR

Parks Canada, in partnership with the Government of British Columbia, launched a feasibility assessment for a National Marine Conservation Area Reserve (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 a 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

Scott Islands Marine National Wildlife Area

The Scott Islands Marine National Wildlife Area (mNWA) is the first protected marine area established by Environment and Climate Change Canada (ECCC) under the Canada Wildlife Act. 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 groundfish bottom trawling (in portions of the mNWA consistent with existing commercial closures) and salmon gill net and seine for commercial and Indigenous fishing for food, social and ceremonial purposes.

For further information on this, please contact Aleria Ladwig at 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

Pacific North Coast Integrated Management Area (PNCIMA)

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/

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 2020/21 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:

Licensing Verification - Vessel licensed - Experimental licence - No Harvesters Registration Card (FRC). - Fail to produce FRC.	PFR S.22 F(G)R S.52 F(G)R S.68(1) PFR S.25 F(G)R S.11	At-sea and dockside inspections will occur when opportunities exist. These inspections may include checks of all licensing documents on board the vessel to ensure compliance with the regulations.
Fish during closed time/area	PFR S.63	Patrols utilizing patrol vessels will be pursued when opportunities exist. Possibilities may exist to use the regional enforcement charter aircraft in co-ordination with other patrols scheduled for Priority fisheries.

Size limit.	PFR S. 66	At sea and dockside inspections will be pursued when opportunities exist.
Fail to provide proper landing and hail information, lack of notification for change of area, cancellation of trip, or incorrect reporting of area fished	F(G)R S.22(7)	At sea and dockside inspections will occur when opportunities exist. Investigations will occur on an opportunistic basis after C&P 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.
Fail to have an operational Electronic Monitoring System	F(G)S. 22(7)	At sea and dockside inspections will occur to measure compliance with this provision.
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 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 2020, commercial service provider performance evaluations and subsequent reviews of Electronic Monitoring, Biosampling, and Harvest Log programs will be conducted to improve regulations and compliance. Annual catch landings will be shared with the crab sectoral committee, as well as a review of DFO stated objectives and in-season management changes. Please contact your local area crab manager, (Appendix 8) for further information.

10.1 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.

11 REFERENCES

Ministry of Agriculture. “Agriculture and Seafood Industry and Sector Profiles.” *British Columbia Fish Processing Employment 2016*, Province of British Columbia. Last retrieved

January 16, 2019 from https://www2.gov.bc.ca/gov/content/industry/agriculture-seafood/statistics/industry-and-sector-profiles

Ministry of Agriculture. "Agriculture and Seafood Industry and Sector Profiles." *2016 Seafood Industry Year in Review*, Province of British Columbia. Last retrieved January 16, 2019 from https://www2.gov.bc.ca/gov/content/industry/agriculture-seafood/statistics/industry-and-sector-profiles

Ministry of Agriculture. "Agriculture and Seafood Industry and Sector Profiles." *Agriculture, Seafood & Agrifood Snapshot, multiple years*, Province of British Columbia. Last retrieved January 16, 2019 from https://www2.gov.bc.ca/gov/content/industry/agriculture-seafood/statistics/industry-and-sector-profiles

DFO. Multiple years. The Survey of Recreational Fishing in Canada. Prepared by Fisheries and Oceans Canada. Last retrieved January 16, 2019 from http://www.dfo-mpo.gc.ca/stats/rec/canada-rec-eng.htm

BC Stats. 2013. British Columbia's Fisheries and Aquaculture Sector, 2012 Edition. Pp 60. Last retrieved January 16, 2019 from https://www2.gov.bc.ca/gov/content/data/statistics/business-industry-trade/industry/fisheries-aquaculture

DFO. Tidal Recreational Licence Statistics: *Annual Comparison of Recreational Licence Sales.* Last retrieved December 2, 2018 from http://www.pac.dfo-mpo.gc.ca/fm-gp/rec/licence-permis/Stats/99tocurrent-eng.html

Nelson, Stuart. 2011. Pacific Commercial Fishing Fleet: Financial Profiles for 2009. Prepared for Fisheries and Oceans Canada, Pacific Region. June. Pacific Commercial Fishing Fleets Financial Profiles Series, 2011-4. 160 pp.

Yonis, Ramzi. 2010. The Economics of British Columbia's Crab Fishery: Socio Economic Profile, Viability, and Market Trends. Statistical and Economic Analysis Series. Publication. No.1-4 iv + 20 p.

GSGislason & Associates Ltd. 2017. Linkages Between Seafood Harvesting and Processing. Prepared for Fisheries and Oceans Canada. Vancouver, Canada. August. Last retrieved January 20, 2019 from http://waves-vagues.dfo-mpo.gc.ca/Library/40652816.pdf

Butler, T. H. 1961. Growth and Age Determination of the Pacific Edible Crab, Cancer magister Dana. J. Fish. Res. Board. Can. 18 (5):873-891.

Butler, T. H. 1984. Dungeness crab. Underwater World. Fisheries and Oceans Canada. 4 p.

Hicks, D. and B.A. Johnson. 1999. A device to measure shell hardness of Dungeness crabs and trial application in the Kodiak Island, Alaska, commercial fishery. N. Am. J. Fish. Manage. 19:581-590.

Rice, J., R.D. Humphreys, L. Richards, R. Kadowaki, D. Welch, M. Stocker, B. Turris, G.A. McFarlane, F. Dickson and D. Ware (eds). 1995. Pacific Stock Assessment Review Committee

(PSARC) Annual Report for 1994. Canadian Manuscript Report of Fisheries and Aquatic Sciences 2318.

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

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

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 *Pacific Fishery Management Area Regulations*. A map of Pacific Fishery Management Areas is available on the DFO internet site at: www.pac.dfo-mpo.gc.ca/ops/fm/Areas/areamap_e.htm
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 *Aboriginal Communal Fishing Licences Regulations* for participation in the commercial fishery.
communal licence	Issued to First Nation's organizations pursuant to the *Aboriginal Communal Fishing Licences Regulations* 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 *Aboriginal Communal Fishing Licences Regulations* 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 "surfline".
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 *Fishery (General) Regulations.*
offshore	Coastal waters seaward of the "surfline".
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: http://www.dfo-mpo.gc.ca/reports-rapports/regs/sff-cpd/precaution-eng.htm
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 co-ordinate 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.
Species at Risk Act (*SARA*)	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 social, cultural, and economic issues please refer to section 4.2.1 of the 2020/21 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 2020/21 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 2020

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.

In February of 2017, the Heiltsuk, Kitasoo/Xai'Xais, Nuxalk and Wuikinuxv Nations and the Department of Fisheries and Oceans signed a Letter of Intent (LOI) that commits the parties to working together to develop and undertake a collaborative process for identifying and recommending management objectives (starting with conservation and sufficient First Nation food, social, and ceremonial access) and measures that will achieve healthy crab populations and sustainable crab fisheries on the Central Coast. This commitment is based on the shared interest of managing crab in a precautionary manner, and supported by the Government of Canada's 2015 commitments to the Indigenous Peoples of Canada, emphasizing renewed "Nation-to-Nation" relationships based on recognition of rights, respect, cooperation and partnerships. The LOI outlines a collaborative governance process and recognizes that rigorous, meaningful and consistent engagement of communities and stakeholders is necessary to achieve the objectives of the LOI. In-season management changes are expected to occur in 2020/2021 as a result of this process.

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 2020, 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 2020, 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?atḥ 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

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.nnkn.ca/files/u28/nis-eng.pdf

4.5 T'aaq-wiihak Fishing

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 an aboriginal right to fish for any species, with the exception of Geoduck, within their court-defined fishing territories and to sell that fish. Their fishing territories are located within portions of Pacific Fishery Management Areas (PFMA) 25/125, 26/126, 124 and all of PFMA 24. As part of the implementation of that right, the Department released in 2019 the first Five Nations Multi-Species Fishery Management Plan (FMP), developed in consultation with the Five Nations. The FMP includes specific details about the Five Nations' right-based sale fishery, such as harvesting opportunities/access, licensing and designations, fishing area, gear, and fishery monitoring and catch reporting. For further information, the 2019/20 FMP can be found at: https://waves-vagues.dfo-mpo.gc.ca/Library/4079393x.pdf.

The implementation of the Five Nations' right-based sale fishery is an ongoing process. Aspects of the Five Nations' right-based sale fishery remain before the courts and management changes may be necessary following future decisions. As well, discussions are occurring with the Five Nations, including on the development of the 2020/21 FMP which may contain changes from last year's FMP. As a result, in-season management changes to this IFMP may occur. DFO will make efforts to advise stakeholders of any such changes in advance of their implementation.

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 10th, 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

Seafood	**Toddlers (1 to 4 years old)** Recommended maximum consumption: **(grams per week)**	**Adults** Recommended maximum consumption: **(grams per week)**
Dungeness crab hepatopancreas	**24 g**	**109 g**
Dungeness crab muscle	**200 g**	**905 g**

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

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 Atrevida 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**.

5 HUMAN WASTE CONTAINMENT REGULATIONS

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

Portable toilets or other designated human waste receptacles shall be used only for the purpose intended, and shall be so secured and located as to prevent contamination of the shellfish area or any harvested shellfish on board by spillage or leakage.

The contents of toilets or other designated human waste receptacles shall be emptied only into an approved sewage disposal system.

Every person onboard a shellfish harvest vessel must wash and sanitize their hands after using or cleaning a waste receptacle, or after using an onshore washroom facility.

Information on human waste containment receptacle requirements can be found at the following CFIA internet site: https://www.inspection.gc.ca/preventive-controls/fish/cssp/questions-and-answers/eng/1563470479199/1563470589053

APPENDIX 2: RECREATIONAL HARVEST PLAN

1. INTRODUCTION

There are five Guiding Principles for recreational fisheries in Canada which are outlined in "An Operational Policy Framework, Fisheries and Oceans Canada, 2001", with more details available on the Internet at: http://www.dfo-mpo.gc.ca/reports-rapports/regs/op-pc-eng.htm

These Principles are:

1. Recreational fishing is a socially and economically valuable and legitimate use of fishery resources.

2. Fisheries and Oceans is responsible for providing sustainable recreational harvesting opportunities as part of integrated management plans consistent with its policies.

3. Recreational harvesters have responsibility for shared stewardship for resource conservation and enhancement.

4. Mechanisms for federal/provincial cooperation in areas of shared jurisdiction will be established and strengthened.

5. Fisheries and Oceans has a leadership role to coordinate policies/programs with the federal government which relate to recreational fishing.

In addition, "*Vision 2021 - A strategic 10-point framework to grow Canada's recreational fishing sector on the Pacific coast"* developed cooperatively by the Sport Fishery Advisory Board (SFAB) and DFO, serves as a framework for implementing initiatives and actions to support achievement of a collective vision for the recreational fishery in B.C. A link to the Vision 2021 document is available here: https://sportfishing.bc.ca/a-vision-for-public-fisheries-in-british-columbia/

BC Recreational regulations are described in the British Columbia Tidal Waters Sport Fishing Guide, found online at: http://www.pac.dfo-mpo.gc.ca/fm-gp/rec/index-eng.html

2. RECREATIONAL HIGHLIGHTS

In February of 2017, the Heiltsuk, Kitasoo/Xai'Xais, Nuxalk and Wuikinuxv Nations and the Department of Fisheries and Oceans signed a Letter of Intent (LOI) that commits the parties to working together to develop and undertake a collaborative process for identifying and recommending management objectives (starting with conservation and sufficient First Nation food, social, and ceremonial access) and measures that will achieve healthy crab populations and sustainable crab fisheries on the Central Coast. In-season management changes are expected to occur in Area B in 2020/2021 as an outcome of this process.

For more 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.

By March 31, 2020, Fisheries and Oceans Canada is required to implement the *Service Fees Act*, which requires that all Government of Canada departments and agencies annually adjust service fees by the rate of inflation subject to certain exemptions. This change will be applicable to all licensing fees associated with all federally regulated commercial and recreational fisheries across Canada. The annual rate of inflation is determined by the All-items year-over-year Consumer Prince Index (CPI) for Canada, published by Statistics Canada. Fisheries and Oceans Canada will implement the first inflationary increase (2.2 per cent) on March 31, 2020, for all fishing seasons that start on or after April 1, 2020. For 2021 onwards, the annual increase will be applied when licences are issued. Fisheries and Oceans Canada last increased licence fees in 1996.

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 contamination details:

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

For more information on open and closed areas where you may be planning to harvest crab or other species, visit the Sport Fish Guide for your species and area of interest at:

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

3.1 Marine Protected Areas and National Marine Conservation Areas

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, including harvesting restrictions and area coordinates, please refer to Section 5.8 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

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 management plan as fully protected areas, will remain closed to commercial and recreational harvest in 2020. 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 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 5.4.2.2. or 5.6.1.16 of the Commercial Harvest Plan for more details).

4. LICENSING

Tidal Water Sport Fishing - Licensing and Regulations

The recreational harvest of all fish and invertebrates, including crab species, in BC, is regulated via the *British Columbia Sport Fishing Regulations, 1996* made under the *Fisheries Act*. A DFO Tidal Waters Sport Fishing licence is required for the recreational harvest of all species of fish and invertebrates. Crab species may generally be fished by crab traps under the regulations, as

well as by dip net, hand picking, and ring net. To review the current regulations for your area and species of interest please visit the BC Tidal Waters Sport Fishing Guide online at: http://www.pac.dfo-mpo.gc.ca/fm-gp/rec/index-eng.html (more details below). Fishers should also review the recreational Conditions of Licence, as printed on the licence, as these may advise other restrictions for crab species.

Tidal Waters Sport Fishing licences may be purchased for a 1 day, 3 day, or 5 day period, or as an annual licence, covering the period April 1 to March 31 the following year. The annual licence fee is not pro-rated for annual licences purchased mid-season. Check for applicable fees in the Licence Fees table below; fees depend on licence duration, age (senior, adult, juvenile) and residency status. Licences for juveniles (ages 15 and under) are free. Purchase your licence online via the National Recreational Licensing System: http://www.pac.dfo-mpo.gc.ca/fm-gp/rec/licence-permis/application-eng.html. Alternatively licences may be purchased over the counter at Independent Access Providers (IAPs) in many areas (note that the IAP may charge an additional service fee); visit the list of IAPs at: http://www.pac.dfo-mpo.gc.ca/fm-gp/rec/licence-permis/iap-fai-eng.html.

Licence Fees

Tidal Waters Sport Fishing Licence -- Please note: these fees DO NOT include 5% GST.

RECREATIONAL LICENCE/STAMP	CURRENT LICENCE FEE	WITH 2.2% INCREASE	ISSUANCE/SEASON OPENING DATE
Annual - Resident - < 64 years	$21.00	$21.46	April
Annual - Resident - 65 > years	$11.00	$11.24	April
5 Day - Resident	$16.00	$16.35	April
3 Day - Resident	$11.00	$11.24	April
1 Day - Resident	$5.25	$5.37	April
Annual - Non-Resident - 16 years >	$101.00	$103.22	April
5 Day - Non-Resident	$31.00	$31.68	April
3 Day - Non-Resident	$19.00	$19.42	April
1 Day - Non-Resident	$7.00	$7.15	April

Pacific Salmon Conservation Stamp	$6.00 (before GST)	$6.13 (before GST)	April

Yukon Recreational Fishing Costs:

RECREATIONAL LICENCE/STAMP	CURRENT LICENCE FEE	WITH 2.2% INCREASE	ISSUANCE/SEASON OPENING DATE
Annual - Yukon Resident/Qualified Non-Resident	$15.00	$15.33	April
Annual - Canadian Resident	$25.00	$25.55	April
6 Day - Canadian Resident	$15.00	$15.33	April
1 Day - Canadian Resident	$10.00	$10.22	April
Annual - Non-Resident	$35.00	$35.77	April
6 Day - Non-Resident	$20.00	$20.44	April
1 Day - Non-Resident	$10.00	$10.22	April
Fish Farming Licence	$25.00	$25.55	April
Salmon Conservation Catch Card - Yukon Resident/Qualified Non-Resident	$10.00	10.22	April
Salmon Conservation Catch Card - Canadian Resident	$20.00	$20.44	April
Salmon Conservation Catch Card - Non-Resident	$50.00	$51.10	April

Notes:

- Fees shown above do not include GST
- A Canadian resident is an individual who normally lives in Canada; proof of residency may be requested (driver's licence etc.)
- A non-resident is anyone who does not live in Canada
- Fees are governed by the BC Sport Fishing Regulations as established in 1996 - http://laws-lois.justice.gc.ca/eng/regulations/SOR-96-137/index.html; please note that the regulations do not provide for concessionary rates for persons with disabilities

- An annually-purchased Salmon Conservation Stamp ($6.00 + GST) must be affixed to licences held by anglers, both adult and juvenile, wishing to retain any species of Pacific salmon; a salmon stamp is not required for catch and release

Online Regulations

The regulations for recreational fishing are summarized online in the British Columbia Tidal Waters Sport Fishing Guide, which lists open and closed times, catch limits, size limits (where applicable) and open/closed areas: http://www.pac.dfo-mpo.gc.ca/fm-gp/rec/index-eng.html. When required, Fishery Notices are issued to advise of changes to the regulations which are kept up-to-date in the online Sport Fishing Guide; view or sign-up to receive Fishery Notice notifications by email at: http://notices.dfo-mpo.gc.ca/fns-sap/index-eng.cfm. The old printed Sport Fish Guide booklet is no longer being produced/distributed, both to reduce costs and in recognition that the online guide does a better job at reporting in-season changes, which was not possible within the format of the printed guide. You may also call your local fishery office to obtain regulatory information for your area of interest – visit us at http://www.dfo-mpo.gc.ca/contact/regions/pacific-pacifique-eng.html to find a local area office, or call 604-666-0384 or email info@dfo-mpo.gc.ca.

Using mobile devices and the FishingBC App

The FishingBC App http://www.fishingbcapp.ca/, as developed by the Sport Fishing Institute of BC, may be downloaded to your mobile device (cell phone, tablet) to assist with having access to regulatory information for species/areas/fishing gear while out on the water (along with other functionality). Please note that the DFO website is the official site for regulatory information in the event of a discrepancy between the two.

E-licences and Paper licences

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

Please consider these licensing requirements before your fishing trip:

- First option – continue to use the paper copy of the licence; this is currently required in all instances to permanently record catch of halibut, chinook, and lingcod
- Alternatively – you may have an electronic(pdf) copy of your licence on your mobile device
- This must be immediately available for review by a fishery officer, as proof of licence purchase
- If you intend to retain halibut, chinook, or lingcod – these catch details must still be permanently recorded on a paper licence
- For users of the FishingBC App, the requirements listed above are still applicable

Supporting Sustainable Fisheries - Catch Reporting and the iREC Survey

The Sport Fishing Advisory Board (SFAB) is the primary consultative body for the recreational fishing community, and includes representatives from all geographic regions in BC, and the BC Wildlife Federation, and the Sport Fishing Institute of BC. The SFAB and the recreational fishing sector strongly support effective fishery monitoring and catch reporting programs in recreational fisheries. The SFAB has been working with DFO on initiatives to strengthen fishing monitoring and catch reporting in the recreational fishery for a number of years.

Recreational harvesters are required as a condition of the Tidal Waters Sport Fishing Licence to report information on their recreational fishing activity and catch to DFO representatives when requested to do so, whether in person or via an internet survey. Recreational harvesters may be requested by a Fishery Officer or designated DFO representative at the dock, or through a creel or internet survey to provide catch/effort information on their recreational fishing activities.

The Internet Recreational Effort and Catch (iREC) Survey was initiated in 2012 to provide monthly estimates of effort for all methods of recreational fishing. Since 2018, iREC survey participants are selected at time of licence purchase, and have their iREC survey access code printed to their licence. A reminder notice will also be sent by email. By completing the survey, fishers provide information essential to understanding the full impacts of the recreational fishery, and thus support sustainable fishery management. More information on the iREC Survey is available at: http://www.pac.dfo-mpo.gc.ca/fm-gp/rec/irec-iarc/index-eng.html.

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 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.

Crab 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 crab that meet minimum size limits. Undersized crab 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.

5.2 Non Retention of Female Crab

Recreational harvesters are required to release all female Dungeness, Red Rock and King Crab 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.

5.3 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 crab. It is illegal to use snares, rakes, spears or other pointed instruments to catch or attempt to catch crab.

Crab traps are required to have two unobstructed circular escape holes or rings, measuring a minimum of 105 mm in diameter. 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 illustrated in Appendix 6.2.

5.4 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 crab 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.

5.5 Possession Limits

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

5.6 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 10th, 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

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

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; crab traps are required to have two unobstructed circular escape holes or rings, measuring a minimum of 105 mm in diameter.

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.

7. HUMAN WASTE CONTAINMENT REGULATIONS

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

Portable toilets or other designated human waste receptacles shall be used only for the purpose intended, and shall be so secured and located as to prevent contamination of the shellfish area or any harvested shellfish on board by spillage or leakage.

The contents of toilets or other designated human waste receptacles shall be emptied only into an approved sewage disposal system.

Every person onboard a shellfish harvest vessel must wash and sanitize their hands after using or cleaning a waste receptacle, or after using an onshore washroom facility.

Information on human waste containment receptacle requirements can be found at the following CFIA internet site: https://www.inspection.gc.ca/preventive-controls/fish/cssp/questions-and-answers/eng/1563470479199/1563470589053

APPENDIX 3: COMMERCIAL HARVEST PLAN (APRIL 1, 2020 – MAR 31, 2021)

TABLE OF CONTENTS

1. COMMERCIAL CHANGES AND HIGHLIGHTS (APRIL 1, 2020 - MARCH 31, 2021)

1.1. Management Changes and Updates:

- 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 gear 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 to include mandatory reporting requirements of lost and retrieved gear for the 2020/2021 season.
- Licence transferring ("trap stacking") will be allowed in Area B and again in E-Sooke, E-Tofino, G, H and J for 2020/21. Licences that stack will be allowed to use 66% of the traps from the 2nd licence.
- The current Best Management Practice will be reduced from 300 traps in Becher Bay and Pedder Bay within the Sooke option area to 220. These traps are divided equally among the vessels who harvest in these areas.
- For vessels in Area E – Tofino, an additional option will be implemented in the Tofino Option Area. Vessels will need to choose the outside Tofino option if that vessel master would like to fish the outside waters only. Vessels who do not choose the outside option will not have any changes to fishing locations. See Section 2.5.1.
- Area E – Quatsino:
  - The once per calendar week haul restriction will be moved from April 1 to June 30. There will be a maximum three hauls per calendar week for the remainder of the year outside the once per week haul period.
  - In subareas 27-10 and 27-11, Rupert and Holberg inlets, a maximum of 280 traps divided by the number of vessels may be fished. The 75 trap cap in 27-7 to 27-11 will be expanded from July 1 to November 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 an aboriginal right to fish for any species, with the exception of Geoduck, within their court-defined fishing territories and to sell that fish. Their fishing territories are located within portions of Pacific Fishery Management Areas (PFMA) 25/125, 26/126, 124 and all of PFMA 24. As part of the implementation of that right, the Department released in 2019 the first Five Nations Multi-Species Fishery Management Plan (FMP), developed in consultation with the Five Nations. The FMP includes specific details about the Five Nations' right-based sale fishery, such as harvesting opportunities/access, licensing and designations, fishing area, gear, and fishery monitoring and catch reporting. For further information, the 2019/20 FMP can be found at: https://waves-vagues.dfo-mpo.gc.ca/Library/4079393x.pdf.
- The implementation of the Five Nations' right-based sale fishery is an ongoing process. Aspects of the Five Nations' right-based sale fishery remain before the courts and management changes may be necessary following future decisions. As well, discussions are occurring with the Five Nations, including on the development of the 2020/21 FMP which may

contain changes from last year's FMP. As a result, in-season management changes to this IFMP may occur. DFO will make efforts to advise stakeholders of any such changes in advance of their implementation.

- In February of 2017, the Heiltsuk, Kitasoo/Xai'Xais, Nuxalk and Wuikinuxv Nations and the Department of Fisheries and Oceans signed a Letter of Intent (LOI) that commits the parties to working together to develop and undertake a collaborative process for identifying and recommending management objectives (starting with conservation and sufficient First Nation food, social, and ceremonial access) and measures that will achieve healthy crab populations and sustainable crab fisheries on the Central Coast. In-season management changes are expected to occur in Area B in 2020/2021 as an outcome of this process.
- 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 2020/21. 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.
- Due to continued low compliance rates in the Area J commercial crab fishery, the Department is considering the implementation of mandatory video monitoring as an addition to the existing management measures in Area J as early as the 2021/22 season. The Department is seeing recurrently low compliance rates in issues such as logbook reporting, fishing over the international US boundary, failing to scan RFID chips on traps, and exceeding trap limits in place in the fishery.
- Area B Commercial Harvesters have proposed that daily haul restrictions be implemented in all seasonal areas to reduce trap turnover.
- Area B Commercial Harvesters have requested a two week earlier opening in Area 3 Nass Estuary but consultation is not complete.
- 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.
- By March 31, 2020, Fisheries and Oceans Canada is required to implement the *Service Fees Act*, which requires that all Government of Canada departments and agencies annually adjust service fees by the rate of inflation subject to certain exemptions. This change will be applicable to all licensing fees associated with all federally regulated commercial and recreational fisheries across Canada. The annual rate of inflation is determined by the All-items year-over-year Consumer Prince Index (CPI) for Canada, published by Statistics Canada. Fisheries and Oceans Canada will implement the first inflationary increase (2.2 per cent) on March 31, 2020, for all fishing seasons that start on or after April 1, 2020. For 2021 onwards, the annual increase will be applied when licences are issued. Fisheries and Oceans Canada last increased licence fees in 1996.

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).

- 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.

1.3. Licensing Updates:

- Requirements for service provider arrangement and submission of previous year's harvest logs prior to annual licence renewal are required.

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 2020, crab licence holders selected an area to fish for the three-year period commencing April 1, 2020 and ending March 31, 2023. Provided below in **Error! Reference source not found.** are l icence area selection details from 2000 to 2023.

The next area selection process, (whereby licenced commercial crab vessels choose one crab management area to fish in) is expected in 2022.

Table 1 Crab License Area Selection and distribution

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**
2019**	32(3)*	24(6)	2	7(1)	32(2)	**41(3)**	16(5)	62(8)	21(5)	24(1)	**220**
2020-2023	36(3)*	21(6)	3	7(1)	33(2)	**43(3)**	19(5)	55(8)	22(5)	24(1)	**220**

*PICFI/ATP First Nation Crab (FR) Licenses in brackets

**License FR33 was moved from Area G to Area E and retired to partially account for an allocation to the Five Nuu-chah-nulth First Nations.

Table 2 Crab Management Areas

Area	Description	Management Area
A	Haida Gwaii	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.

A map of these areas has also been provided in Appendix 7.

2.6 Service Provider & 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.

Commercial Service Provider program evaluations have been conducted for 2019 and will continue in 2020/21.

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:

2.7.1 Area A Trap Allocations

Table 3 Area A Trap Allocation

Vessel Length	Licences	Share	Area Limit/ Licence	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	20	1	729	14583	600	12000	600	300	600
13-14m	4	1.33	972	3889	800	3200	800	400	800
14-15.8m	4	1.67	1215	4861	1000	4000	1000	500	1000
>15.8 m	8	2	1458	11667	1200	9600	1200	600	1200
Total	36			35000		28800			

2.7.2 Area B to J Trap Allocations

Table 4 Area B to J Trap Allocations

Area & Portion	Area Trap Limit	Right-Based Fishery	Remaining Trap Limit	Max Traps / Licence	Licences 2020-2022	Final Traps / Licence
Crab Management Area B	7,600			400	21	361
B_Nass Estuary	3,800			200		180
Crab Management Area E				350	-	
E_Quatsino 27-7 to 27-11				200	3	200
Jan 1-Jun 30 & Nov 16-Dec 31	600			200		200
Jul 1-Nov 15	75			75		25
E_Sooke	2,800			350	7	350
E_Sooke 20-6 (Harbour)	420			350		60
E_Sooke 20-7 (Basin)	420			350		60
E_Tofino	8,400	402	7,998	350	33	242*
E_Tofino Area 24	1,600	77	1,523	350		46*
E_Tofino Area Amphitrite Hole	3,200	153	3,047	350		92
Crab Management Area G	5,600			400	19	294
Crab Management Area H	12,900			300	55	234
Crab Management Area I	8,400			200	22	200
Jun 15-Jul 5				100		100
Crab Management Area J	3,600			200	24	150

*This number may change upon vessels choosing outside option. Please confirm with conditions of licence. For 2020, 2 vessels have chosen the Outside Option. See Table 5 below.

Table Definitions:

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

Max Traps/Licence – The maximum number of traps that are allowed per vessel, regardless of the number of licences.

Final Traps 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.

2.7.3 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 4)

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 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.

"Amphitrite Hole Trap Limit Area"
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 49°5.680'N 125°53.375'W [Cox Point] then following the shoreline to the beginning point. A 92 trap limit per vessel to a maximum 3200 trap limit minus the Five Nations Rights based commercial fishery trap allocation for the Hole will be implemented for 2020/21 to reduce trap congestion in this area.

2.7.4 Area E Tofino Outside Option

In recent years, DFO has heard concerns from commercial harvesters about the current fishery in the Area E-Tofino licence option with respect to small vessel viability, reduced trap limits and the inability to explore the potential for an offshore Dungeness crab fishery in areas not currently fished.

After consultations with commercial harvesters and local First Nations in the area, in 2020-21 Area E-Tofino licenced vessels may choose an "Outside Option" to fish offshore waters only, and forgo fishing in Areas 23 or 24. In exchange for not fishing in Areas 23 or 24 these vessels will be allowed to fish 30% more traps in the offshore areas. The traps that Outside Option vessels forgo in Area 24 will be split among the vessels to use in Area 24 that do not choose the Outside Option. Vessels that do not choose the Outside Option will have their overall trap limit reduced depending on the number of vessels that choose the Outside Option (see table below).
Vessels that do not choose the Outside 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.

This management change is intended to make Area E-Tofino Licence Option more economically viable for all vessels by separating small vessels, which choose to fish in inshore areas, from larger vessels that may have the ability to fish more traps in the offshore waters.

Under this plan, the trap caps for Area E-Tofino remain at their current levels. The Area E-Tofino trap cap is 8400 minus the Five Nations rights-based commercial fishery trap allocation. Area 24 has a trap cap of 1600 minus the Five Nations rights-based sale fishery trap allocation for Area 24. For the area known as the "Amphitrite hole" the trap cap is 3200 minus the Five Nations Rights based commercial fishery trap allocation.

The Outside Option will be a pilot and be chosen on an annual basis. Vessels will need to notify DFO Licencing Unit before licenses are issued. Please refer the Notice to Industry for more information and the deadline date.

Below is a table showing the potential scenarios based on an increasing number of vessels choosing the Area E Tofino Outside option:

Table 5 Area E Tofino Outside Option Scenarios

Total Traps	Regular Tofino Licence	Number of Vessels to Select Outside Option	Traps allowed in Area 24	Total Traps for Regular Tofino Vessels	Total Traps for Outside Vessels
7998	33	0	46	242	-
7998	32	1	48	240	315
7998	**31**	**2**	**49**	**238**	**315**
7998	30	3	51	235	315
7998	29	4	53	232	315
7998	28	5	54	229	315
7998	27	6	56	226	315
7998	26	7	59	223	315
7998	25	8	61	219	315
7998	24	9	63	215	315
7998	23	10	66	211	315
7998	22	11	69	206	315
7998	21	12	73	201	315
7998	20	13	76	195	315
7998	19	14	80	189	315
7998	18	15	85	182	315
7998	17	16	90	174	315

***For 2020-21, 2 vessels (licenses) selected the Outside Option and is in bold font above.**

Quatsino Option
During the period from January 1 to June 30 and November 16 to December 31, a maximum of 200 traps per vessel may be fished within Subareas 27-7 to 27-11 of which a maximum of 93 traps may be fished in Subareas 27-10 and 27-11. During the period of July 1 to November 15 a maximum of 25 traps per vessel may be fished in Subareas 27-7 to 27-11.
A cap trap of 600 traps is in effect for Subareas 27-7 to 27-11, with a maximum vessel trap limit of 200 traps not to be exceeded.

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.

2.8.1 Area A

Area	Dates	Status	Comments	Haul Restrictions
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 EXCEPT 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	

2.8.2 Area B

Area B Commercial Harvesters have proposed that daily haul restrictions be implemented in all seasonal areas to reduce trap turnover.

Due to concerns in the Nass Estuary from the Kincolith Community regard domestic catches, the Area B harvesters shortened the Nass Estuary fishery from 7 weeks to 3 weeks in 2019 and plan to expand the commercial closed area. As a trade-off, the Area B Commercial Harvesters have requested a two week earlier opening in Area 3 Nass Estuary. Harvesters would have to choose between the 3 week Nass Estuary opening and the other seasonal areas. This proposal will need to be reviewed by the Nisga'a Joint Technical Committee and approved by the Nisga'a Joint Management Committee before implementation.

Area	Dates	Status	Comments	Haul Restrictions
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	*Proposed: Sept 15 – Oct 5	Open	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

*This proposal is dependent on consultations with local First Nations. See Section 2.8.2

2.8.3 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;

<u>All Common Areas</u> (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.

<u>Sooke (20-1 to 20-2)</u>

- 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: 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 27-11, and Area 127)

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

Area	Dates	Commercial Haul Restrictions:			
		1 Haul / Day	3 Hauls / Week	2 Hauls / Week	1 Haul / Week
E_Common	May 1, 2020 - Jan 31, 2021	X			
	Feb 1, 2020 to April 30, 2020				X
E_Quatsino option area 27-7 to 27-11	April 1 – June 30				X
	July 1 to March 31, 2021		X		
E_Sooke 20-1 & 20-2	April 1 - April 30, 2020 & Feb 1 - March 31, 2021				X
	May 1, 2020 - Jan 31, 2021		X		
E_Sooke 20-3 to 20-7	May 1, 2020 - Jan 31, 2021			X	
	April 1 - April 30, 2020 & Feb 1 - March 31, 2021				X
E_Tofino option area	Jan 1 - Mar 31				X
	April 1 - Dec 31	X			

2.8.4 Areas G, H, I, J

Area	Dates	Status	Haul Restrictions

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. Daylight only.
	Jan 15 – Apr 15	Open	Not to exceed once per week. Daylight only.
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.

2.9.1 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.

2.11.1 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.**

2.11.2 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.

2.11.3 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 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, 2020 and/or August 1, 2020 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, 2020 in Area J. **All gear must be fished from the licensed vessel.**

2.16 Best Management Practices

<u>General:</u>

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 communities and 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

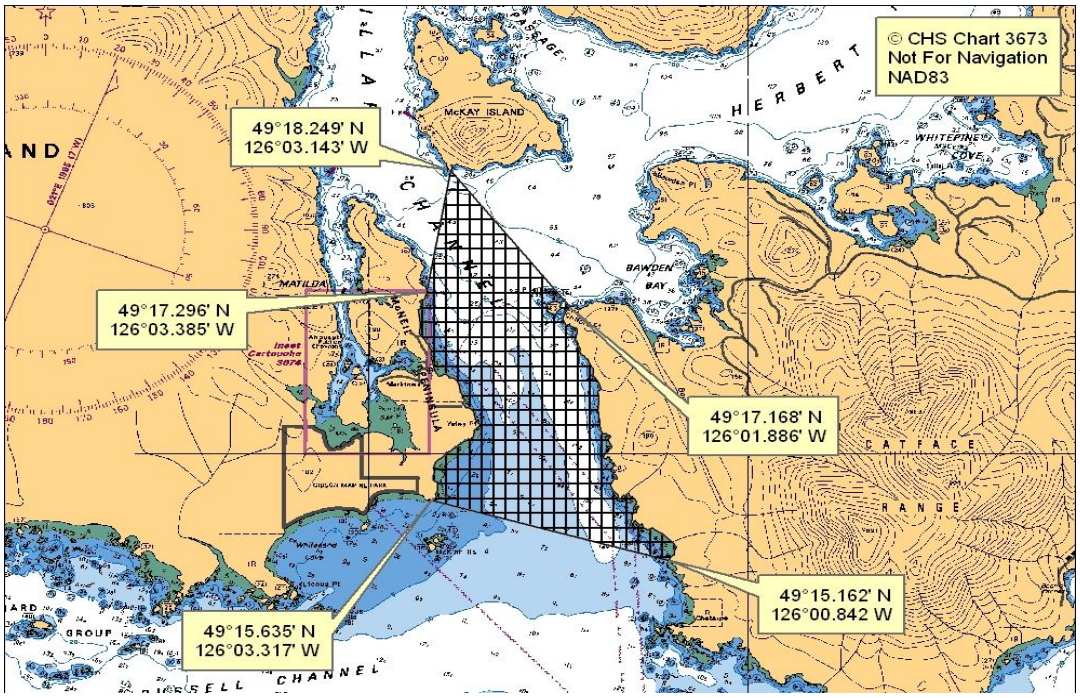
- For several years now, a voluntary ferry lane closure between Prince Rupert and Skidegate has been in effect year-round, (see map in Appendix 7). This closure was developed in cooperation with the Area "A" Crab Association, the B.C. Ferries Corporation and the Department. To ensure continued participation 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.



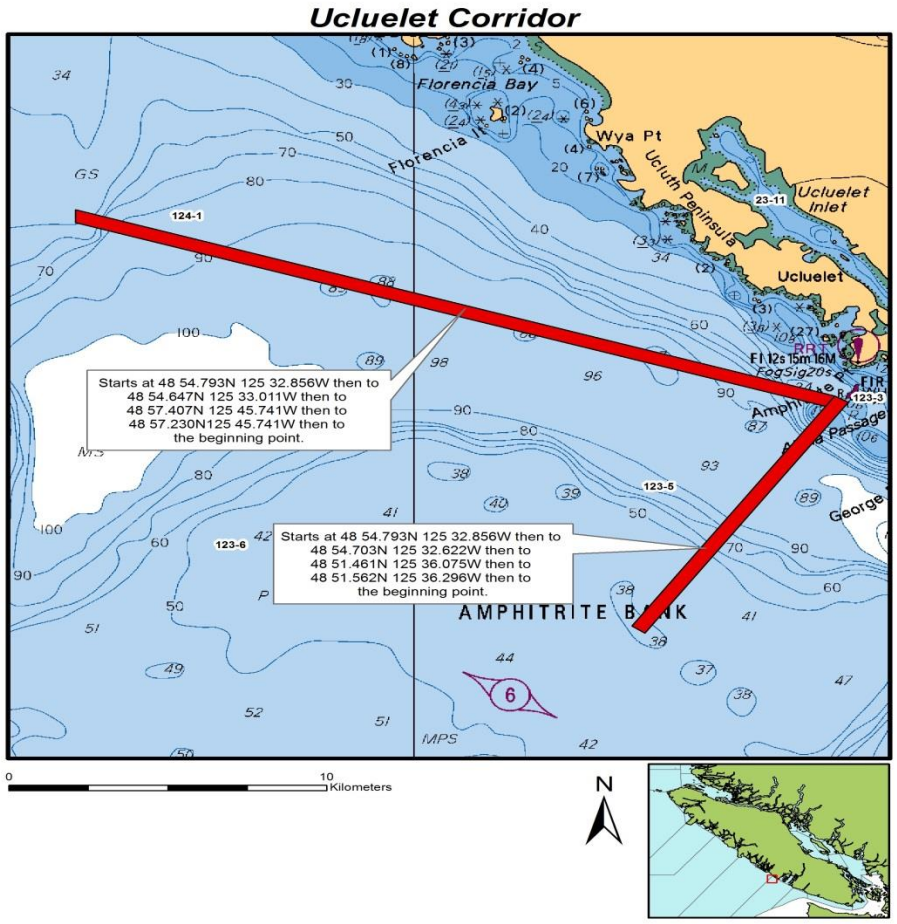
Area E Tofino.

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 57.230N125 45.741W then to
- The beginning point.

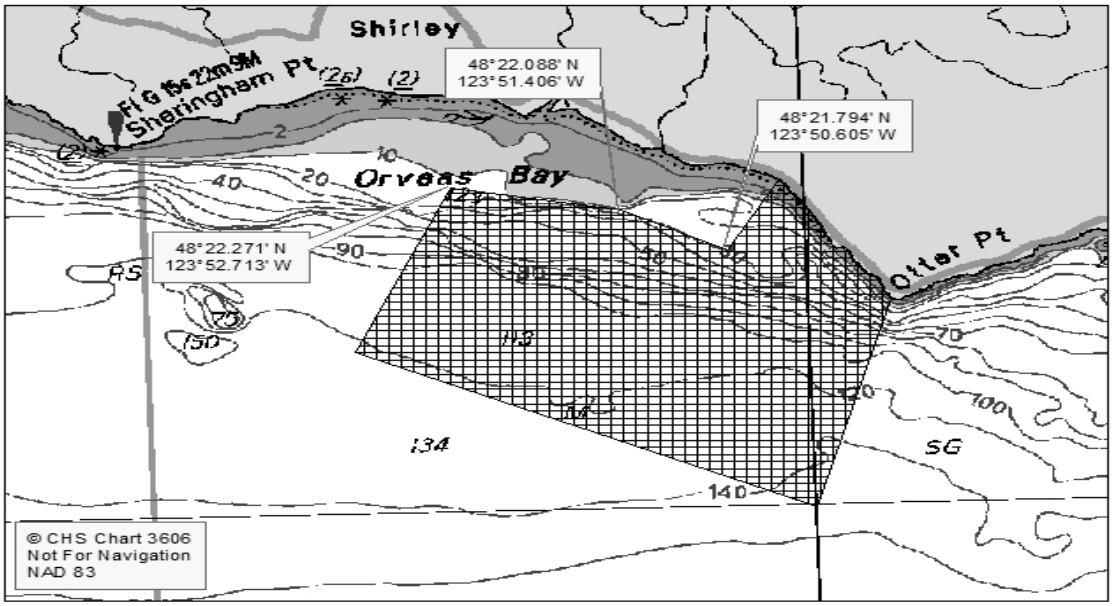
and

- 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



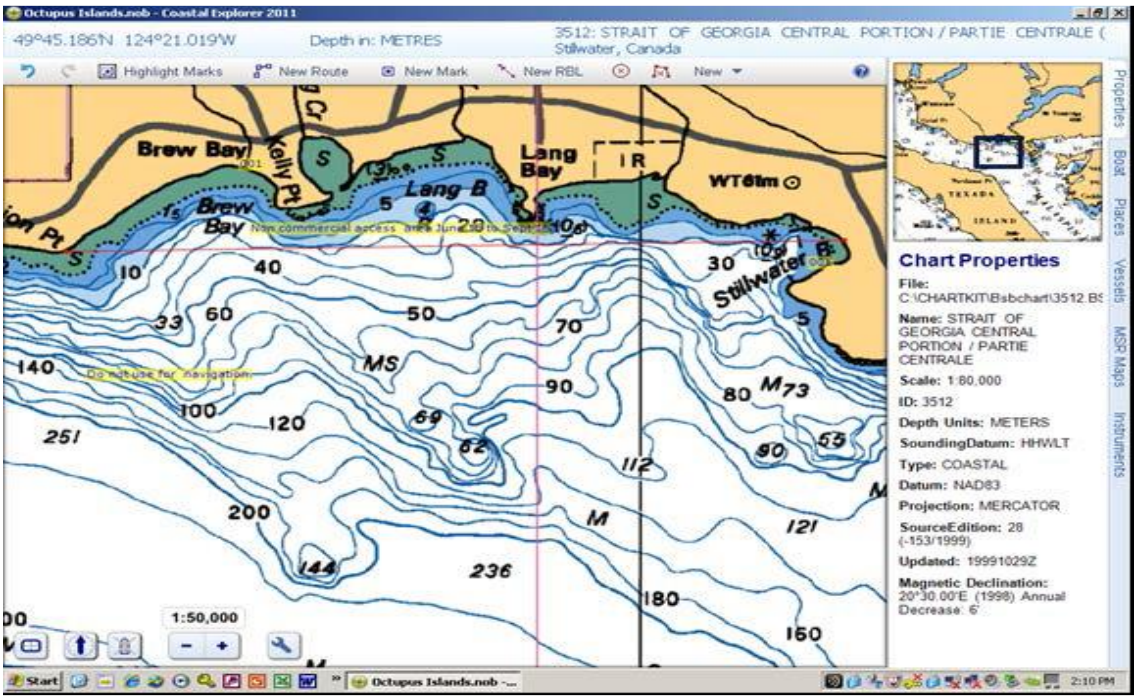
Area E – Sooke

- 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 220 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.



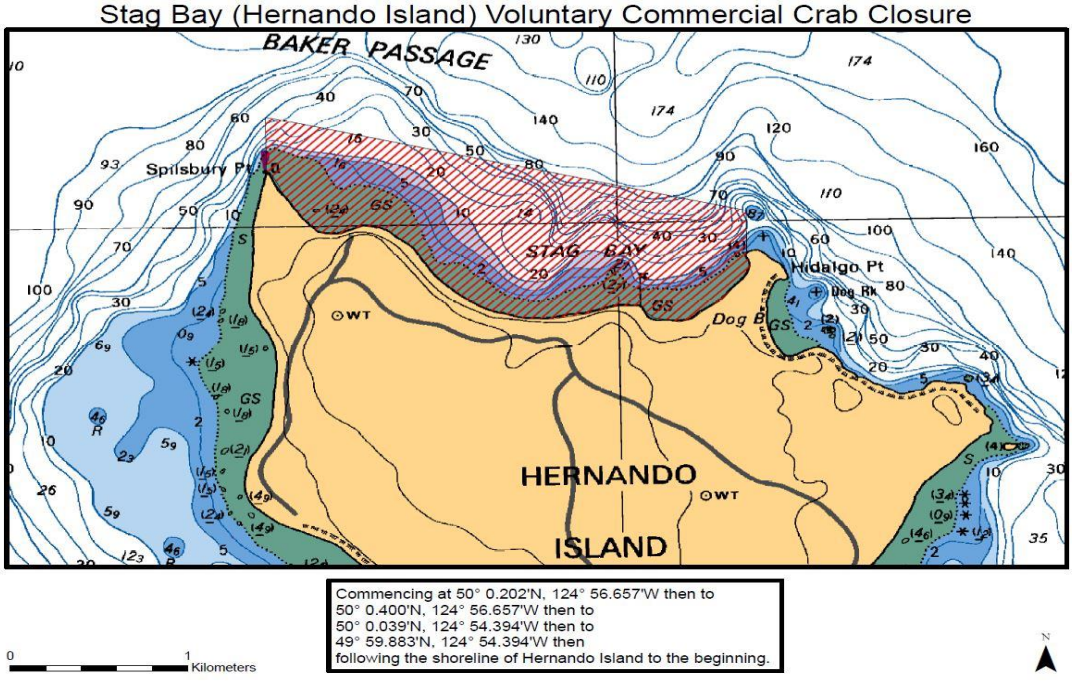
Area G

- To improve First Nations FSC access, harvesters are being requested to keep gear away from the areas fronting First Nation communities and 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).

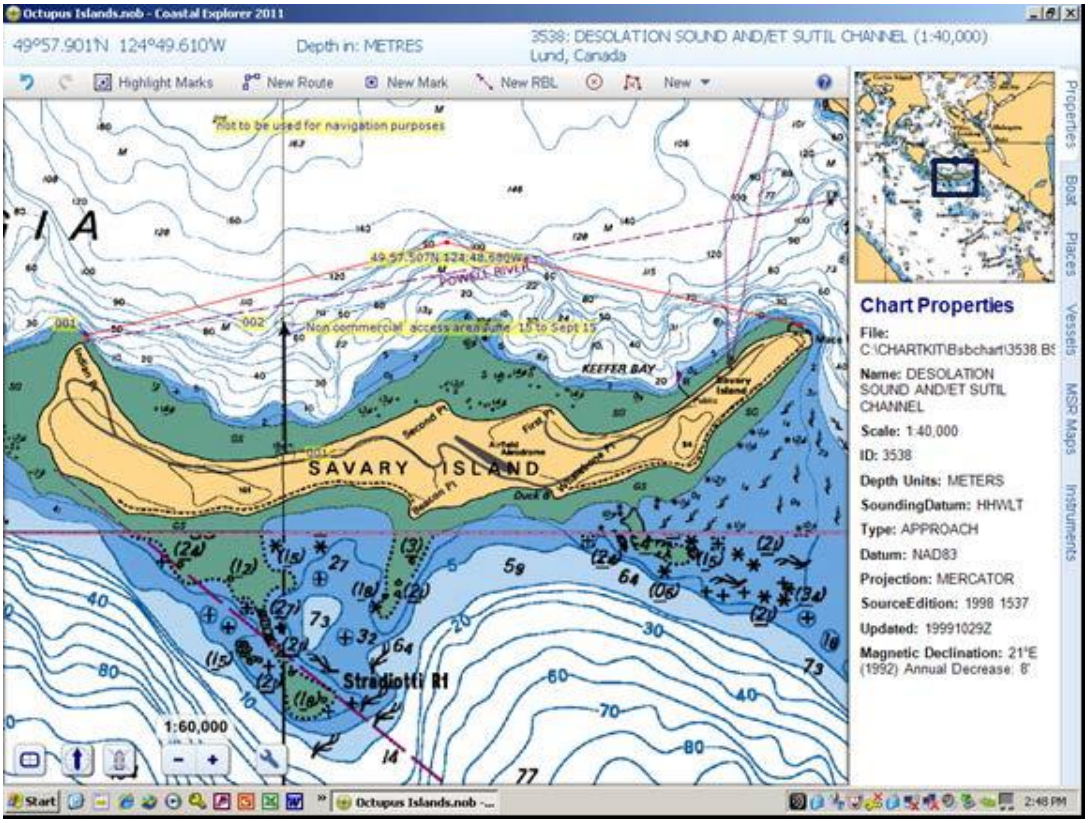


- Area G harvesters have agree as part of their Best Management plans to not set their gear in Stag Bay at Hernando Island at a location starting at the Spilsbury Point Commencing at 50° 0.202'N, 124° 56.657'W then to 50° 0.400'N, 124° 56.657'W then to 50° 0.039'N, 124° 54.394'W then to 49° 59.883'N,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

Stag Bay (Hernando Island) Voluntary Commercial Crab Closure



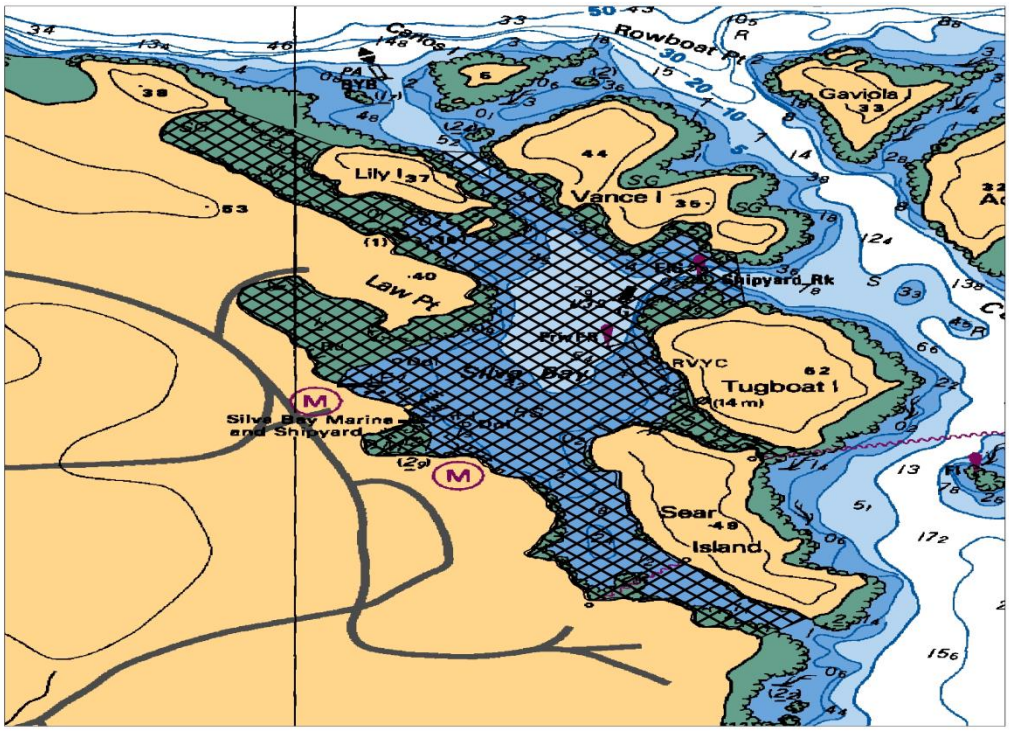
- Commercial crab gear to be removed or not set between June 15 and September 15 near Savary Island inside a line starting at 49.57.022N and 124.51.607'W Easterly to a point at 49.57.508,N and 124.48.680'W then to Mace Point at 49.57.093'N and 124.45.795'W.



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 49º09.500'N 123º42.175'W then to 49º09.434'N 123º42.020'W then to 49º09.424'N 123º41.796'W then southerly following the shoreline to 49º09.258'N 123º41.452'W then to 49º09.154'N 123º41.436'W then southerly following the shoreline to 49º08.925'N 123º41.352'W then to 49º08.900'N

123º41.426’W then southerly following the shoreline to 49º08.640’N 123º41.344’W then to 49º08.600’N 123º41.424’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, 2020 to March 31, 2021. 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.

4.3.1 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.

4.3.2 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 service provider for instructions on obtaining more tags. The service provider will then contact the crab manager regarding issuing a complete new set of replacement tags for all traps allocated to that licence. 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. Note: replacement tags will only be issued if lost, stolen or damaged and not in the event of seizure by enforcement personnel.

Two trap tag colours for Area E Tofino harvesters for traps fished inside and outside of Area 24 are no longer required.

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.

4.4.1 Special Buoy Requirements

4.4.1.1 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.

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:

4.5.1 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 2020, 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.

4.7.1 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.

4.7.2 Transportation of Holding Cages

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

4.7.3 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 2020 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 2020, crab monitoring programs will provide reports to Fisheries and Oceans Canada on fishing activity (hails) for Area A and plastic trap tags for all other licence areas, in order to review compliance with trap limits. 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 2020/21 Fishery Monitoring and Catch Reporting Program Standards (Appendix 9).

4.8.1 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).

4.8.2 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 2020/21 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 2020/21. 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 hardrives, the hail program will continue to support program objectives.

4.11 Catch and Fishing Data

4.11.1 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.

4.11.1.1 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.

4.11.1.2 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.

4.11.1.3 Confidentiality of Harvest Data

Harvest data, including fishing location data supplied through latitude/longitude co-ordinates, 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.

4.11.2 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.

4.11.3 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 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 4th 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 2020. The description of this closure is provided below. A map describing this closure is provided in Appendix 7.

The Area "A" Crab Association, though 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.

5.1.1 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.

5.1.1.1 Ganges Harbour, Chart 3478, NAD 83

The channel is 110 meters wide by two nautical miles long; bearing 308º true inbound and 128º 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 90º 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 48º50.096, Longitude 123º27.191'W
Outer South, Latitude 48º50.057'N, Longitude 123º27.251'W
Inner North, Latitude 48º51.134'N, Longitude 123º29.241'W
Inner South, Latitude 48º51.127'N, Longitude 123º29.367'W

5.1.1.2 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 48º40.234'N, Longitude 123º23.850'W
South East point Latitude 48º40.183'N, Longitude 123º23.916'W
Bearing 290º True Inbound
Bearing 110º 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 48º40'25"N / 123º24'33"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 48º40'43"N, longitude 123º24'45"W which is at the port hand day mark (square green/white).

5.1.1.3 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

5.1.1.4 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

5.2.1 Area A Year Round Crab Closures

The following areas are closed permanently to commercial crab harvesting:

5.2.1.1 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 [surfline] 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 surfline 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).

5.2.1.2 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)

5.2.1.3 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]

5.2.1.4 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 53º11'52.9" North latitude and 130º19'47.2" West longitude, to a point having coordinate values of 53º09'22.0" North latitude and 130º18'53.0" West longitude, then to a point having coordinate values of 53º02'54.5" North latitude and 130º25'16.2" West longitude, then to a point having coordinate values of 53º03'06.9" North latitude and 130º30'35.6" West longitude, then to a point having coordinate values of 53º07'17.8" North latitude and 130º42'03.2" West longitude, then to a point having coordinate values of 53º07'44.5" North latitude and 130º46'26.5" West longitude, then to a point having coordinate values of 53º13'28.7" North latitude and 130º47'28.7" West longitude, then to a point having coordinate values of 53º19'20.0" North latitude and 130º54'24.2" West longitude, then to a point having coordinate values of 53º24'05.4" North latitude and 130º48'37.8" West longitude then to a point having coordinate values of 53º23'40.7" North latitude and 130º42'52.2" West longitude then to a point having coordinate values of 53º18'42.5" North latitude and 130º38'09.3" West longitude, then to a point having coordinate values of 53º15'20.6" North latitude and 130º33'01.3" 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 53º18'40.4" North latitude and 130º52'46.5" West longitude, to a point having coordinate values of 53º22'12.1" North latitude and 130º47'01.7" West longitude, then to a point having coordinate values of 53º22'20.2" North latitude and 130º43'12.5" West longitude, then to a point having coordinate values of 53º17'22.8" North latitude and 130º38'18.2" West longitude, then to a point having coordinate values of 53º15'01.7" North latitude and 130º36'35.5" West longitude, then to a point having coordinate values of 53º10'55.2" North latitude and 130º20'19.3" West longitude, then to a point having coordinate values of 53º04'30.2" North latitude and 130º25'53.6" West longitude, then to a point having coordinate values of 53º04'58.0" North latitude and 130º32'16.9" West longitude then to a point having coordinate values of 53º07'22.2" North latitude and 130º37'37.6" West longitude, then to a point having coordinate values of 53º08'36.6" North latitude and 130º39'29.5" West longitude, then to a point having coordinate values of 53º08'41.8" North latitude and 130º45'40.0" West longitude, then to a point having coordinate values of 53º13'51.2" North latitude and 130º46'41.2" 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 52º00'24.4" North latitude and 129º14'12.6" West longitude, to a point having coordinate values of 51º55'50.5" North latitude and 129º18'13.8" West longitude, then to a point having coordinate values of 51º51'32.5" North latitude and 129º36'37.4" West longitude, then to a point having coordinate values of 51º53'00.7" North latitude and 129º44'03.4" West longitude, then to a point having coordinate values of 52º05'14.1" North latitude and 129º36'14.1" West longitude, then to a point having coordinate values of 52º08'46.0" North latitude and 129º33'33.5" West longitude, then to a point having coordinate values of 52º15'42.6" North latitude and 129º44'12.3" West longitude, then to a point having coordinate values of 52º29'35.4" North latitude and 129º52'32.7" West longitude, then to a point having coordinate values of 52º32'05.4" North latitude and 129º53'06.2" West longitude, then to a point having coordinate values of 52º34'05.6" North latitude

and 129º47'51.4" West longitude, then to a point having coordinate values of 52º25'42.7" North latitude and 129º35'12.2" West longitude, then to a point having coordinate values of 52º20'02.8" North latitude and 129º29'51.7" West longitude, then to a point having coordinate values of 52º09'52.3" North latitude and 129º25'29.5" 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 52º14'03.4" North latitude and 129º38'33.2" West longitude, to a point having coordinate values of 52º16'54.8" North latitude and 129º43'13.4" West longitude, then to a point having coordinate values of 52º21'57.1" North latitude and 129º43'56.5" West longitude, then to a point having coordinate values of 52º24'24.5" North latitude and 129º47'22.8" West longitude, then to a point having coordinate values of 52º29'05.9" North latitude and 129º50'59.4" West longitude, then to a point having coordinate values of 52º31'05.2" North latitude and 129º50'13.9" West longitude, then to a point having coordinate values of 52º31'06.7" North latitude and 129º47'40.9" West longitude, then to a point having coordinate values of 52º27'42.0" North latitude and 129º40'25.1" West longitude, then to a point having coordinate values of 52º25'22.9" North latitude and 129º37'24.0" West longitude, then to a point having coordinate values of 52º19'47.0" North latitude and 129º32'43.2" West longitude, then to a point having coordinate values of 52º16'18.2" North latitude and 129º33'22.8" 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 51º54'43.1" North latitude and 129º41'22.2" West longitude, to a point having coordinate values of 52º01'22.5" North latitude and 129º35'48.4" West longitude, then to a point having coordinate values of 52º05'13.5" North latitude and 129º34'32.5" West longitude, then to a point having coordinate values of 52º08'48.5" North latitude and 129º31'44.1" West longitude then to a point having coordinate values of 52º08'51.3" North latitude and 129º29'18.0" West longitude, then to a point having coordinate values of 52º04'27.1" North latitude and 129º21'17.3" West longitude, then to a point having coordinate values of 51º59'40.8" North latitude and 129º15'23.9" West longitude, then to a point having coordinate values of 51º56'04.5" North latitude and 129º18'46.2" West longitude, then to a point having coordinate values of 51º52'55.7" North latitude and 129º36'49.8" 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 51º24'44.2" North latitude and 128º47'58.3" West longitude, to a point having coordinate values of 51º18'32.5" North latitude and 128º40'35.6" West longitude, then to a point having coordinate values of 51º14'57.6" North latitude and 128º47'01.2" West longitude, then to a point having coordinate values of 51º14'33.9" North latitude and 128º55'45.5" West longitude, then to a point having coordinate values of 51º17'42.3" North latitude and 129º00'29.0" West longitude, then to a point having coordinate values of 51º19'24.5" North latitude and 129º00'53.6" 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 51º17'59.2" North latitude and 128º57'31.9" West longitude, to a point having coordinate values of 51º19'30.8" North latitude and 128º58'22.7" West longitude, then to a point having coordinate values of 51º23'41.9" North latitude and 128º48'50.9"

West longitude, then to a point having coordinate values of 51º19'17.5" North latitude and 128º42'33.6" West longitude, then to a point having coordinate values of 51º18'24.5" North latitude and 128º42'37.7" West longitude, then to a point having coordinate values of 51º15'56.0" North latitude and 128º47'04.2" West longitude, then to a point having coordinate values of 51º15'52.2" North latitude and 128º54'20.4" West longitude, then back to the point of Commencement.

5.2.2 Area A Seasonal Crab Closures

5.2.2.1 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, 2020. 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).

5.2.2.2 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, 2020. 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, 2020 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, 2020 (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, 2020 and November 1, 2020 and 00:01 h January 1, 2021 and March 31, 2021 is one-half the total trap allocation indicated on the vessel licence.

5.2.2.3 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, 2020. **Ring net fishery only**. (Soft-shell Closure)

5.2.3 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.

5.3.1 Area B Year Round Crab Closures

The following areas are closed permanently to commercial crab harvesting:

5.3.1.1 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 55º00.000'N 130º01.000'W then to 54º58.200'N 129º55.000'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).

5.3.1.2 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).

5.3.1.3 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.

5.3.1.4 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)

5.3.1.5 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)

5.3.1.6 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)

5.3.1.7 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)

5.3.1.8 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)

5.3.1.9 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)

5.3.1.10 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)

5.3.1.11 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)

5.3.1.12 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)

5.3.1.13 Fitz Hugh Sound:

Subarea 8-3:

Those waters of Fitz Hugh Sound including the Koeye 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).

5.3.1.14 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)

5.3.1.15 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)

5.3.1.16 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)

5.3.2 Area B Seasonal Crab Closures

Please see Table 2.8.4 for the applicable open times.

5.3.2.1 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).

5.3.2.2 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 dues 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 September 15 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 opening date of October 1, closure date of November 9, and closure area boundary may be changed pre-season based on consultation.

5.3.2.3 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)

5.3.2.4 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)

5.3.2.5 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)

5.3.2.6 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).

5.3.2.7 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)

5.3.2.8 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).

5.3.2.9 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)

5.3.2.10 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 to51°38.301'N 127°26.792'W [near Scandinavia Bay]. (First Nations and Recreational Access Closure)

5.3.3 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

5.4.1 Area E Year Round Crab Closures

The following areas are closed permanently to commercial crab harvesting:

5.4.1.1 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)

5.4.1.2 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'.

5.4.1.3 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)

5.4.1.4 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)

5.4.1.5 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)

5.4.1.6 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)

5.4.1.7 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)

5.4.1.8 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)

5.4.2 Area E Seasonal Crab Closures

5.4.2.1 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)

5.4.2.2 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.

5.4.2.3 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)

5.4.2.4 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°31.429W [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)

5.4.3 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

5.5.1 Areas G Year Round Crab Closures

The following areas are closed permanently to commercial crab harvesting:

5.5.1.1 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)

5.5.1.2 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°11.487N 125°20.344W. (Dioxin Closure)

That portion of Subarea 13-10 east of a line that begins at 50°17.702N 125°18.922W [Chonat Point] then to 50°17.367N 125°18.922W. (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 10.347W 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)

5.5.1.3 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)

5.5.1.4 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)

5.5.2 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

5.6.1 Area H Year Round Crab Closures

The following areas are closed permanently to commercial crab harvesting:

5.6.1.1 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

5.6.1.2 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.

5.6.1.3 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)

5.6.1.4 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).

5.6.1.5 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°58.283N 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).

5.6.1.6 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)

5.6.1.7 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.

5.6.1.8 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)

5.6.1.9 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)

5.6.1.10 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)

5.6.1.11 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)

5.6.1.12 Sidney Spit:

Those waters easterly of a line that begins at 48º39.223'N 123º 20.763'W [navigation light at the north end of Sidney Island] then to 48º38.245'N 123º20.437'W then following the shoreline to the beginning point. (Recreational Access Closure)

5.6.1.13 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 48º39.18'N 123º29.35W then to 48º39.18'N 123º29.02'W then to 48º38.97'N 123º29.02'W then to 48º38.97'N 123º29.35'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

5.6.1.14 Victoria Harbour:

That portion of Subarea 19-1 inside a line that begins at 48º26.444'N 123º23.267'W [Chapman Point] then to 48º26.409'N 123º23.317'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)

5.6.1.15 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)

5.6.1.16 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'.

5.6.1.17 Ganges Harbour:

No buoys are permitted in that portion of Subarea 18-3 shown in Appendix 7. (Navigation Closure)

5.6.1.18 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)

5.6.1.19 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)

5.6.1.20 Esquimalt Harbour

As a precautionary measure, Esquimalt Harbour (Subarea 19-2) was closed on May 10th, 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)

5.6.1.21 Tsehum Harbour:

No buoys are permitted in that portion of Subarea 19-5 shown in Appendix 7. (Navigation Closure)

5.6.1.22 Cordova Channel:

Those waters of Subarea 19-5 inside a line that begins at 48º35.990'N and 123º23.400'W [Turgoose Point] then to 48º37.040' N 123º22.780' W [light off NW point of James Island] then following the shoreline of James Island to 48º35.370' N 123º20.960' W then to 48º33.490'N 123º21.750'W [Cowichan Head] then northerly following the shoreline to the beginning point, (First Nations FSC and Recreational Access Closure)

5.6.2 Area H Seasonal Crab Closures

5.6.2.1 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)

5.6.2.2 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)

5.6.2.3 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)

5.6.3 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

5.7.1 Area I Year Round Crab Closures

The following areas are closed permanently to commercial crab harvesting:

5.7.1.1 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 1st, 2020 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.

5.7.1.2 Roberts Bank/Deltaport/Tsawwassen BC Ferries:

Portions of Subarea 29-7 are closed to commercial fishing in 2020. 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° 08.783West 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.

5.7.1.3 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 2020 fishery. For additional information see: http://venus.uvic.ca/

5.7.2 Area I Seasonal Crab Closures

5.7.2.1 Fraser River:

Areas 28 and 29, excluding Subareas 29-5 and 29-8 are closed January 1 to 08:00 hours June 15, 2020 and from 16:00 hours November 30 to December 31, 2020, (Soft-shell and Conservation Closure).

5.8 Boundary Bay - Area J

5.8.1 Area J Seasonal Crab Closures

5.8.1.1 Boundary Bay:

Subarea 29-8 is closed January 1 to 08:00 hours July 15, 2020 and 16:00 hours November 30 to December 31, 2020. For 2020, the two day bait ban has been removed. (Soft-shell and Conservation Closure)

5.9 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:

5.9.1 Area 6

5.9.1.1 Subarea 6-2 (First Nations FSC access closure)

5.9.2 Area 13

5.9.2.1 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)

5.9.2.2 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)

5.9.3 Area 14

5.9.3.1 Hornby Island:

Those waters of Lambert Channel and the Strait of Georgia, Subarea 14-7, inside a line commencing at Shingle Spit on Hornby Island, thence 239º true for 0.5 nautical miles, thence 126º true for 3.5 nautical miles, thence 64º true for 4.9 nautical miles, thence 304º true for 2.9 nautical miles, thence 213º true for 0.5 nautical miles to Cape Gurney on Hornby Island. (Marine Reserve)

5.9.3.2 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)

5.9.4 Area 15

5.9.4.1 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)

5.9.4.2 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)

5.9.4.3 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)

5.9.4.4 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)

5.9.4.5 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)

5.9.4.6 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)

5.9.5 Area 16

5.9.5.1 Skookumchuck Narrows Provincial Park

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

5.9.6 Area 19

5.9.6.1 Ogden Point

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

5.9.6.2 10 Mile Point

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

5.9.6.3 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 2020. Changes to boundary descriptions resulting from consolations may occur in season.

5.9.6.4 Saanich Inlet

Subareas 19-7 to 19-12 inclusive. (First Nations FSC and Recreational access closure)

5.9.7 Area 20

5.9.7.1 Botanical Beach Provincial Park

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

5.9.7.2 Pacific Rim National Park, Juan de Fuca

That portion of Subarea 20-1 between the lowest low water on record and the highest high water on record from Bonilla Light thence following the shoreline of Vancouver Island easterly to Owen Point. (Park)

5.9.8 Area 21

5.9.8.1 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)

5.9.9 Area 23

5.9.9.1 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)

5.9.9.2 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)

5.9.9.3 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)

5.9.10 Area 26

5.9.10.1 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)

5.9.10.2 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)

5.9.11 Area 28

5.9.11.1 Porteau Cove

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

5.9.11.2 Whytecliff Park

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

5.9.11.3 Burrard Inlet

Subarea 28-10. (Navigational Closure)

5.9.11.4 False Creek

Subarea 28-8. (Navigational Closure)

6. LICENCING

6.1 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.

6.2 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 31will 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 Licencing 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, 2020**.

6.3 Licence Documents

Crab by Trap licence documents are valid from the date of issue to March 31 of the following calendar year. Replacement for lost or destroyed licence documents may be obtained by reprinting the licence document through the licence holders account via the National Online Licencing System.

6.4 Trap Re-allocation

Temporary crab trap re-allocation (stacking) will be permitted on an annual basis in Areas B, 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 before licenses are issued. No exceptions. Please refer the Notice to Industry for more information and the deadline date.

Trap reallocations cannot be reversed once the transaction has been completed.

6.5 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.

6.6 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 Human Waste Containment Regulations

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

Portable toilets or other designated human waste receptacles shall be used only for the purpose intended, and shall be so secured and located as to prevent contamination of the shellfish area or any harvested shellfish on board by spillage or leakage.

The contents of toilets or other designated human waste receptacles shall be emptied only into an approved sewage disposal system.

Every person onboard a shellfish harvest vessel must wash and sanitize their hands after using or cleaning a waste receptacle, or after using an onshore washroom facility.

Information on human waste containment receptacle requirements can be found at the following CFIA internet site: https://www.inspection.gc.ca/preventive-controls/fish/cssp/questions-and-answers/eng/1563470479199/1563470589053

7.4 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.

7.5 Vessel Safety & Stability

- Please see Appendix 4

APPENDIX 4: FISHING VESSEL SAFETY

TABLE OF CONTENTS

1. OVERVIEW – FISHING VESSEL SAFETY

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

In the federal government, responsibility for shipping, navigation and vessel safety regulations and inspections lies with TC; emergency response with the Canadian Coast Guard (CCG) and DFO has responsibility for management of the fisheries resources. The Transportation Safety Board is an independent agency that advances transportation safety by investigating selected occurrences in the air, marine, pipeline and rail modes of transportation including fishing vessel occurrences. In 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 (Subsidized rate for BC commercial fishers provided)
Fish Safe – Safest Catch Program – **FREE** for BC commercial fishers
First Aid training
Radio Operators Course (Subsidized rate for BC commercial fishers provided)
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)

Transportation Safety Board's investigation into fishing safety in Canada:

- http://www.bst-tsb.gc.ca/eng/rapports-reports/marine/etudes-studies/M09Z0001/M09Z0001.html
- 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
- www.fishsafebc.com
- www.worksafebc.com
- www.tsb.gc.ca

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 to correct ballasting. Fish harvesters must be familiar with their vessel's centre of gravity, the effect of liquid free surfaces on stability (e.g. loose water or fish on deck), loading and unloading operations, watertight integrity and the vessel's freeboard. Know the limitations of your vessel; if you are unsure, contact a 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.

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 for 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, new regulations pertaining to stability assessments to be performed by a competent person came into force, as follows:

- A new fishing vessel that has a hull length of more than 9 m – where the vessel construction was started or that a contract was signed for the construction after July 13, 2018;
- A fishing vessel more than 9 m and that has undergone a major modification or a change in activity that is likely to adversely affect its stability;
- A fishing vessel that is fitted with an anti-roll tank at any time;
- A fishing vessel more than 15 gross tonnage and used for catching herring or capelin during the period beginning on July 6, 1977 and ending on July 13, 2017.

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.

In 2008, TC updated SSB No. 01/2008, which sets out a voluntary record of modifications for the benefit of owners/masters of any fishing vessels. For vessels of more than 15 gross tons, the record of modifications was to be reviewed by TC inspectors during regular inspections and entered on the vessel's inspection record. However, information gathered during the Transportation Safety Board's (TSB) Safety Issues Investigation into the fishing industry showed minimal recording of vessel modifications prior to this date.

The TSB has investigated several fishing vessel accidents since 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*, M17P0052 – *Miss Cory and M18P0073 – Western Commander*.

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.

Fish Safe has developed a code of best practices for the food and bait/roe herring fisheries and the prawn fishery: These Best Practices are available on Fish Safe's website for convenient download here: https://www.fishsafebc.com/best-practices. Alternatively, 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.

2.2. Emergency Drill Requirements

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

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

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

WorkSafeBC's Occupational Health and Safety Regulation (OHSR) requires written rescue and evacuation procedures for work on or over water. Additionally, fishing vessel masters must establish procedures and assign responsibilities to each crew member to cover all emergencies, including the following: crew member overboard, fire on board, flooding of the vessel, abandoning ship, and calling for help. Fishing vessel masters are also required to conduct emergency drills at the start of each fishing season, when there is a change of crew, and at periodic intervals to ensure that crewmembers are familiar with emergency procedures.

Between 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 WorkSafeBC Bulletin *Cold Water Immersion* (available from the WorkSafeBC website at www.worksafebc.com)

Under the recently amended (June 2019) OHS Regulation, section 24.96.1, a crewmember must wear a PFD or lifejacket when on board a fishing vessel that has no deck or deck structure or when on the deck of a fishing vessel that has a deck or deck structure.

Section 8.26, which requires workers to wear a PFD or lifejacket when working "under conditions which involve a risk of drowning", would continue to apply to fishing crewmembers and other workers (e.g. when they are working on shore, docks and other vessels).

Current WorkSafeBC regulations essentially require fishers to always wear a PFD when working on deck. The specific requirements can be found on WorkSafeBC's PFD Primer provided on Fish Safe's website here: https://www.fishsafebc.com/cold-water-survival. 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

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

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).

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. WORKSAFE BC

WorkSafeBC exercises jurisdiction over workplace health and safety, including the activities of crews of fishing vessels. Commercial fishing, diving and other marine operations are subject to the provisions of the *Workers Compensation Act (WCA,)* and requirements in Part 24 of the Occupational Health and Safety Regulation (OHSR).

Examples of Part 24 regulatory requirements related to fishing include, but are not limited to, the requirement to establish emergency procedures, to conduct emergency drills, to provide immersion suits for the crew, to provide stability documentation for the vessel, safe work procedures, injury reporting, correction of unsafe working conditions, the requirement to wear personal flotation devices (PFDs), etc.

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

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

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

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

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

For further information, contact an Occupational Safety Officer:

Bruce Logan	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
Paul Matthews	Courtenay	(250) 334-8741
Wayne Tracy	Port Moody	(604) 232-1939

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

For information on projects and initiatives related to commercial fishing health and safety please contact Tom Pawlowski, Manager, Industry and Labour Services, at (604) 233-4062 or by email: 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.

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

Fish Safe is managed by 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
Program Manager
Fish Safe
#100, 12051 Horseshoe Way

Cell: (604) 739-0540
Office: (604) 261-9700
Email: ryan@fishsafebc.com

Richmond, BC V7A 4V4 www.fishsafebc.com

5. TRANSPORTATION SAFETY BOARD

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

In 2014 the TSB 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. TC 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 to require persons to wear suitable personal flotation devices at all times when on the deck of a commercial fishing vessel or when on board a commercial fishing vessel without a deck or deck structure and that programs are developed to confirm compliance. In June 2019, WorksafeBC amended its fishing regulation related to the use of PFDs. Under the new amendments, crewmembers must wear a PFD or lifejacket when on board a fishing vessel that has no deck or deck structure, or when on the deck of a fishing vessel that has a deck or deck structure. Crewmembers are not required to wear lifejackets or PFDs below deck or when inside a deck structure where there is risk of entrapment. This amendment removes the need for a risk of drowning to be present before a PFD must be worn.

For more information about the TSB, visit the website at www.tsb.gc.ca

For information about the TSB's investigation into fishing safety, or to view a brief video, visit:

http://www.tsb.gc.ca/eng/medias-media/videos/marine/m09z0001/index.asp

To view information on the TSB's recent safety Watchlist, visit: http://www.bst-tsb.gc.ca/eng/surveillance-watchlist/marine/2018/marine.html

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

Recently the TSB produced a Safe at Sea: Activity book on fishing safety intended for the next generation of fish harvesters (ages 4-7). Download a copy.

www.tsb.gc.ca › eng › medias-media › prudence-safe › safe-at-sea

Glenn Budden, Investigator, Marine - Fishing Vessels
Transportation Safety Board of Canada
4 - 3071 No. 5 Road
Richmond, BC, V6X 2T4

Telephone: (604) 619-6090

Email: glenn.budden@tsb-bst.gc.ca

CRAB TRAP HARVEST LOG

V.R.N. *Vessel Registration No.* Vessel *Vessel Name* **Year** 2018 Page No.

Fishing Method: (check all that apply) [ ] Singles [X] Ground Lines

Depth: (check one) [ ] Fathoms or [X] Meters

Catch Weight: (check one) [X] Pounds or [ ] Kilograms

Bait Fastener: (check all that apply) [X] 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 √ (specify if other)	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.		No. of Pieces	Weight						
1	03	15	2		51° 03.123′	127° 18.421′	1	3	14	20	√	96	156	195	Joe Happy	Joe Happy	54321		1
2	↓	↓	↓		50° 54.316′	127° 16.523′	12	13	4	8	√	24	38	50	Joe Happy	Joe Happy	54321		2
3	↓	18	3		51° 03.123′	127° 18.421′	1	3	14	20	√	72	117	195	John Smith	John Smith	12345		3
4																			4
5																			5
6																			6
7																			7
8																			8
9																			9
10																			10
11																			11
12																			12
13																			13
14																			14
15																			15

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*
Fishing Method	Indicate if the traps were attached to a Ground line, Single-buoyed or a mix of both (check all that apply)
Bait Fastener	Indicate if bait is in a Jar (container), in Cages or held on by a Clip or Hook (check all that apply)
Catch Weight	Check off if reporting weights in Pounds or Kilograms
Date Hauled	Month and day that gear was HAULED. Month (01 to 12); Day (01 to 31)
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.
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

TERM	*DESCRIPTION*
Depth	Check off if reporting in Fathoms or Meters. Record minimum and maximum depth of traps set.
Bait Type	Indicate bait used; for example herring, squid, salmon heads, etc.
Catch Information	Record the total count of crab retained and/or total weight of crab retained
Soak Time	Length of time that traps were in water fishing. Records as total DAYS soaked OR total HOURS soaked.
Pacific Fishery Management Area/Sub-area	Boundaries are defined in the *Pacific Fishery Management Area Regulations, 2007*. Must correspond to Latitude and Longitude recorded.
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	30
3	1	10

Line Number	Count of Octopus	Total Weight

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	200	(circular) square conical	Iron (Iron+Stainless) Stainless	36	12	(Stainless) Synthetic	110
#2	95	(circular) square conical	Iron Iron+Stainless (Stainless)	36	12	Stainless (Synthetic)	105
#3		circular square conical	Iron Iron+Stainless Stainless			Stainless Synthetic	

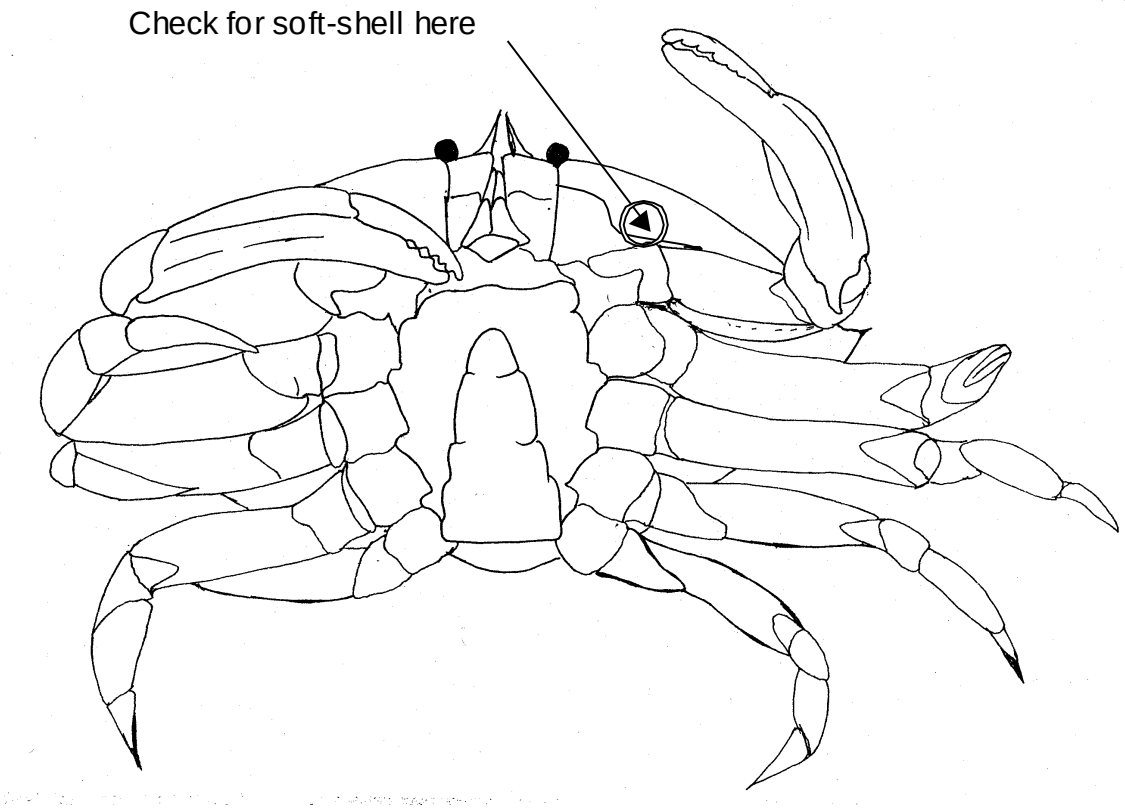
(original white copies) Mail to: **Fisheries and Oceans Canada Shellfish Data Unit, Pacific Biological Station, 3190 Hammond Bay Road, Nanaimo, BC, V9T 6N7**

revised December 2017

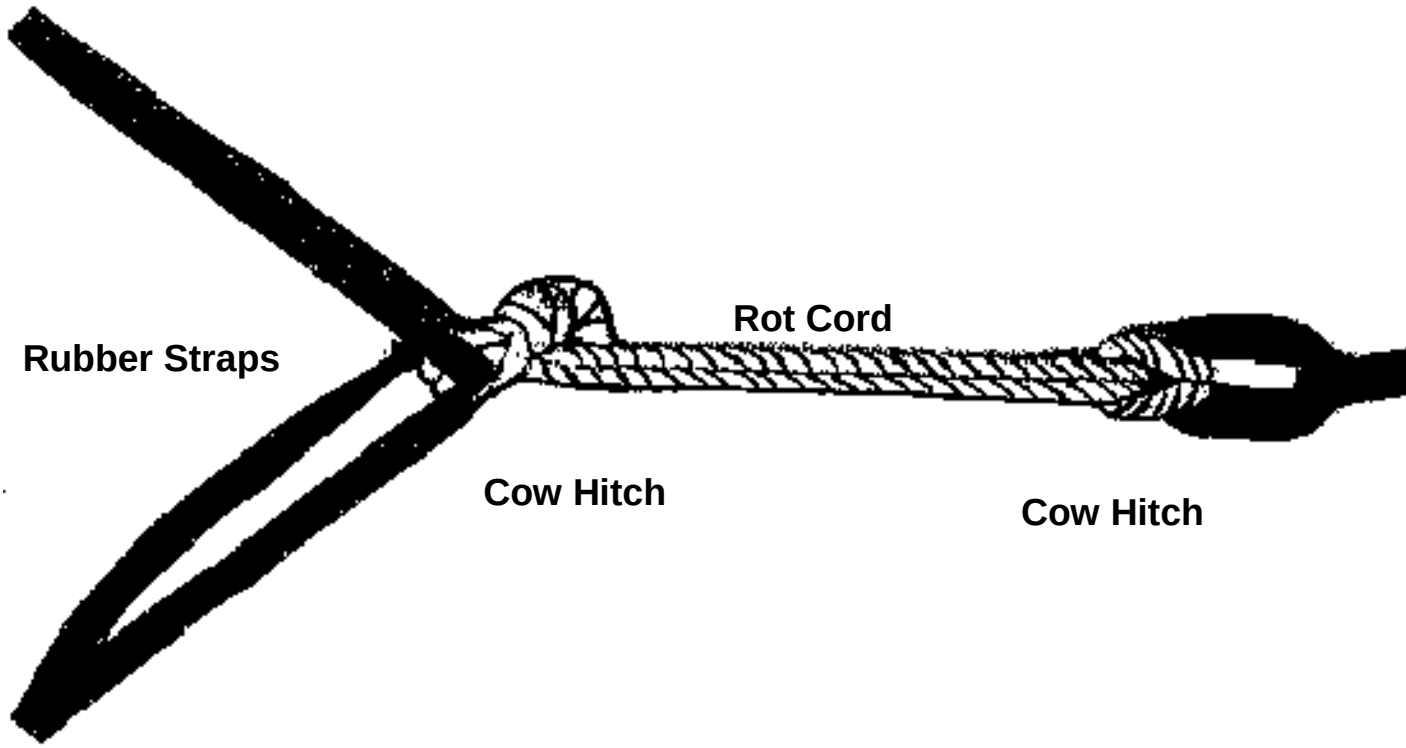
APPENDIX 6: DIAGRAMS

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.



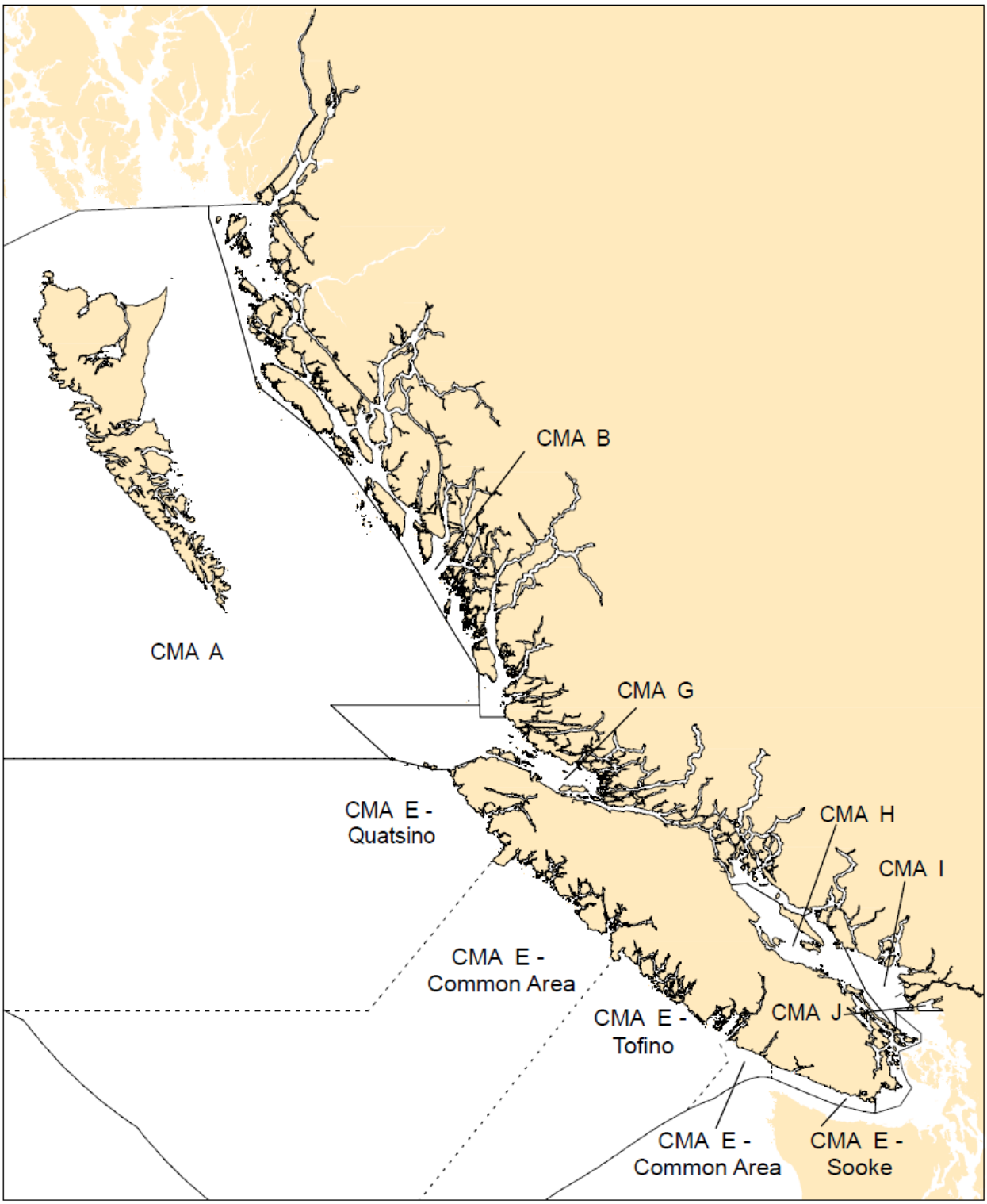
APPENDIX 6.2 ROT CHORD DIAGRAM PLACEMENT



APPENDIX 7: MAPS

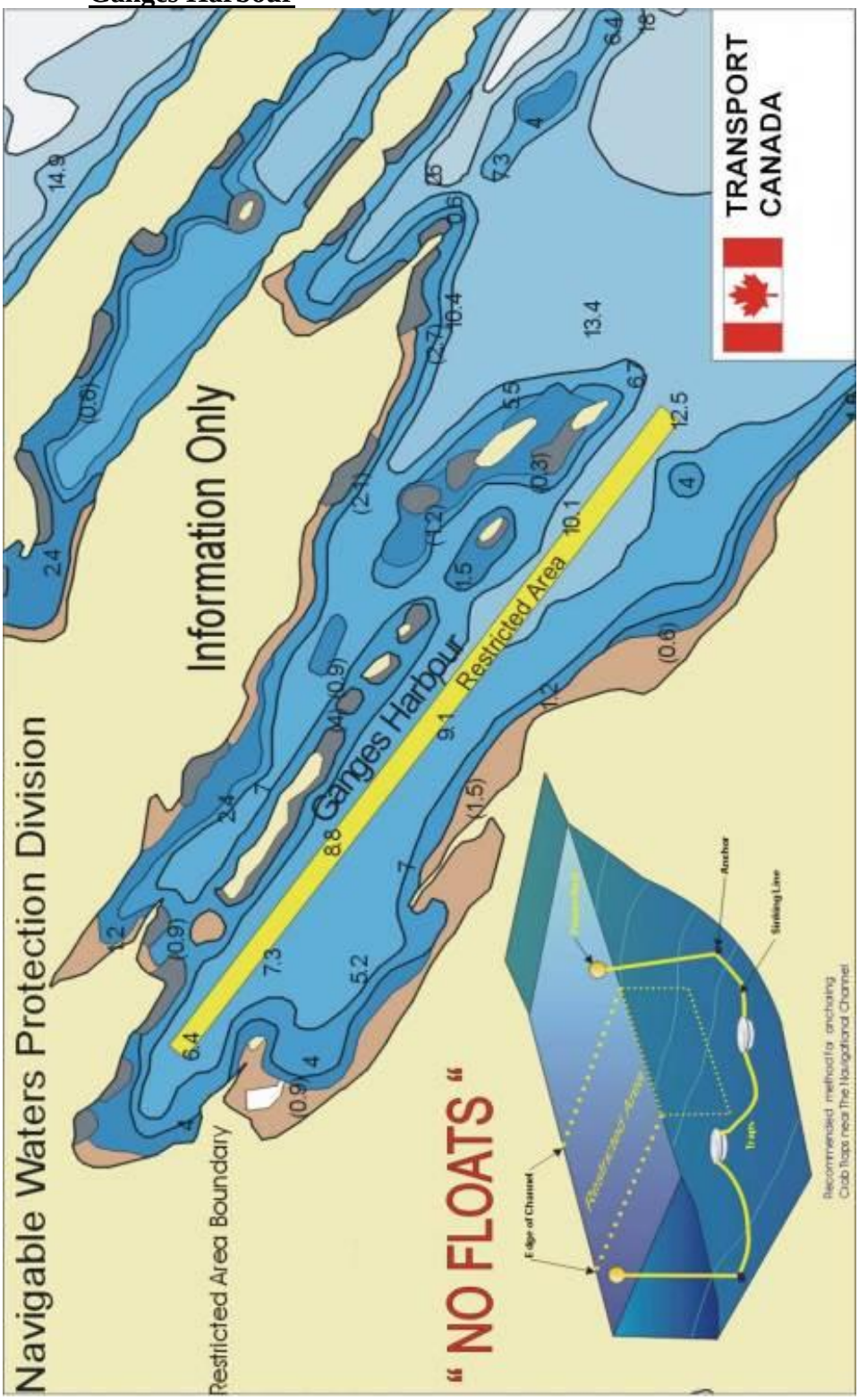
Table of Contents

7.1 Map of Commercial Crab Management Areas

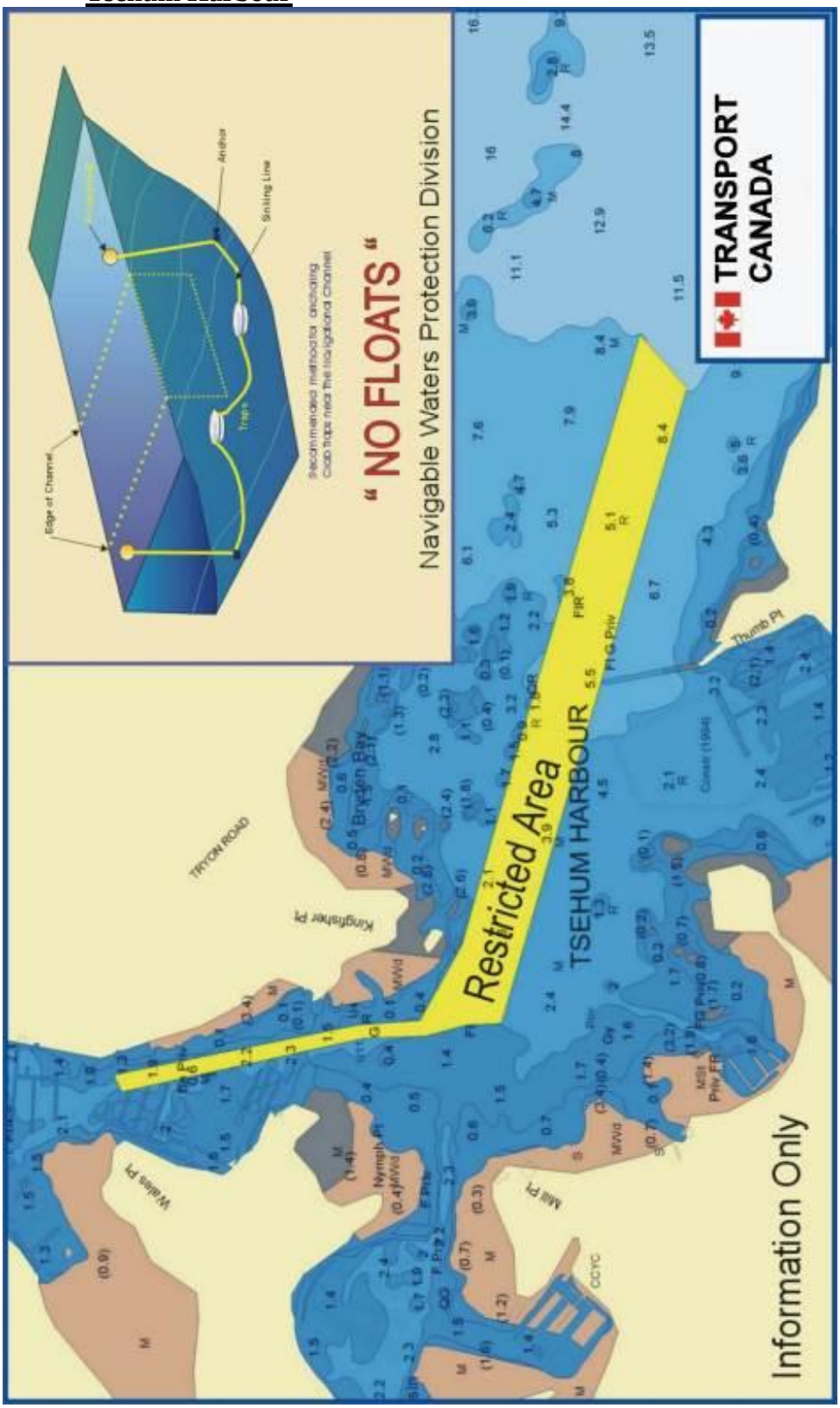


7.2 Maps of Restricted Fishing Areas

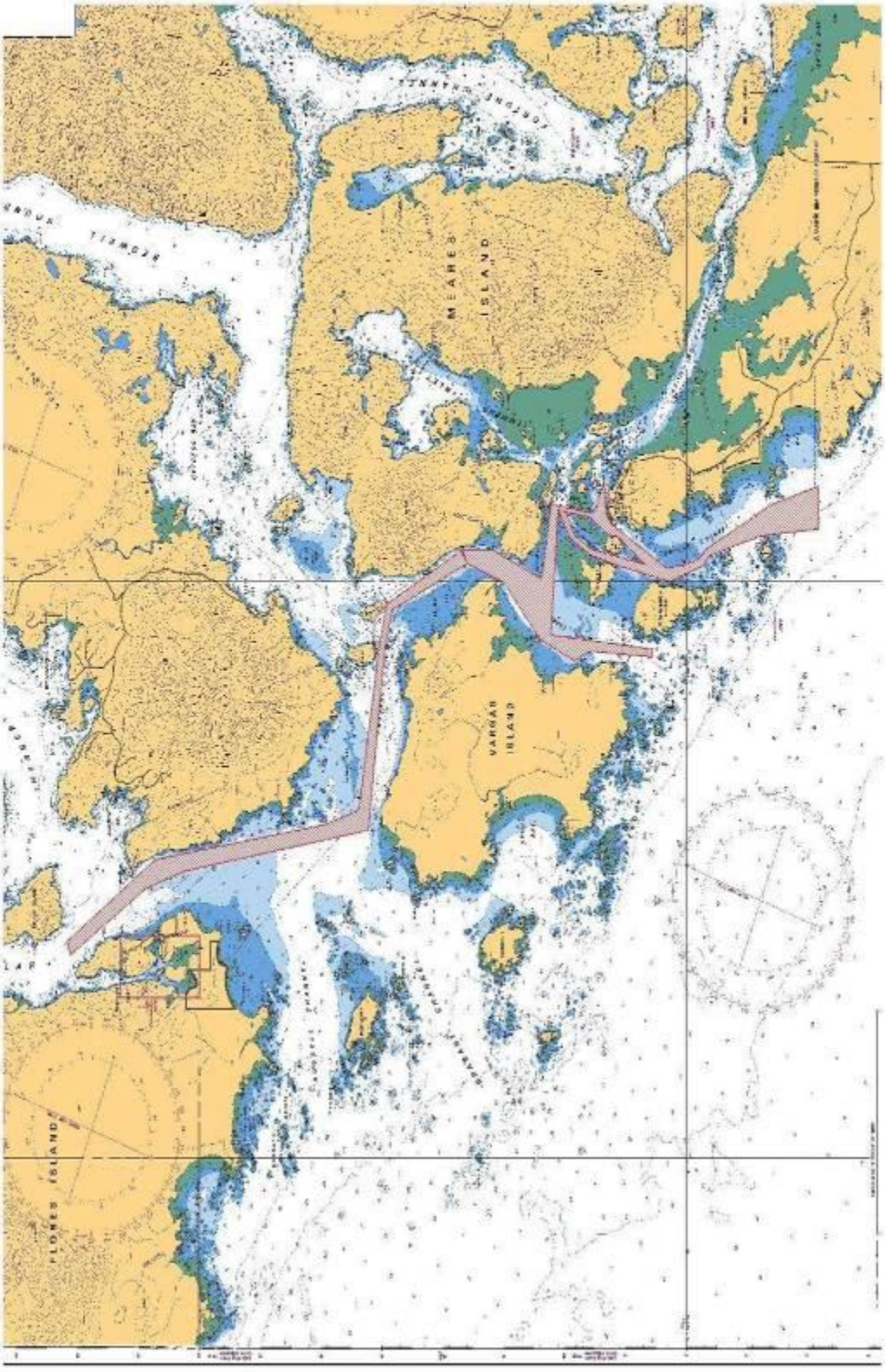
Ganges Harbour



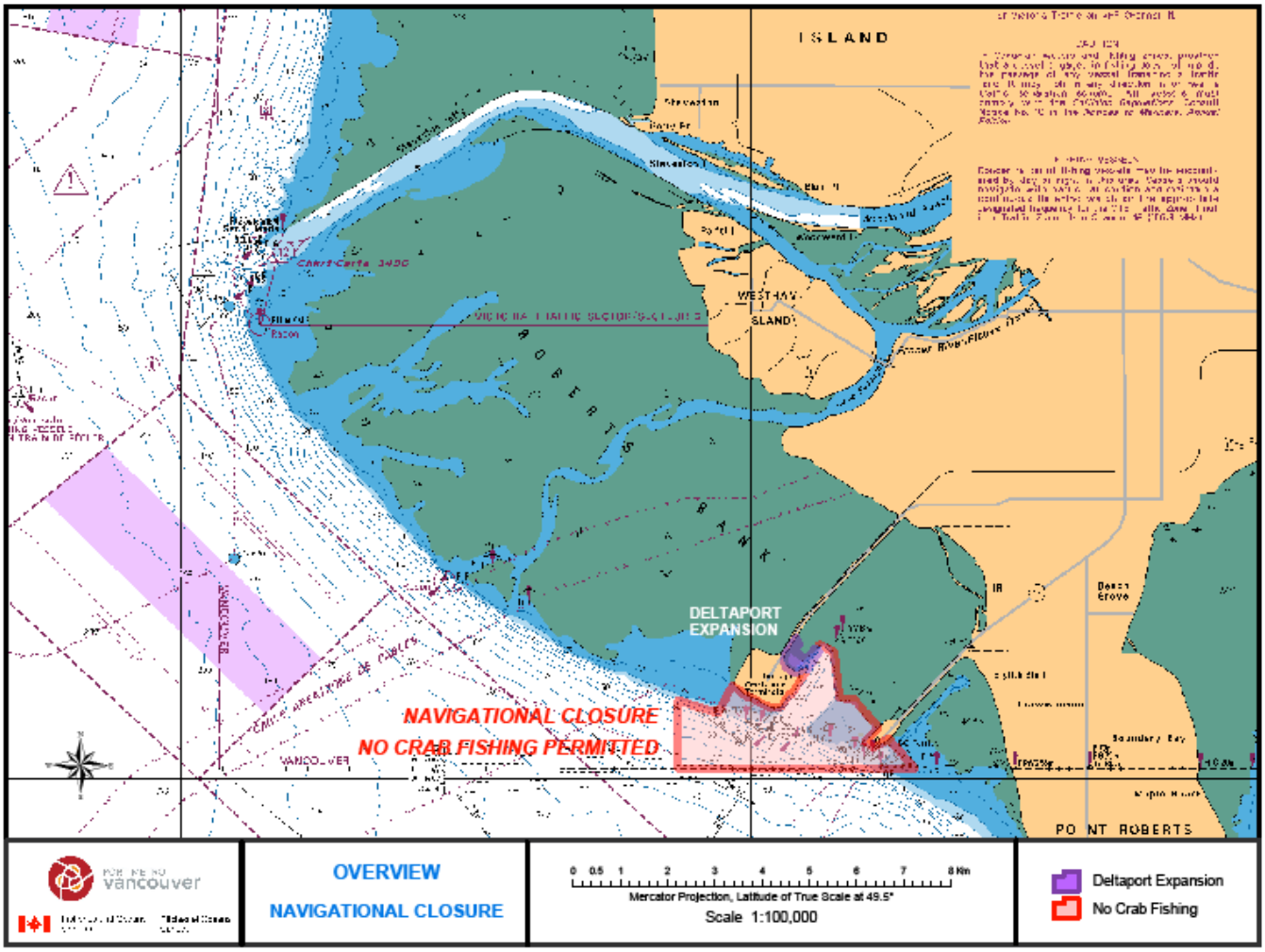
Tsehum Harbour



Tofino Area

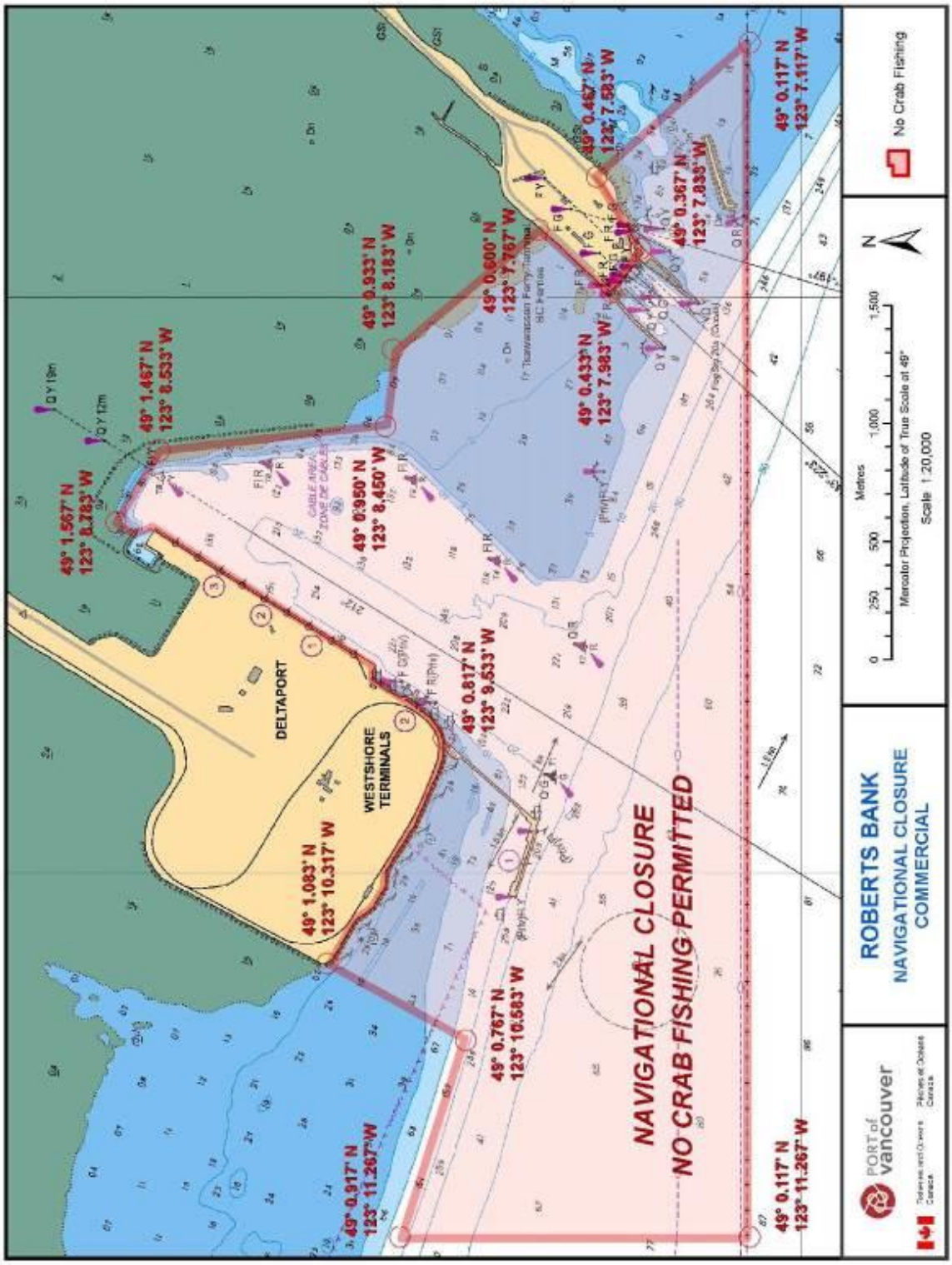


Deltaport, Roberts Bank: No Fishing Zone Overview

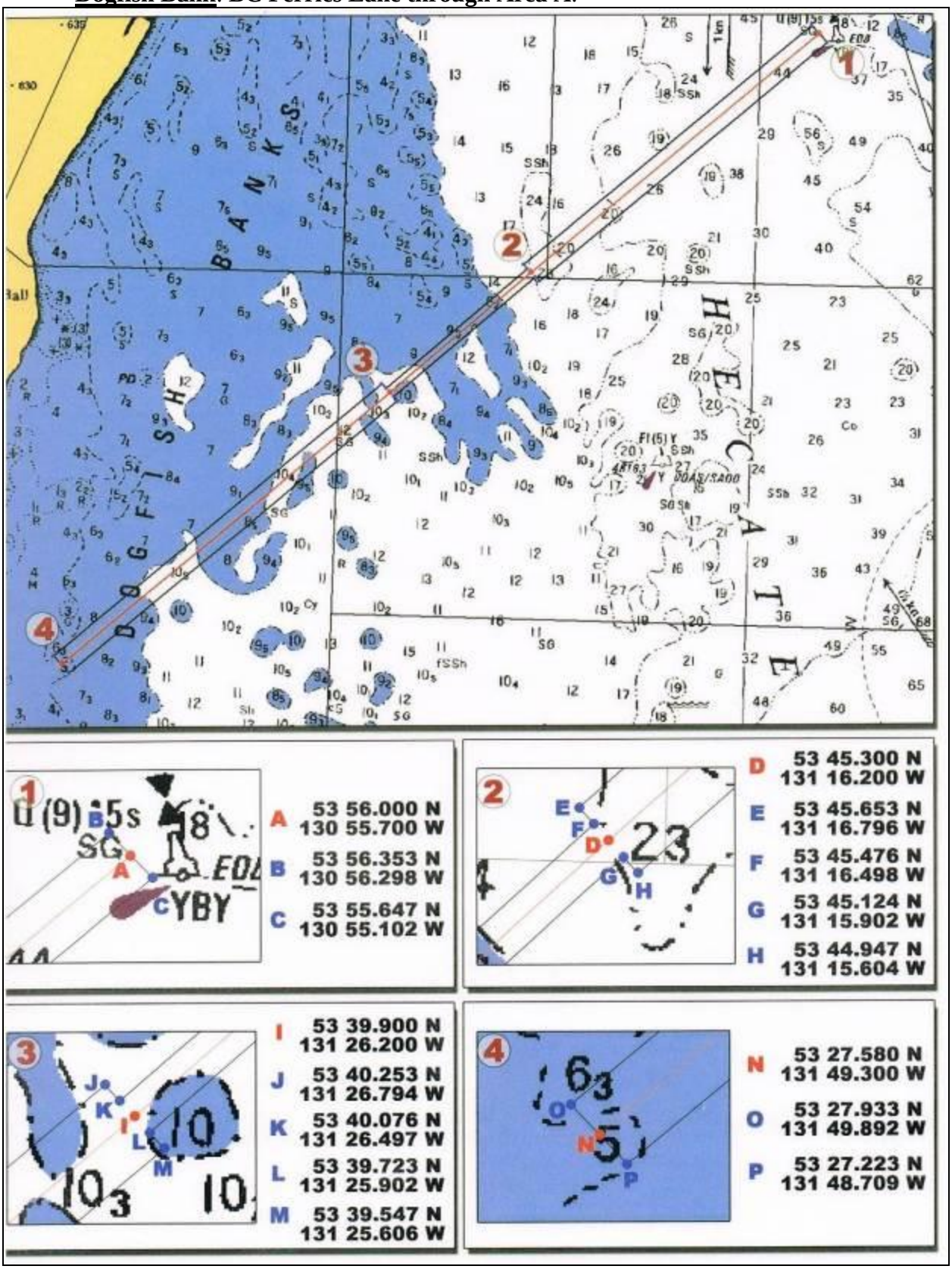


Map created on November 25, 2008.

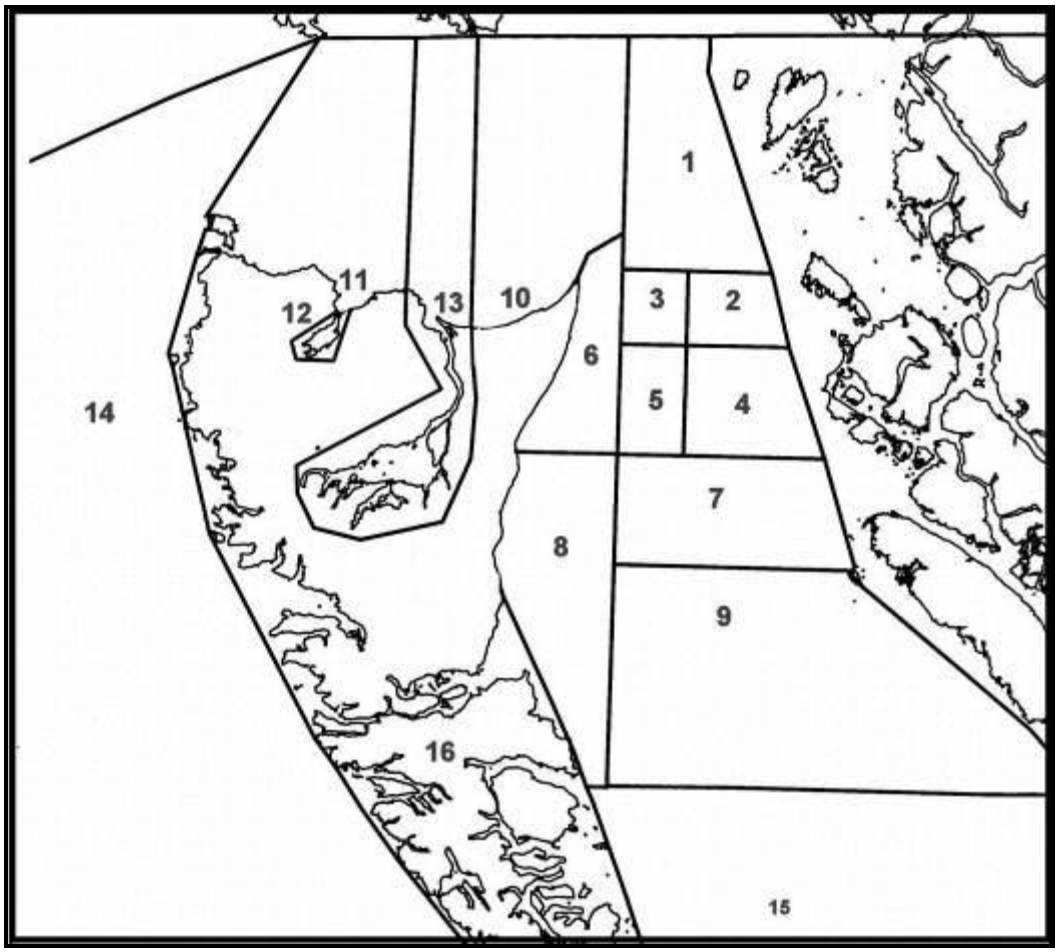
Deltaport, Roberts Bank: No Fishing Zone



<u>Dogfish Bank</u>: BC Ferries Lane through Area A.



7.3 Map of Area "A" Softshell-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.

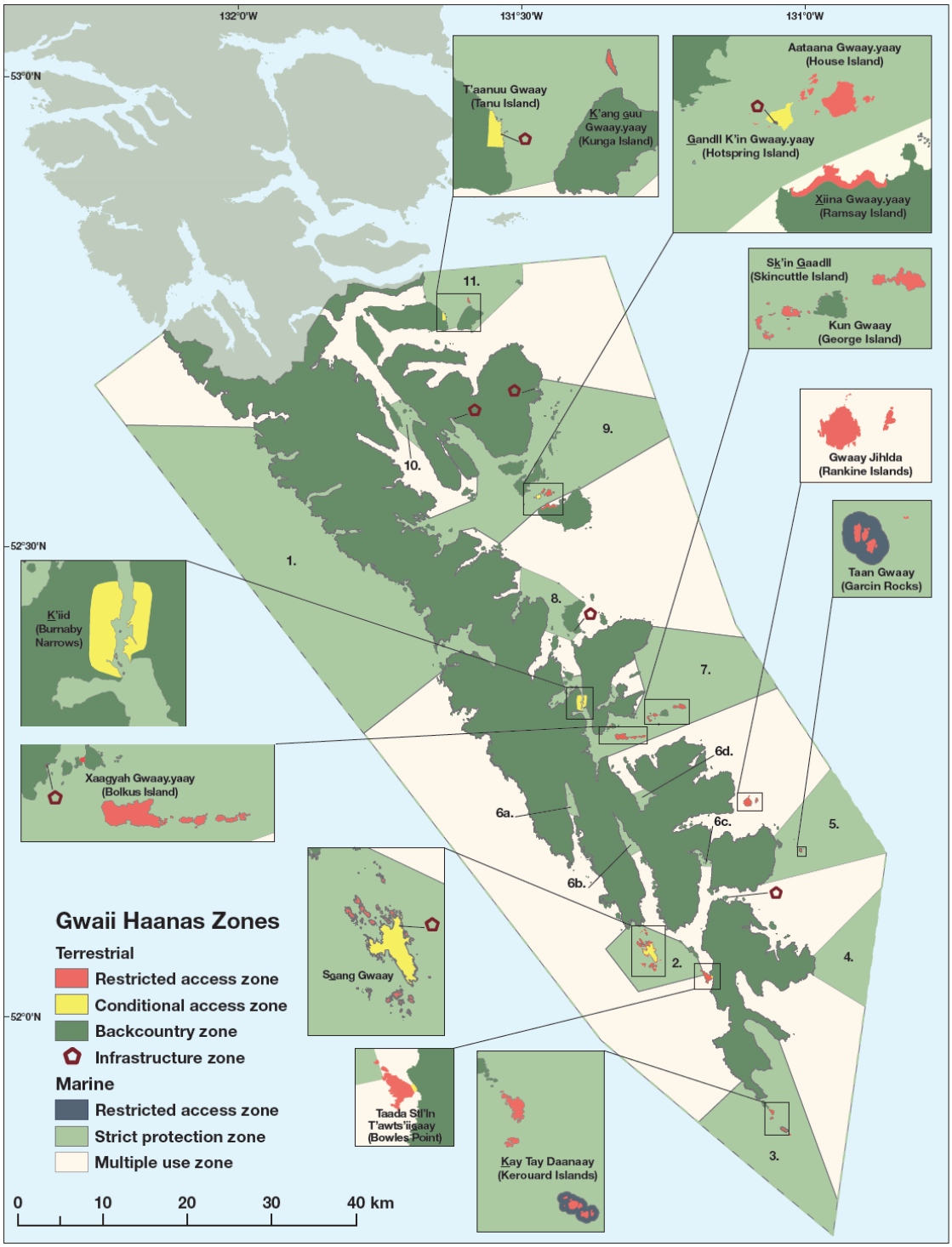
14. Areas 130 and 142, and Subareas 101-1, 101-2 and 101-3 (WCQCI)

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)

7.4 Gwaii Haanas National Marine Conservation Area Reserve and Haida Heritage Site

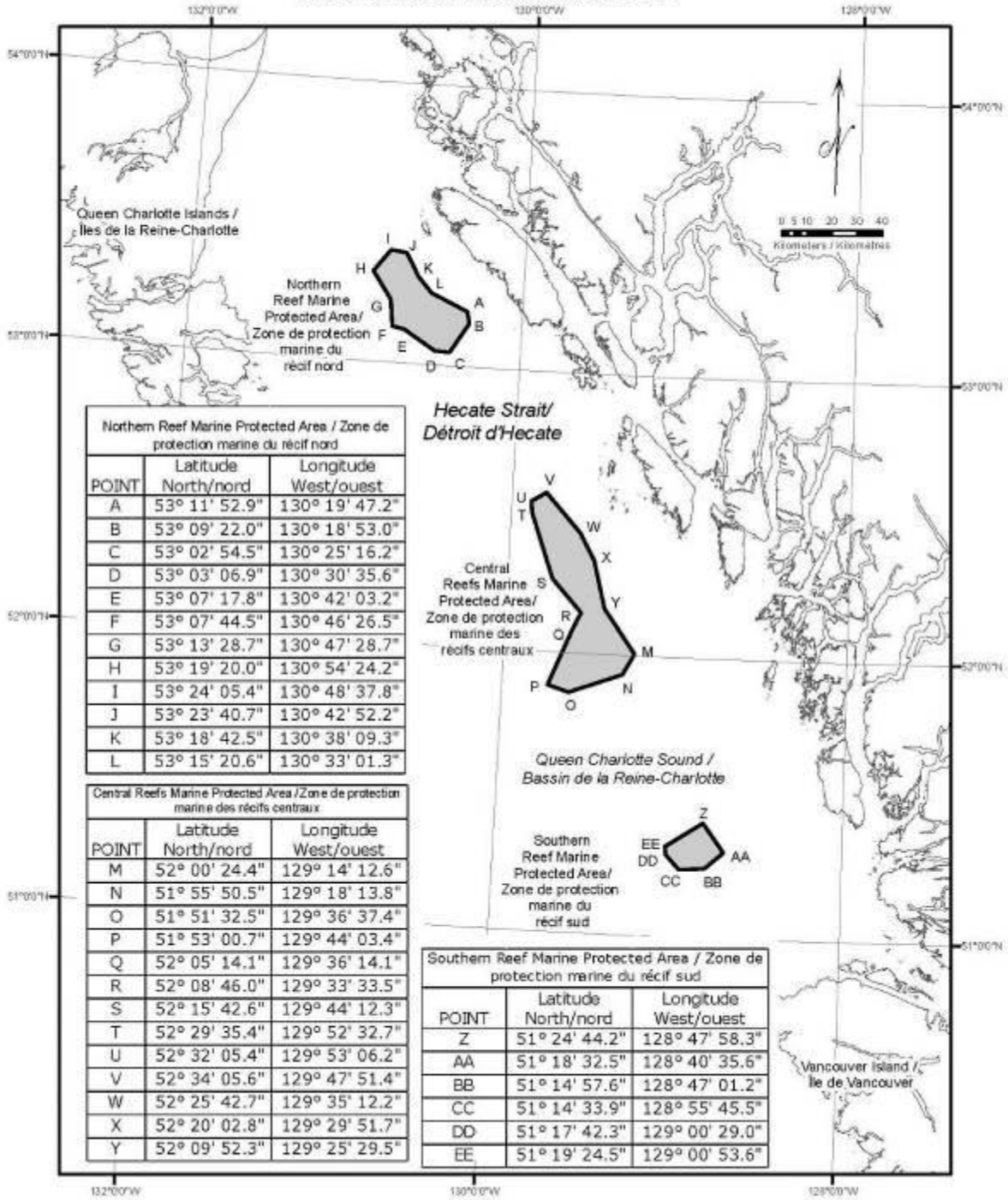
Description of Fully Protected Areas



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'HÉCATE
ET DU BASSIN DE LA REINE-CHARLOTTE



Northern Reef Marine Protected Area / Zone de protection marine du récif nord		
POINT	Latitude North/nord	Longitude West/ouest
A	53° 11' 52.9"	130° 19' 47.2"
B	53° 09' 22.0"	130° 18' 53.0"
C	53° 02' 54.5"	130° 25' 16.2"
D	53° 03' 06.9"	130° 30' 35.6"
E	53° 07' 17.8"	130° 42' 03.2"
F	53° 07' 44.5"	130° 46' 26.5"
G	53° 13' 28.7"	130° 47' 28.7"
H	53° 19' 20.0"	130° 54' 24.2"
I	53° 24' 05.4"	130° 48' 37.8"
J	53° 23' 40.7"	130° 42' 52.2"
K	53° 18' 42.5"	130° 38' 09.3"
L	53° 15' 20.6"	130° 33' 01.3"

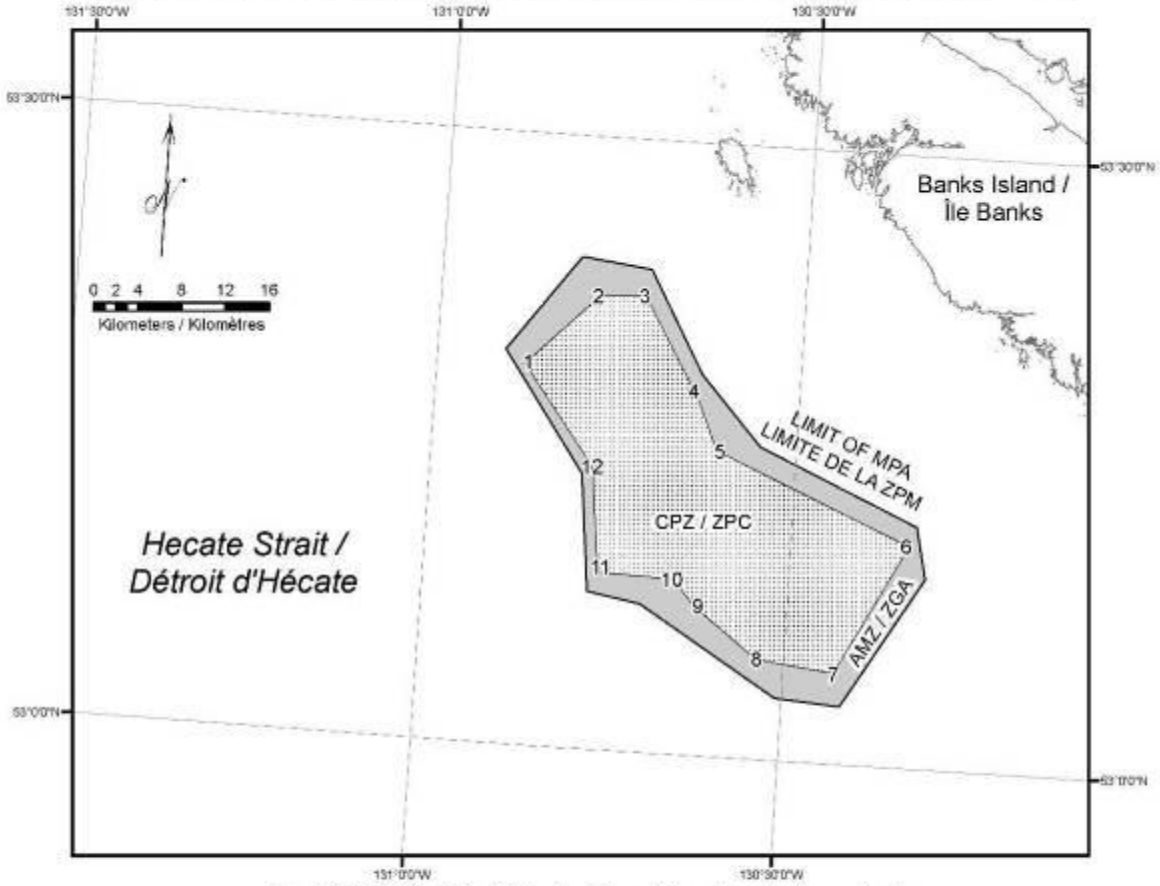
Central Reefs Marine Protected Area / Zone de protection marine des récifs centraux		
POINT	Latitude North/nord	Longitude West/ouest
M	52° 00' 24.4"	129° 14' 12.6"
N	51° 55' 50.5"	129° 18' 13.8"
O	51° 51' 32.5"	129° 36' 37.4"
P	51° 53' 00.7"	129° 44' 03.4"
Q	52° 05' 14.1"	129° 36' 14.1"
R	52° 08' 46.0"	129° 33' 33.5"
S	52° 15' 42.6"	129° 44' 12.3"
T	52° 29' 35.4"	129° 52' 32.7"
U	52° 32' 05.4"	129° 53' 06.2"
V	52° 34' 05.6"	129° 47' 51.4"
W	52° 25' 42.7"	129° 35' 12.2"
X	52° 20' 02.8"	129° 29' 51.7"
Y	52° 09' 52.3"	129° 25' 29.5"

Southern Reef Marine Protected Area / Zone de protection marine du récif sud		
POINT	Latitude North/nord	Longitude West/ouest
Z	51° 24' 44.2"	128° 47' 58.3"
AA	51° 18' 32.5"	128° 40' 35.6"
BB	51° 14' 57.6"	128° 47' 01.2"
CC	51° 14' 33.9"	128° 55' 45.5"
DD	51° 17' 42.3"	129° 00' 29.0"
EE	51° 19' 24.5"	129° 00' 53.6"

Northern Reef Area

SCHEDULE 2 / ANNEXE 2

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
NORTHERN REEF MARINE PROTECTED AREA / ZONE DE PROTECTION MARINE DU RÉCIF NORD

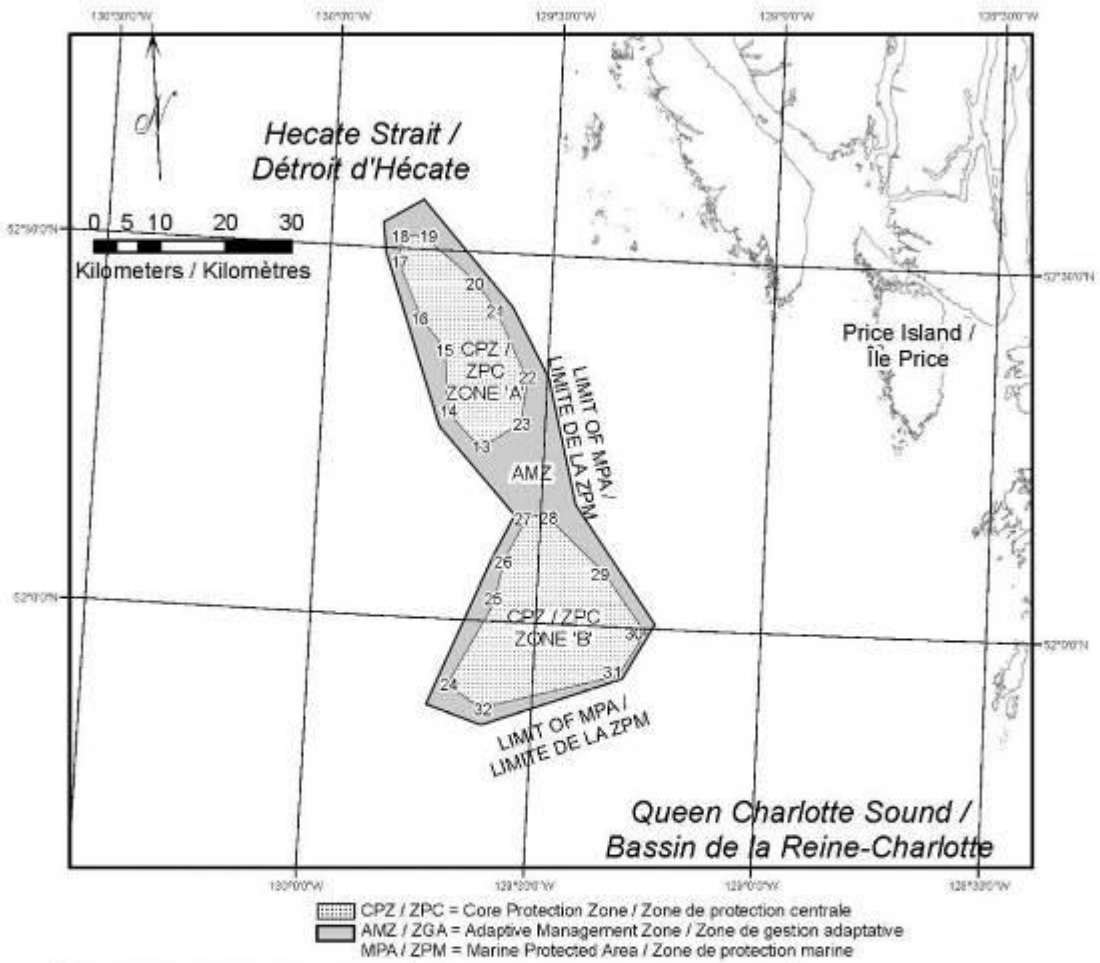


CPZ / ZPC = Core Protection Zone / Zone de protection centrale
AMZ / ZGA = Adaptive Management Zone / Zone de gestion adaptative
MPA / ZPM = Marine Protected Area / Zone de protection marine

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



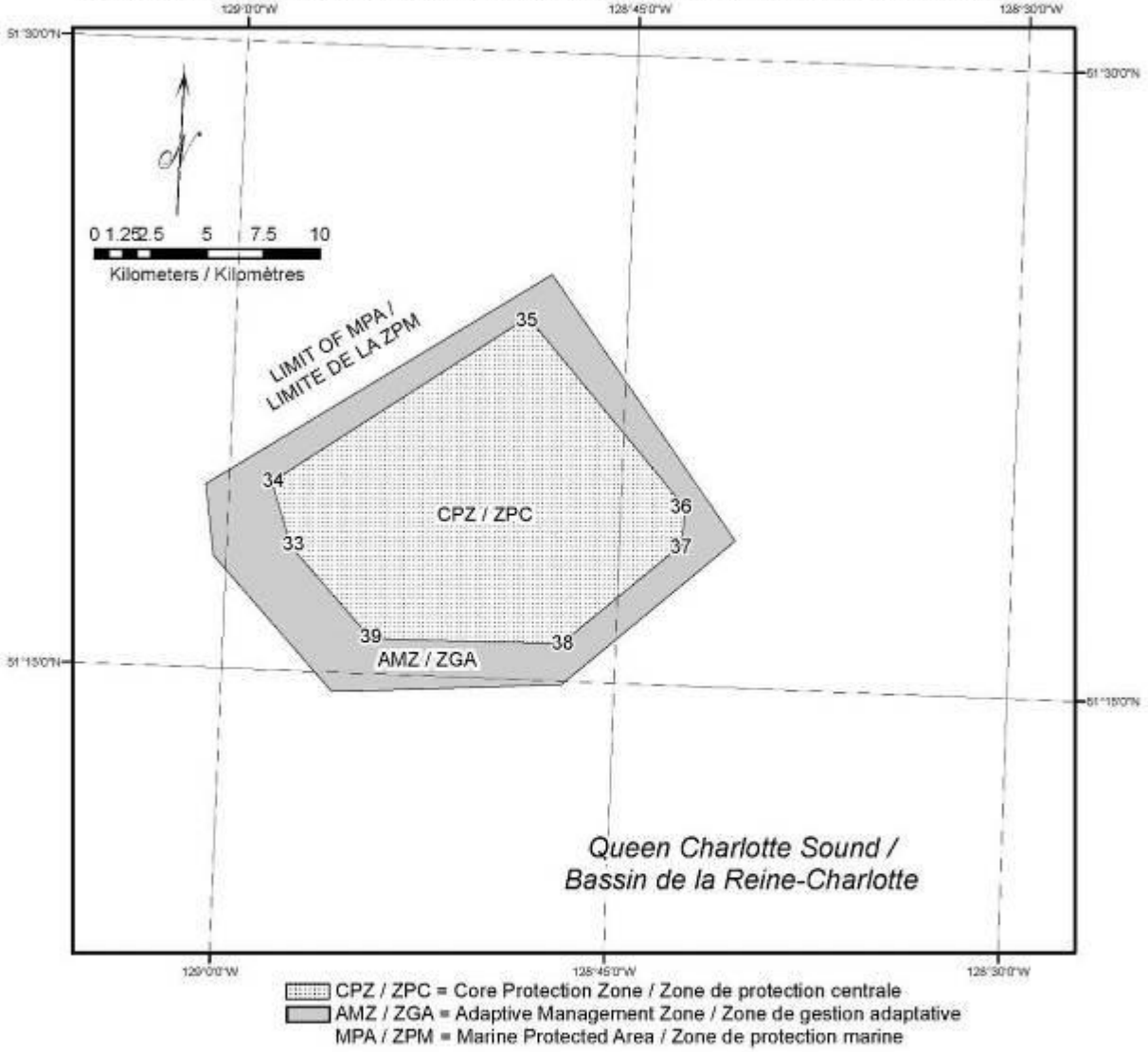
Central CPZ / ZPC centrale - Zone 'A'		
POINT	Latitude North/nord	Longitude West/ouest
13	52° 14' 03.4"	129° 38' 33.2"
14	52° 16' 54.8"	129° 43' 13.4"
15	52° 21' 57.1"	129° 43' 56.5"
16	52° 24' 24.5"	129° 47' 22.8"
17	52° 29' 05.9"	129° 50' 59.4"
18	52° 31' 05.2"	129° 50' 13.9"
19	52° 31' 06.7"	129° 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 RÉCIFS D'ÉPONGES SILICEUSES DU DÉTROIT D'HÉCATE ET DU BASSIN DE LA REINE-CHARLOTTE
SOUTHERN REEF MARINE PROTECTED AREA / ZONE DE PROTECTION MARINE DU RÉCIF SUD

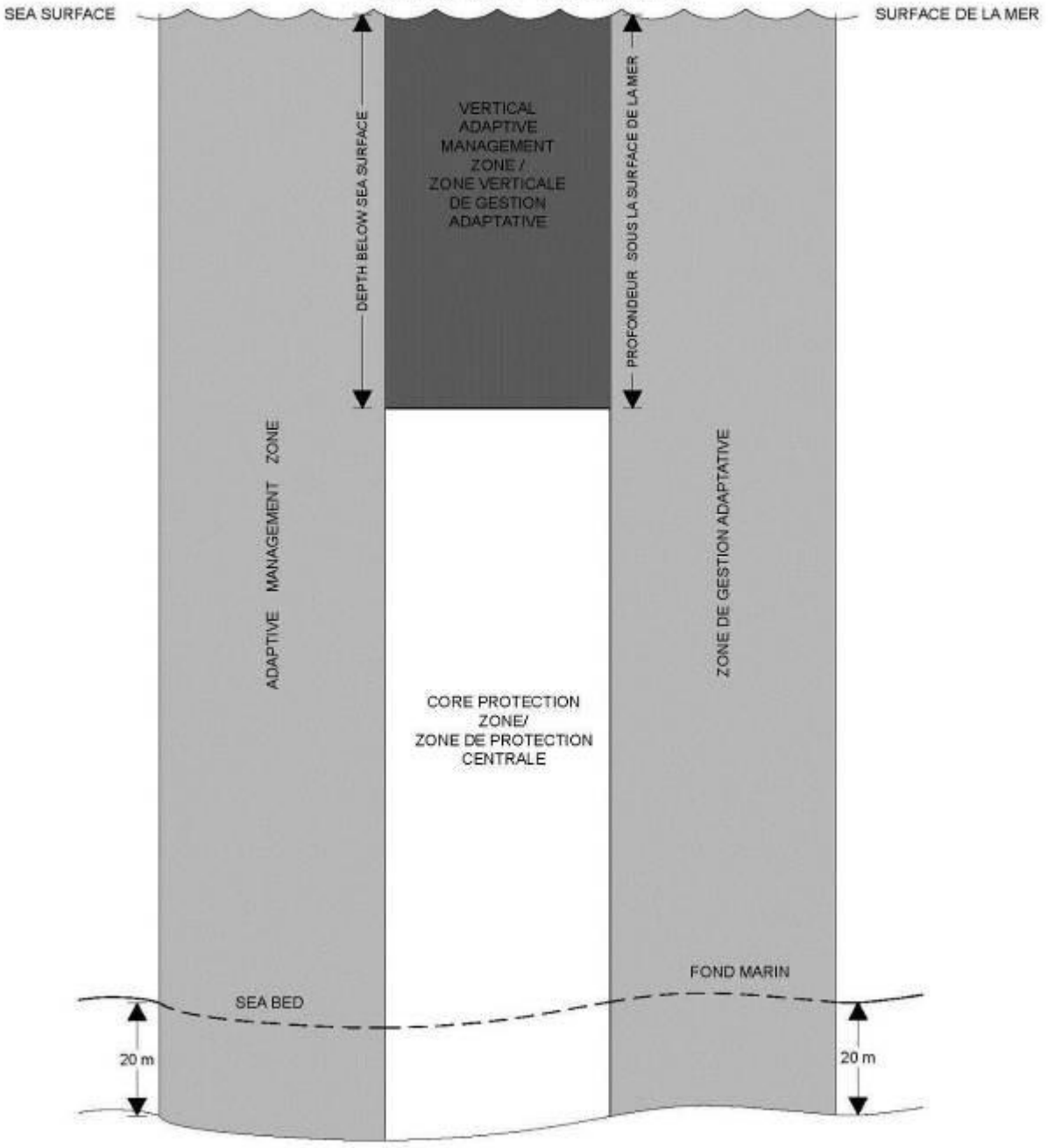


Southern CPZ / ZPC sud		
POINT	Latitude North/nord	Longitude West/ouest
33	51° 17' 59.2"	128° 57' 31.9"
34	51° 19' 30.8"	128° 58' 22.7"
35	51° 23' 41.9"	128° 48' 50.9"
36	51° 19' 17.5"	128° 42' 33.6"
37	51° 18' 24.5"	128° 42' 37.7"
38	51° 15' 56.0"	128° 47' 04.2"
39	51° 15' 52.2"	128° 54' 20.4"

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

PROFILE VIEW / VUE LATÉRALE



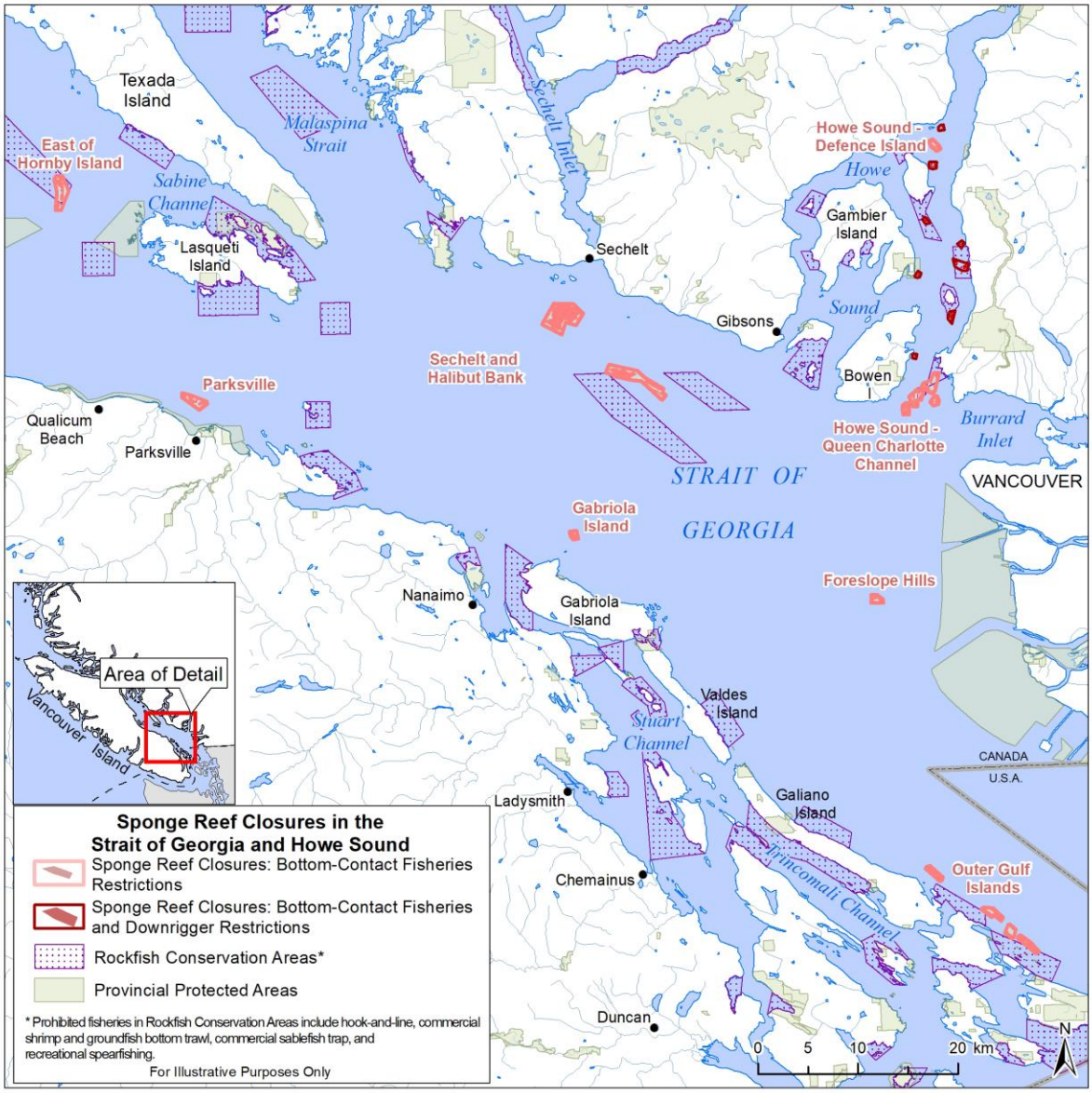
NOT TO SCALE /NON À L'ÉCHELLE

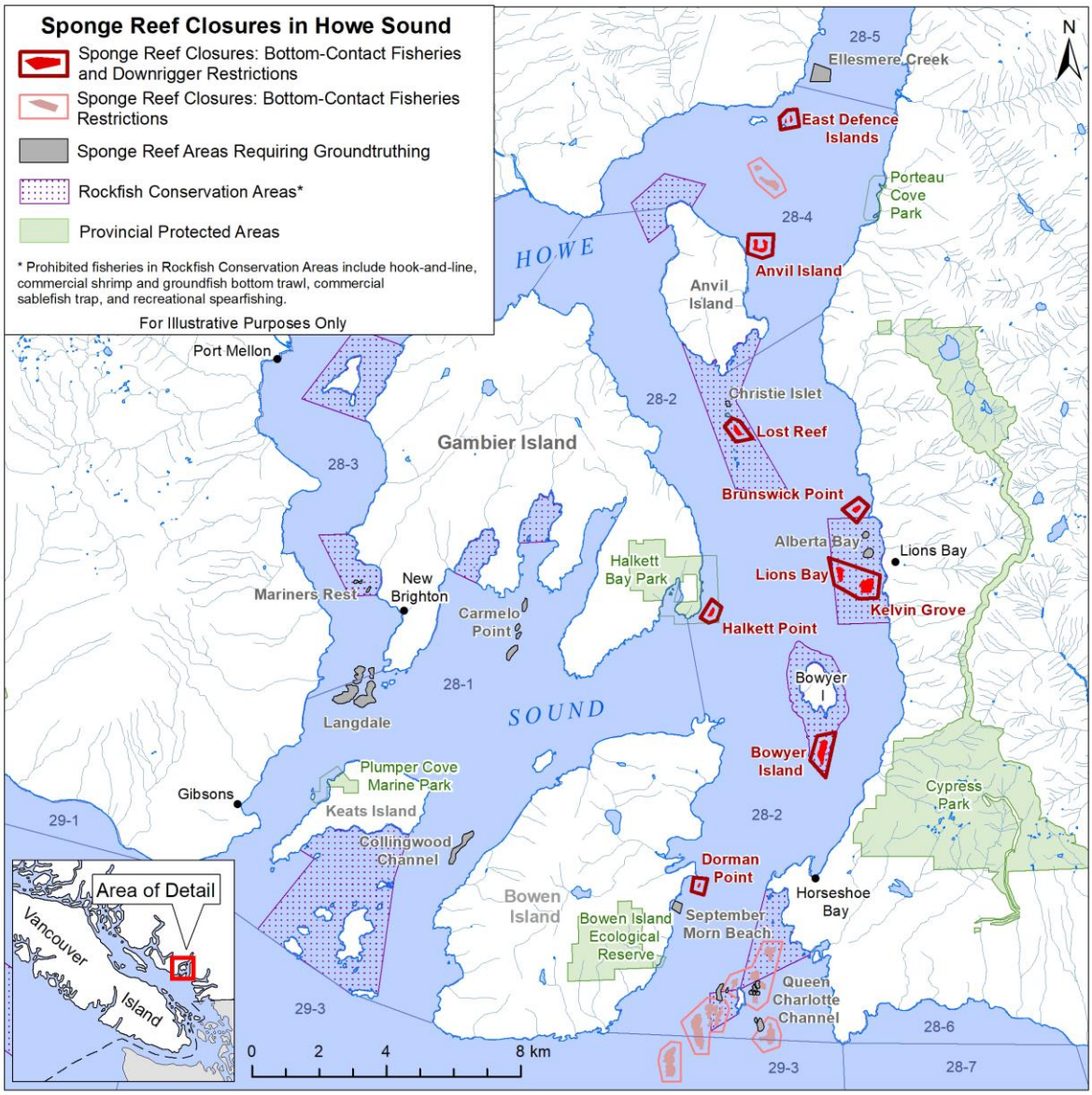
7.6 Maps of Strait of Georgia and Howe Sound Glass Sponge Reef Marine Refuges

All commercial, recreational and FSC bottom-contact fishing activities for prawn, shrimp, crab and groundfish are prohibited within 17 areas in the Strait of Georgia and Howe Sound to protect glass sponge reefs, as marine refuges. The use of downrigger gear in recreational salmon trolling is also prohibited in eight of the 17 areas.

The following maps show all 17 closures. Geographic coordinates and more information are available at: http://www.canada.ca/glass-sponge-closures or by contacting Deirdre Finn at Deirdre.finn@dfo-mpo.gc.ca.

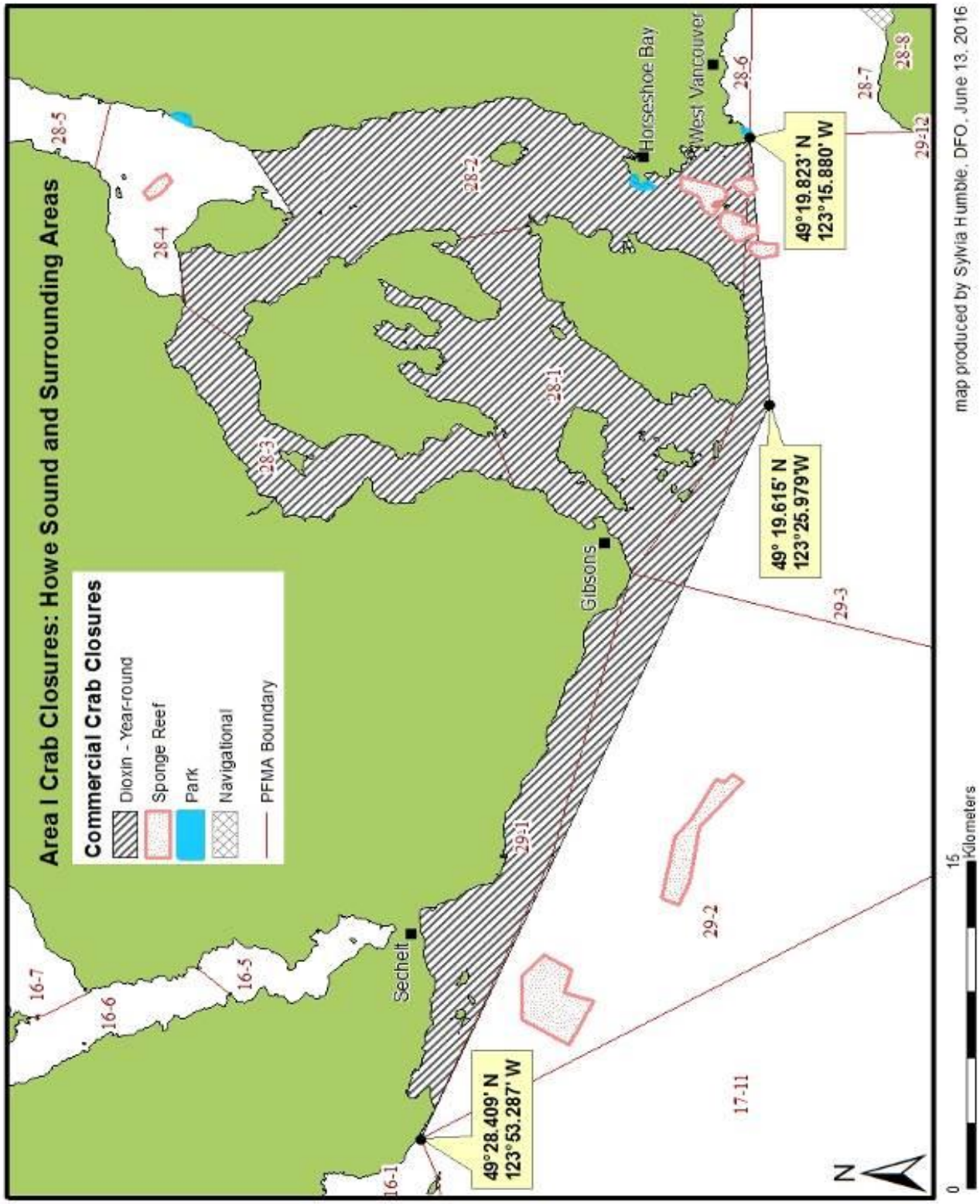
Variation Order Nos. 2019-RCT-352, 2019-353, 2019-354, 2019-411, 2019-412, 2019-413



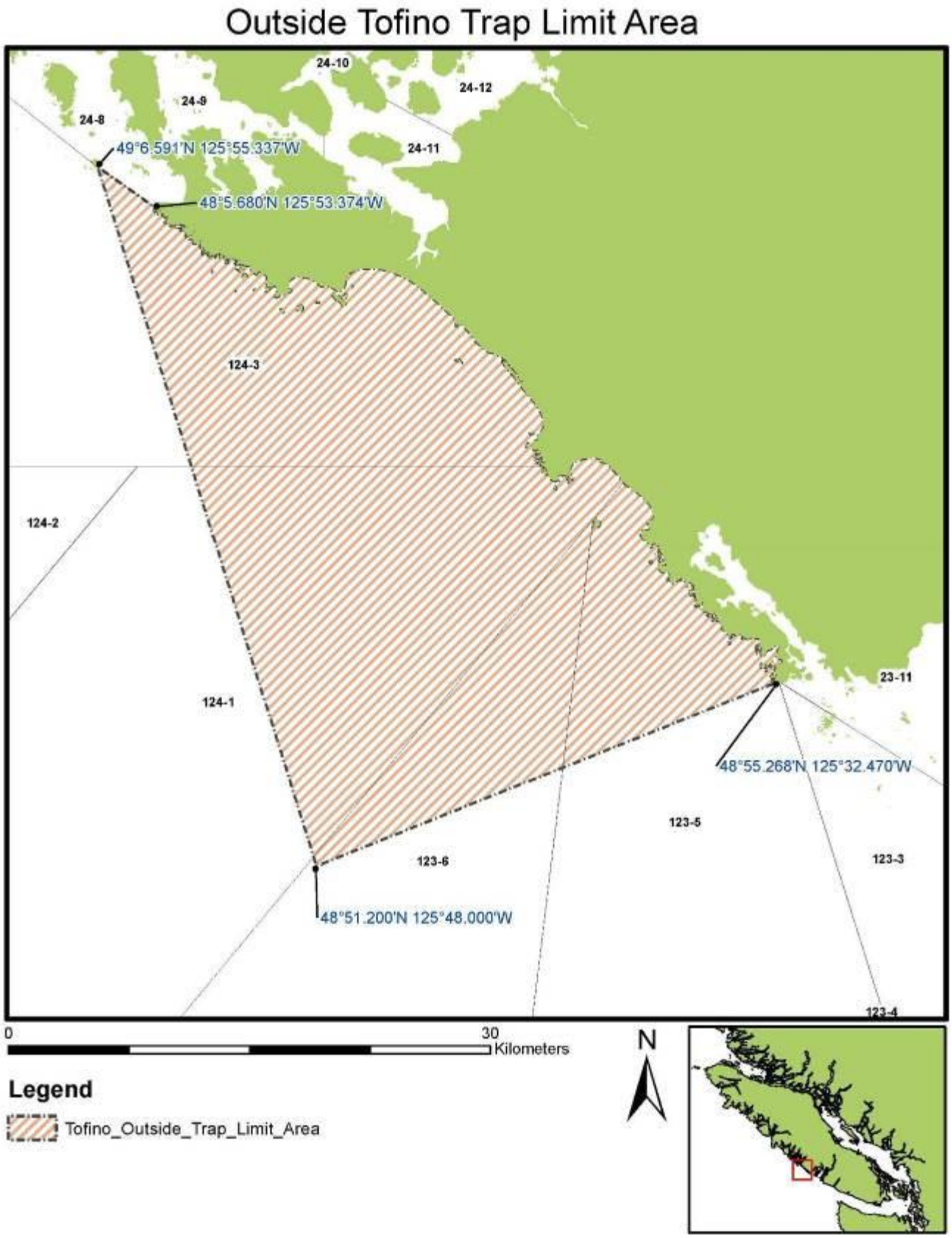


Appendix 7: Maps

7.7 Howe Sound and Surrounding Area Closures



7.8 Area E (Tofino) – New Outside Tofino trap limit area (“the Hole”)



APPENDIX 8: CRAB CONTACTS

APPENDIX 8.1: CRAB SECTORAL COMMITTEE 2020/21

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:

http://www.pac.dfo-mpo.gc.ca/consultation/shell-crust/index-eng.html

Commercial Crab Area Representatives

Area A – Haida Gwaii/Hecate Strait
Area A Crab Association
Dan Edwards, CEO
Phone: 250-624-3225 / Cell: 250-266-0082
Email: danedwards@telus.net

Area B -North Coast
Le Tung Mong
Phone: 778-884-5591
Fax: 250-627-4444

Area E -Sooke
Jamie Heggelund
Phone: 250-883-9969

Area E -Tofino
Robbie Heggelund (Tofino)
Phone: 778-425-3316
Cell : 250-213-9779

Area E-Quatsino
William S. Benton
Phone: 250-230-1534
Email: abenton@recn.ca

Danielle Benton
Phone: 250-230-5768
Email: danielleleighbenton@hotmail.com

Area G -Johnstone Strait
Lance Underwood
Phone: 250-710-7344
Email: captnlance@gmail.com

Area H -Strait of Georgia/Gulf
Kelvin Campbell
Phone: 250-656-7445
Email: kcfishing@shaw.ca

Area I -Fraser River
Peter Policnick Phone: 604-813-6187
Email: policnick@outlook.com

Loc Nguyen Phone: 604-760-3503
Email: sellingmybrain@hotmail.com

Area J -Boundary Bay
Hoan Do
Phone: 778-388-7025
Email: Hoan-do@hotmail.com

Commercial Crab Service Providers:

Ecotrust Canada
Jennifer Paton
Suite 200 -515 Third Avenue West
Prince Rupert, BC V8J 1L9
Phone: 250-624-4191
Fax: 604-682-1944
jennifer@ecotrust.ca

Pacific Coast Fishery Services Inc.
Willem Buitendyk
270 Suneagle Dr.
Saltspring Island BC, V8K 1E5
Phone: 250-931-7686
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
Wayne Harling: harling@shaw.ca
Ted Brookman: teddystackle@shaw.ca

APPENDIX 8.2: CRAB BY TRAP CONTACTS 2019/20

Observe, Record and Report (Radio Room) **1-800-465-4336**
Fisheries Information and Shellfish Contamination Closure Update (24 Hours) (866) 431-3474
(Greater Vancouver) 604-666-2828

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

Resource Management

Regional Shellfish Co-ordinator	Lisa Mijacika	604-666-3869
Regional Fisheries Management Officer	Sophie Roth	604-666-7089
A/Regional Recreational Fisheries Coordinator	Greg Hornby	250-850-9370
North Coast Area		
417 2nd 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	Dillon Buerk	250-627-3477
Aboriginal Affairs Advisor	Amy Wakelin	DFO.NCAP-PACN.MPO@dfo-mpo.gc.ca
Resource Manager – Recreational Fisheries	Darren Chow	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 Beaith	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	Barbara Mueller	604-666-2370

Conservation and Protection

North Coast Area	
Masset 1590 Old Beach Rd, Masset, BC V0T1M0	250-626-3316
Queen Charlotte City 137 Bay St., Queen Charlotte City V0T1S0	250-559-4413
Prince Rupert 417 2nd Avenue West, Prince Rupert, BC V8J1G8	250-627-3499
Terrace 5235-A Keith Ave, Terrace, BC, V8G1L2	250-615-5350
Bella Coola McKenzie Hwy 20, PO Box 130, Bella Coola, BC, V0T1C0	250-799-5345
South Coast Area	
Campbell River 315-940 Alder St., Campbell River, BC,V9W 2P8	250-287-9564
Duncan 5245 Trans Canada Hwy, Duncan, BC, V0R2C0	250-746-6221
Nanaimo 3225 Stephenson Point Rd, Nanaimo, BC, V9T1K3	250-756-7270
Victoria 4520 Commerce Circle, Victoria, BC, V8Z4M2	250-363-3252
Fraser and Interior Area	
Langley 5550 268th St., Langley, BC, V4W 3X4	604-607-4150
Steveston 12551 No. 1 Rd., Steveston, BC, V7E 1T7	604-664-9250

Science

Pacific Biological Station 3190 Hammond Bay Road Nanaimo, B.C. V9T 6N7	Dan Curtis	250-756-7027

Licensing

Pacific Fishery Licence Unit 200-401 Burrard Street Vancouver, B.C. V6C 3S4	Phone Fax	1 877 535 7307 604-666 5855

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
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,
Internet: 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 2020/21

TABLE OF CONTENTS

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 2020/21 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 Registry (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 2020/21 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, 2020 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 2020/21 fishing season will be accomplished through seven 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 2020/21 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 service provider. The service provider will then contact the area crab manager 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. Note: replacement tags will only be issued if lost, stolen or damaged and not in the event of seizure by enforcement personnel.

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 submit data to DFO 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 2020/21 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 2020).

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

2020/21 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, 2020 for the fishing period of April 1, 2020 to October 31, 2020. A year-end report shall be completed by April 30, 2021 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 2020/21 licence year. Service providers

failing to meet a minimum level of performance in a particular program during the 2020/21 season may not be approved by the Department to perform those duties in 2021/22.

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 2020/21 commercial crab licence.

The Department reminds all licence holders that licence conditions and program designs may change in 2020/21 or subsequent years.

DFO performance evaluations against the evaluation criteria will continue in 2020/21 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	Rachel McGuinness	(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

Project Name:	PacFish Information Management Framework
Document Title:	DFO Data Transfer Specifications: Electronic Monitoring
File Number:	
Author:	Sylvia Humble
Organization:	Fisheries and Oceans Canada
Version:	1.0
Date:	December 13, 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.

- **Fishery(s):** Commercial Crab by Trap
- **Fishery Season:** 2020/21
- **Data Collection Program Name:** Electronic Monitoring (EM)
- **Associated Fishery Data Manager:** Resource Management - Invertebrates, South Coast Area

Table of Contents:

List of Tables:

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 2020/21 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_2020.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. 2020-03-31T23:59:59) (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[1]	Integer
HDOP	Horizontal Dilution of Precision[2]:	Decimal
EPE	Estimated Position Error[3] (metres)	Decimal

Table 2: Hydraulic data

- **File Naming Conventions:** [licence area]_HYD_[month: 2 digits]_[year: 4 digits] (e.g., B_HYD_01_2020.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. 2020-03-31T23:59:59) (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

[1] 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)
[2] 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.
[3] EPE is a measure of horizontal position error in meters (GPS industry standard).

Field Name	Description	Field Type/Size
HDOP	Horizontal Dilution of Precision	Decimal
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_2020.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. 2020-03-31T23:59:59) (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_2020.xlsx)
- **Special Requirements:** For each vessel and fishing date, at least one record is required; a separate record is required for each Sub Area[4] 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[4] in which trap scans recorded on given date	Integer (e.g. 24)
Sub Area	Pacific Fishery Management Sub Area[4] 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_2020.xls)

[4] Areas and Sub Areas are described in the Pacific Fishery Management Area Regulations

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
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. 12/31/20)
Record_Update	Date on which this record was last updated	Short Date (month/day/year, e.g. 12/31/20)

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_2020.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

Field Name	Description	Field Type/Size
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
Record_Entry_Date	Date on which this record was first entered	Short Date (month/day/year, e.g. 12/31/20)
Record_Update	Date on which this record was last updated	Short Date (month/day/year, e.g. 12/31/20)

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. 12/31/20)
Last_Time	Time of last data delivery	hh:mm:ss (e.g. 23:59:59)

Field Name	Description	Field Type/Size
Next_Date	Date of next data delivery (to be entered when data received)	Short Date (month/day/year, e.g. 12/31/20)
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)
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. 12/31/20)
Record_Update	Date on which this record was last updated	Short Date (month/day/year, e.g. 12/31/20)

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)

Field Name	Description	Field Type/Size
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
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. 2020-03-31T23:59:59) (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. 12/31/20)
Record_Update	Date on which this record was last updated	Short Date (month/day/year, e.g. 12/31/20)

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[5], 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

[5] A calendar week is described as 00:01 hours Sunday to 23:59 hours Saturday.

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)
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. 12/31/20)
Record_Update	Date on which this record was last updated	Short Date (month/day/year, e.g. 12/31/20)

* 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. 12/31/20)
Record_Update	Date on which this record was last updated	Short Date (month/day/year, e.g. 12/31/20)

* "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. 12/31/20)
Record_Update	Date on which this record was last updated	Short Date (month/day/year, e.g. 12/31/20)

* 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_SOOKE_20_6	Sub Area 20-6
E_SOOKE_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. 12/31/20)
Record_Update	Date on which this record was last updated	Short Date (month/day/year, e.g. 12/31/20)

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. 12/31/20)
Record_Update	Date on which this record was last updated	Short Date (month/day/year, e.g. 12/31/20)

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: Summary of monthly trap haul frequency

- **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_2020.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

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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
Haul Count	Total number of trap hauls (RFID chip scans) in the fishing month	Integer

Field Name	Description	Field Type/Size
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_2020.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_Action	Indicate whether hard-drive was installed, replaced or removed using Hard Drive Action* from table below	Text
Hard-drive_Unique_Identifier	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. 12/31/20)

HARD DRIVE ACTION*
Install
Replace
Remove

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. 12/31/20)
EM_Hard-drive_End_Date	Date of hard-drive removal	Short Date (month/day/year, e.g. 12/31/20)
10%_Manual_Review	Rational for 10% manual analysis	Text
Date_of_10%_Manual_Review	Date of 10% manual analysis	Short Date (month/day/year, e.g. 12/31/20)
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. 12/31/20)
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: (v**essel 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

Project Name:	PacFISH Information Management Framework
Document Title:	DFO Data Transfer Specifications: At-sea Observers
Author:	
Organization:	Fisheries and Oceans Canada
Version:	1.0
Date:	December 17, 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:** 2020/21
- **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_2020)

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_2020)

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)

Field Name	Description	Field Type/Size
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

Project Name:	PacFISH Information Management Framework
Document Title:	DFO Data Transfer Specifications: Plastic Trap Tags
File Number:	
Author:	Sylvia Humble
Organization:	Fisheries and Oceans Canada
Version:	1.0
Date:	December 17, 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:** 2020/21
- **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 2020/21 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).

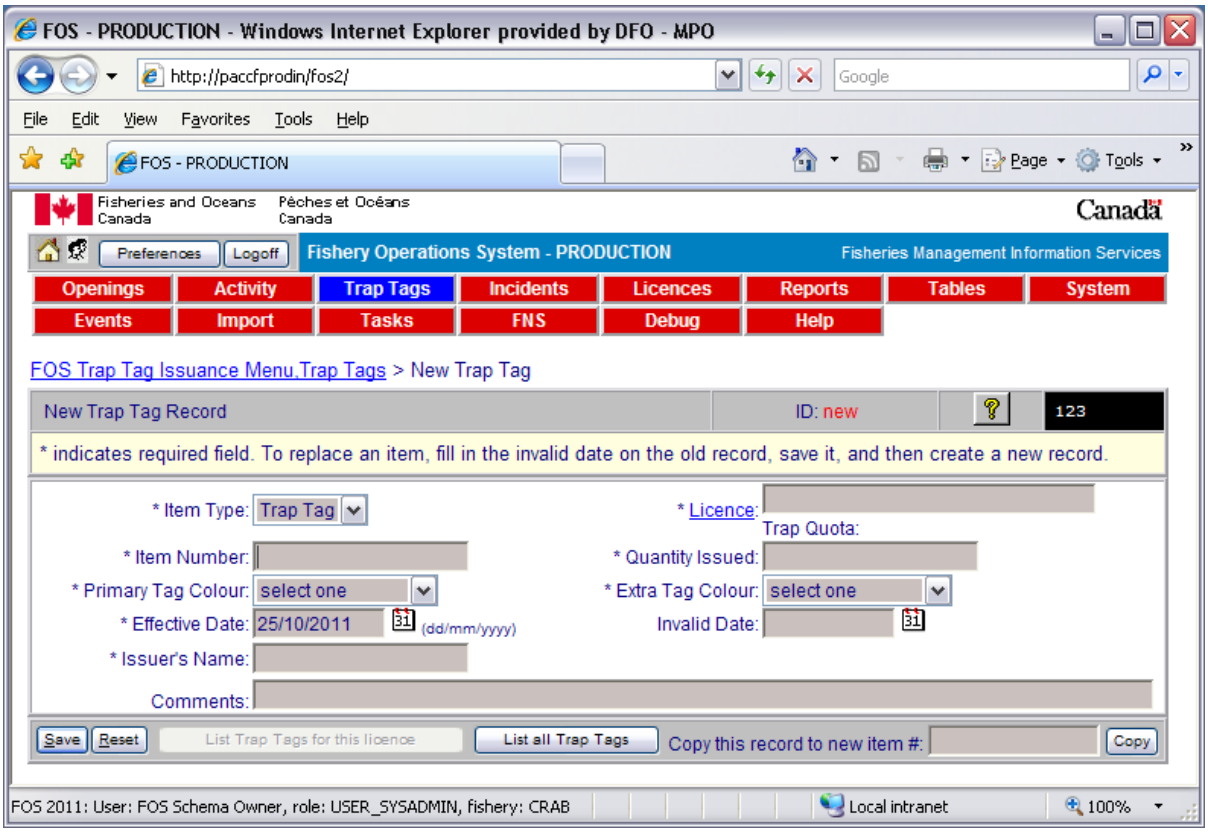
Data Transfer Requirements

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 2020/21 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[1]	Colour of primary tags (enter if issuing primary tags at this time)	N	Drop down
Extra Tag Colour[2]	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 invalid (e.g. Dec. 31)	Y	Date picker
Issuer’s Name	Issuer’s Name	Y	Textbox

Field Name	Description	Mandatory?	Form Type
Comments	Any relevant information (e.g. number of primary vs. extra tags, Item Numbers specific to each)	N	Textbox

[1] Primary Tag Colour Options

ORANGE
WHITE
YELLOW
PINK
RED
GREY
GREEN
BLUE-DARK
BEIGE
BLUE-LIGHT
BLACK
PURPLE
GOLD
BROWN
FL.PINK
BURGUNDY

[2] Extra Tag Colour Options

ORANGE
WHITE
YELLOW
PINK
RED
GREY
GREEN
BLUE-DARK
BEIGE
BLUE-LIGHT
BLACK
PURPLE
GOLD
BROWN
FL.PINK
BURGUNDY

Project Name:	**PacFish Information Management Framework**
Document Title:	**Crab Harvest Log Program (Paper) Data Specifications**
File Number:	
Author:	Leslie Barton, Sandra Bassett
Organization:	Fisheries and Oceans Canada
Version:	1.0
Date:	October 31, 2017 revised

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:** 2020/21
- **Data Collection Program Name:** Shellfish Crab Harvest Log Program (paper-based)
- **Associated Fishery Data Service:** Shellfish Data Unit

Document Change History

Author	*Date*	*Description of Change*
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	

Field Name	Description	Mandatory	Field Type/Size	Value if N/A or Unknown	Validation Rules
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	**Yes**	Integer or byte		
MONTH	Month of fishing event	**Yes**	Integer or byte	0	1-12
DAY	Day of fishing event	**Yes**	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	

Field Name	Description	Mandatory	Field Type/Size	Value if N/A or Unknown	Validation Rules
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	**Yes**	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	**Yes**	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:

QID ---------- Squid	**TIN** -------- Tinned Fish	**SAL** -------- Salmon (all species + heads + frames)
GEO ---------- Geoducks	**ZOR** -------- Razor Clams	**FRA** ------- Fish Frames (not Salmon)
HER ---------- Herring	**CLA** --------- Clams	**AST** -------- Fish Paste
OCT ---------- Octopus	**DOG** -------- Dogfish	**EUL** -------- All Smelt species
ROC ---------- Whole Rockfish	**XXX** -------- Experimental	**MIX** --------- Mixed Fish Species (and offal and scraps)
KKK ---------- Hake	**UNK** --------- Unknown	
PEL ---------- Pellets	**YYY** -------- Other	

A mixture of two baits listed above can be coded as first code letter (**W**)ith 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**)ith **'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.

Species	Species Code	Species	Species Code	Species	Species Code
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.

Status	Code
Record **Newly Submitted** to Shellfish Data Unit	0
Record has been **Previously Submitted** and is **Unchanged**	1
Record has been **Edited** and **Re-submitted** to Shellfish Data Unit	2

British Columbia Commercial Crab Fishery
Biological Sampling Program

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Table of Contents

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).

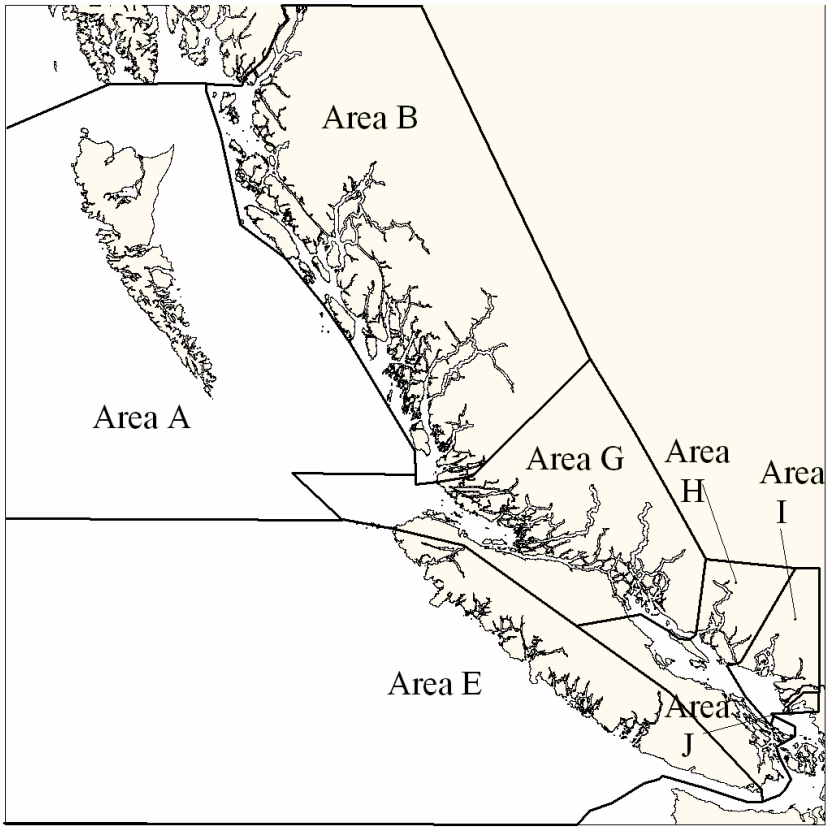


Figure 1. Crab Management Areas (CMAs) in British Columbia.

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 2020). 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		7	3	9		
February		7	3	9		
March	4	7	3	9		
April	5	7	3	9		
May	5	8	3	10		
June	5	8	4	10	4	
July	5	7	4	10	4	5
August	5	7	3	10	4	5
September	5	7	3	9	3	5
October	4	7	3	9	3	5
November	4	7	3	9	3	4
December		7	3	9		
Total	42	86	38	112	21	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	21	2	42
E	Indep	Tofino (24-6, 8, 9)				6
	Comm		12	43	2	86
G	Indep	Village Is (12-6, 26)				6
	Comm		12	19	2	38
H	Indep	Sidney (19-5, 6)				6
	Comm		12	56	2	112
I	Indep	Fraser River (28, 29)				DFO[a]
	Comm		5.5	21	1	21
J	Indep	Boundary Bay (29-8)				DFO[a]
	Comm		4.5	24	1	24

[a]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 2020/21 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 ≥ 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 2020 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 2020).

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. 2020. Pacific Region Integrated Fisheries Management Plan. Crab by Trap. April 1 2020 to March 31, 2021.

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. 2020)
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. 2020).
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

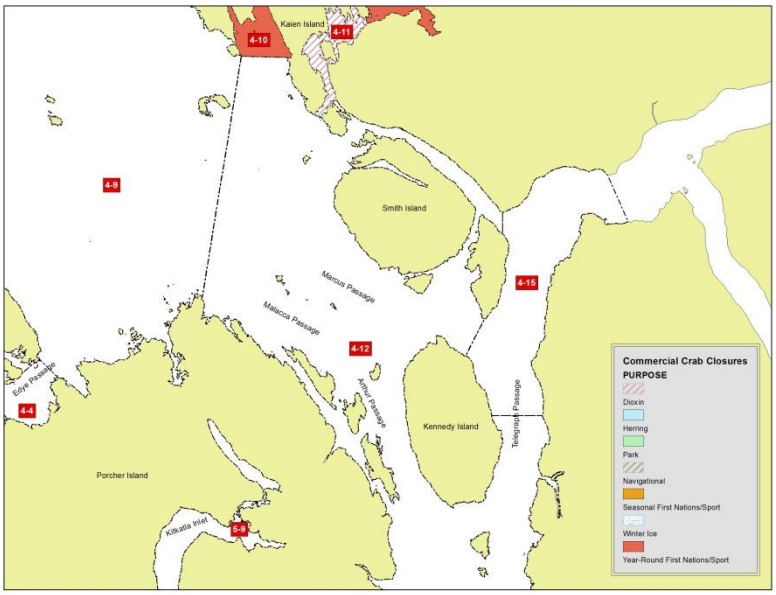
Source

Code	Description
IL	Independent index length
CL	Commercial index length

Index Sites

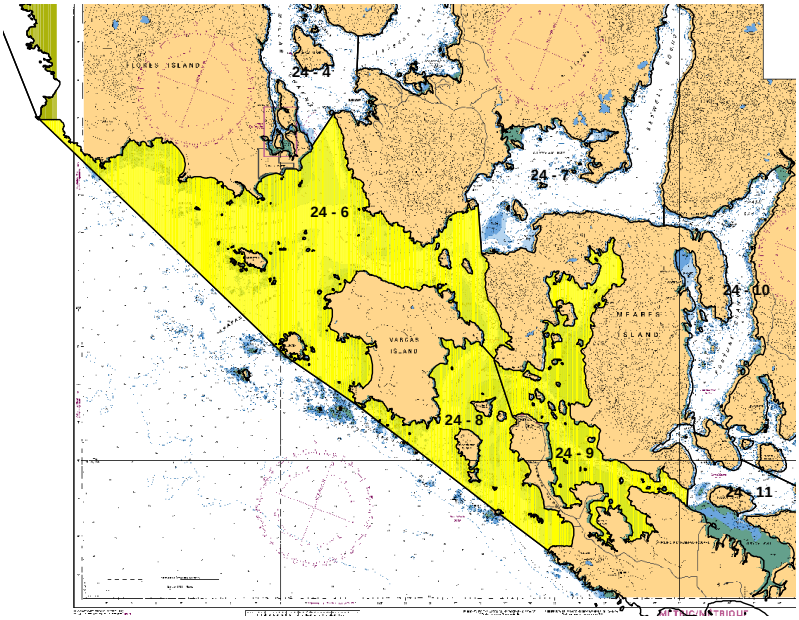
Area B

Skeena River mouth (northern portion of PFMA 4-12 around Smith Island and 4-12, -15 around Kennedy Island).



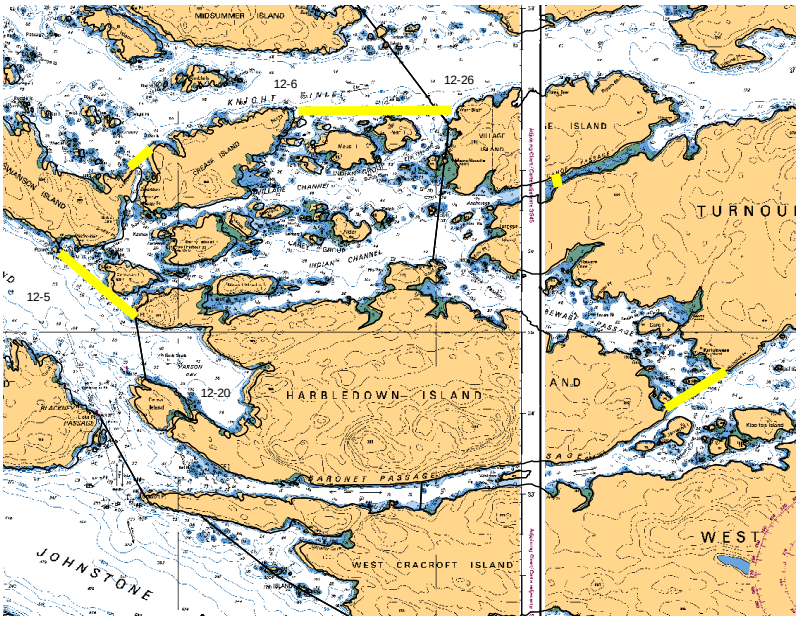
Area E

Tofino (PFMAs 24-6, -8, -9)



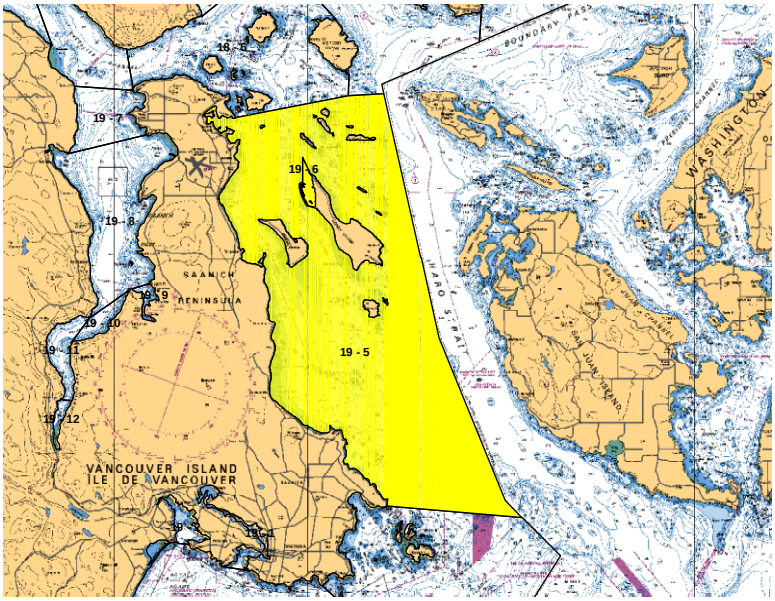
Area G

Village and Indian Channel, and Beware Passage (portions of PFMAs 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

Code	Description
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:

Code	Description
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:

Code	Description
HCQ	Herring with clams and squid
HDB	Herring with dogfish and gurdy

Fishing Method

Code	Description
S	Single
G	Ground line

Gear Code

Code	Description
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

Code	Description
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. 2020)
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).

<u>Notes</u>

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

Codes	Description
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)

Code	Common Name	Scientific Name
VMI	Brown Box	*Lopholithodes foraminatus*
XKG	Dungeness	*Metacarcinus magister*
VMC	Golden King	*Lithodes aequispinus*
XKE	Graceful	*Cancer gracilis*
ZCA	Graceful Decorator	*Oregonia gracilis*
XMB	Green	*Carcinus maenas*
XAF	Helmet (Horse)	*Telmessus cheiragonus*
VAC	Hermit sp.	Family Paguridae
ZGE	Longhorn Decorator	*Chorilia longipes*
ZDF	Northern Kelp	*Pugettia producta*
ZBA	Pacific Lyre	*Hyas lyratus*
VMJ	Puget Sound King	*Lopholithodes mandtii*
VNI	Red King	*Paralithodes camtschaticus*
XLA	Red Rock	*Cancer productus*
VIF	Scaled	*Placetron wossnessenskii*
ZGC	Sharp Nose	*Scyra acutifrons*
ZAF	Southern Tanner	*Chionoecetes bairdi*
VLC	Spiny Lithode	*Acantholithodes hispidus*
VSA	Squat Lobster	Family Galatheidae
848	Only used with Trap Usability = 15. Signifies no crabs caught.	

Sex

Code	Description
1	Male
3	Female
4	Female with eggs
5	Female spent (eggs hatching)

Shell Condition

Code	Description
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. 2020)
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	*Enteroctopus dofleini*
	98D	Octopus	Order Octopoda
	98G	Red Octopus	*Octopus rubescens*
	98F	Smooth Skin Octopus	*Benthoctopus leioderma*
	91G	Stubby Squid	*Rossia pacifica pacifica*
Echinoderms	Code	Common Name	Scientific Name
	4PD	Bat Star	*Asterina miniata*
	4RA	Blood Star	*Henricia leviuscula*
	5HA	Brittle Stars	Class Ophiuroidea
	4XF	Fish-Eating Star	*Stylasterias forreri*
	6BB	Green Urchin	*Strongylocentrotus droebachiensis*
	4OC	Leather Star	*Dermasterias imbricata*
	4GD	Rainbow Star	*Orthasterias koehleri*
	4HC	Mud Star	*Ctenodiscus crispatus*
	4ZC	Giant Pink	*Pisaster brevispinus*
	4ZA	Purple Star	*Pisaster ochraceus*
	4GD	Sand Star	*Luidia foliolata*
	6NA	Sea Cucumbers	Class Holothuroidea
	4AB	Sea Lilies	Class Crinoidea
	4GA	Sea Stars	Class Asteroidea
	4TA	Sun Star	Family Solasteridae
	4XE	Sunflower Star	*Pycnopodia helianthoides*
	4JD	Vermillion Star	*Mediaster aequalis*
Flatfish	Code	Common Name	Scientific Name
	596	Pacific Sanddab	*Citharichthys sordidus*
	625	Slender Sole	*Lyopsetta exilis*
Rockfish	Code	Common Name	Scientific Name
	407	Copper	*Sebastes caurinus*
	410	Darkblotched	*Sebastes crameri*
	414	Greenstriped	*Sebastes elongatus*
	424	Quillback	*Sebastes maliger*
	442	Yelloweye	*Sebastes ruberrimus*

Bycatch Form codes

Roundfish	Code	Common Name	Scientific Name
	455	Sablefish	*Anoplopoma fimbria*
	225	Pacific Hake	*Merluccius productus*
	467	Lingcod	*Ophiodon elongatus*
	319	Northern Ronquil	*Ronquilus jordani*
	222	Pacific Cod	*Gadus macrocephalus*
	228	Pollock Walleye	*Theragra chalcogramma*
	230	Red Brotula	*Brosmophycis marginata*
	461	Kelp Greenling	*Hexagrammos decagrammus*
	466	Whitespotted Greenling	*Hexagrammos stelleri*
Sculpins	Code	Common Name	Scientific Name
	519	Blackfin	*Malacocottus kincaidi*
	499	Buffalo	*Enophrys bison*
	508	Dusky	*Icelinus burchami*
	521	Great	*Myoxocephalus polyacanthocephalus*
	502	Red Irish Lord	*Hemilepidotus hemilepidotus*
	491	Roughback	*Chitonotus pugetensis*
	522	Sailfin	*Nautichthys oculofasciatus*
	472	Sculpins	Family Cottidae
	497	Spinyhead	*Dasycottus setiger*
	513	Spotfin	*Icelinus tenuis*
	518	Pacific Staghorn	*Leptocottus armatus*
	510	Threadfin	*Icelinus filamentosus*
Selachii	Code	Common Name	Scientific Name
	044	Spiny Dogfish	*Squalus acanthias*
	066	Spotted Ratfish	*Hydrolagus colliei*

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)

Item	Field Name	Type	Size
Artificial number, index key and link to Dependent tables LF and ByCatch	**Key**	LongInteger	4
Source of the data (code)	**Source**	Text	2
Set Number, or Sample Number	**SetNum**	Integer	2
Year when gear Hauled.	**Year**	Integer	2
Month when gear Hauled.	**Month**	Byte	1
Day when gear Hauled	**Day**	Byte	1
Trap soak time in hours.	**Soak_hrs**	Integer	2
Soak time days (where applicable).	**Soak_days**	Byte	1
Hours of soak, Same thing as "Soak_hrs", Included for historic compatibility.	**HoursSoak**	Integer	2
Minimum depth in meters.	**MinDepth**	Integer	2
Maximum depth in meters	**MaxDepth**	Integer	2
PFMA Statistical Area,	**StatArea**	Byte	1
PFMA Statistical Sub-Area.	**SubArea**	Byte	1
Sub-Sub-Area (Not Used, included for historic database compatibility only)	**Locality**	Byte	1
Chart Reference for where the Set was Located (for cross-reference purposes)	**GeogLoc**	Text	50
Integer Degree of Latitude at start of string.	**StartLatDeg**	Integer	2
Decimal Minutes of Latitude at start of String (recorded to 3 decimal places, e.g. 23.975)	**StartLatMin**	Single	4
Integer Degree of Longitude at start of string.	**StartLongDeg**	Integer	2
Decimal Minutes of Longitude at start of String (recorded to 3 decimal places e.g. 42.468)	**StartLongMin**	Single	4
Integer Degrees of Latitude, end of string.	**EndLatDeg**	Integer	2
Decimal Minutes of Latitude, end of string.	**EndLatMin**	Single	4
Integer Degrees of Longitude, end of string.	**EndLongDeg**	Integer	2
Decimal Minutes of Longitude, end of string.	**EndLongMin**	Single	4
How position was obtained. G = GPS, etc.	**FixType**	Text	1
Who took the sample and did the measuring.	**SamplerCode**	Byte	1
Who entered this set into the computer form or onto the hardcopy form.	**CoderCode**	Byte	1
Unused – for historic compatibility only.	**VesselCode**	Integer	2
VRN (CFV) of commercial boat sampled (or Vessel ID of service provider boat where doing Independent Lengths)	**CFV**	Long Integer	4
3 character code for type of bait used.	**BaitCode**	Text	3

Item	Field Name	Type	Size
Distance in meters between traps on string.	**TrapSpacing**	Integer	2
Unused – for historic compatibility only.	**FrameType**	Text	2
Code for type of Mesh on the traps.	**MeshType**	Text	2
Unused – for historic compatibility only.	**TrapShape**	Byte	1
Trap diameter (or length of side if square), in Inches.	**TrapDimension**	Byte	1
Trap Height in Inches.	**TrapHeight**	Byte	1
Number of escape port rings (where exist)	**RingNumber**	Byte	1
Size in MM of diameter of escape ports	**RingSize**	Byte	1
Size in MM of diameter of escape ports (if ports exist of different size than RingSize).	**RingSize2**	Byte	1
Unused – for historic compatibility only.	**TriggerNumber**	Byte	1
Code how bait is normally attached	**BaitMethod**	Text	1
Code, Groundlines or Single traps used ?	**FishingMethod**	Text	1
Number of traps in the string (where known)	**NumTrapsInString**	Byte	1
Number of traps Sampled in this set.	**NumTrapsSampled**	Byte	1
Total number of Dungeness crabs sampled in this string.	**NumCrabsSampled**	Integer	2
Number of legal size male Dungeness crabs sampled in this string.	**NumLegalMales**	Integer	2
Number of sub-legal size male Dungeness crabs sampled in this string.	**NumSubLegalMales**	Integer	2
Number of female Dungeness crabs sampled in this string.	**NumFemales**	Integer	2
Unused – for historic compatibility only.	**VaxCode**	Byte	1
Unused – for historic compatibility only.	**CardCode**	Byte	1
Unused – for historic compatibility only.	**YearSet**	Byte	1
Unused – for historic compatibility only.	**MonthSet**	Byte	1
Unused – for historic compatibility only.	**DaySet**	Byte	1
Any relevant Comment noted by Sampler or Coder.	**Comment**	Text	1
Flag whether data has been uploaded to main DFO database (always = NO)	**Uploaded**	Yes/No	1

Field Names and Data Typing for Table 'LF' (see Appendix 2)

Item	Field Name	Type	Size
Link to Header table key field	**Hkey**	Long Integer	4
Counter to create a unique index key with, possibly indicates line number on H/C page.	**Line**	Integer	2
Code Sex of crab sampled	**Sex**	Byte	1
Width measurement type, (should always be N=notch to notch)	**WidthType**	Text	1
Unused – for historic compatibility only.	**WidthSpine**	Byte	1
Width in mm, notch to notch (rounded down to the nearest mm)	**WidthNotch**	Byte	1
Code for Shell Hardness.	**Shell**	Byte	1
Code for Injuries.	**Injury**	Byte	1
Number of Claws missing, (except where caused by sampling)	**ClawsMissing**	Byte	1
Number of Legs Missing, (except where caused by sampling)	**LegsMissing**	Byte	1
Code Mating marks	**Marks**	Byte	1
Code Unusual information about the crab.	**Observation**	Byte	1
Order in which the sampled traps are pulled in the string,'1' is the first trap in string.	**TrapNum**	Byte	1
Code type of Trap being Sampled	**GearCode**	Text	4
Code problems/malfunction with the trap (Default is "0" if trap is OK).	**TrapUsability**	Byte	1
Pacific Region Species Code XKG = Dungeness, XLA = Red Rock, etc.	**Species**	Text	3

Field Names and Data Typing for Table 'ByCatch' (see Appendix 3)

Item	Field Name	Type	Size
Link to Header table key field	**H_key**	Long Integer	4
Counter to create a unique index key with,	**Line**	Integer	2
Pacific Region Species Code	**Species**	Text	3
Weight caught in Kilograms	**Weight**	Single	4
Is the Weight Estimated (Yes) or was it Actually Weighted (No).	**Estimated**	Yes/No	1
Number of individuals of this species	**Num_Caught**	Integer	2
Unused – for historic compatibility only.	**Num_per_kg**	Integer	2

Project Name:	PacFISH Information Management Framework
Document Title	DFO Data Transfer Specifications: Hail Program
Author:	
Organization:	Fisheries and Oceans Canada
Date:	December 17, 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:** 2020/21
- **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_2020

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. 12/31/20)
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[1]	Text
TRIP_TYPE	Type of Trip[2]	Text
PFMA	PFMA[3]	Number
PFM_SUB_AREA	PFM Subarea[3]	Number
COMMENTS	Comments	Memo
HAIL_OP	Hail Operator	Memo

[1] TRIP STATUS
START FISHING (FOR THE SEASON)
START TRIP
END TRIP
LOCATION CHANGE
UPDATE
CANCEL END FISHING (FOR THE SEASON)

[2] TRIP TYPE
COMMERCIAL
COMMERCIAL W/ SAMPLING
SAMPLING

[3] 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 ≥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 Moult	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	
8	Transition	6 to 12 months		Old
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 AND SOUTHERN STRAIT OF GEORGIA NATIONAL MARINE CONSERVATION AREA RESERVE

Gwaii Haanas National Park Reserve, National Marine Conservation Area Reserve, and Haida Heritage Site is a 5,000 km^2 land-and-sea protected area in the southern portion of Haida Gwaii, approximately 100 kilometres off the north coast of BC. The Haida Nation declared the area a Haida Heritage Site in 1985. The terrestrial part of Gwaii Haanas was designated a National Park Reserve by the Government of Canada soon after, and the two parties have been managing the area cooperatively since 1993. In 2010, following an extensive public consultation process, the marine area of Gwaii Haanas was given the designation of National Marine Conservation Area Reserve.

Gwaii Haanas is managed by the Archipelago Management Board, a cooperative body made up of representatives of the Council of the Haida Nation and the Government of Canada (DFO and Parks Canada). The Archipelago Management Board is guided by the *Gwaii Haanas Agreement* and the *Gwaii Haanas Marine Agreement*, which describes how Canada and the Haida Nation will manage Gwaii Haanas cooperatively.

In November 2018, following an extensive consultation process, a new management plan for Gwaii Haanas was approved by Canada and the Haida Nation. The Gina 'Waadluxan KilGuhlGa Land-Sea-People plan includes a shared vision, guiding principles based on Haida cultural values, goals and objectives, and zoning for the land and the sea. The plan will be in place for the next decade. The final zoning plan includes several areas of strict protection, where commercial and recreational fishing is prohibited, including prawn and shrimp fishing (Appendices 1 and 2). An overview map is provided in Appendix 13. A monitoring plan will be developed to assess the effectiveness of zoning in achieving ecological and cultural objectives. Regular monitoring within and outside of the strict protection zones will illustrate ecosystem responses and facilitate adaptive management of the Gwaii Haanas marine area. Implementation of the Land-Sea-People plan will also involve cooperative management of fisheries using an ecosystem-based management framework and monitoring activities will be supported through partnerships.

Parks Canada, in partnership with the Government of BC, launched a feasibility assessment for a National Marine Conservation Area Reserve 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 a National Marine Conservation Area Reserve is practical and feasible, an establishment agreement between the Governments of Canada and BC will be negotiated and an interim management plan developed. If the National Marine Conservation Area Reserve 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.

The Land-Sea-People plan is available at:

https://www.pc.gc.ca/en/pn-np/bc/gwaiihaanas/info/consultations/gestion-management-2018

More information on Gwaii Haanas and the Archipelago Management Board is available at:

https://www.pc.gc.ca/en/pn-np/bc/gwaiihaanas/index

More information on National Marine Conservation Areas is available at:
https://www.pc.gc.ca/en/amnc-nmca/cnamnc-cnnmca

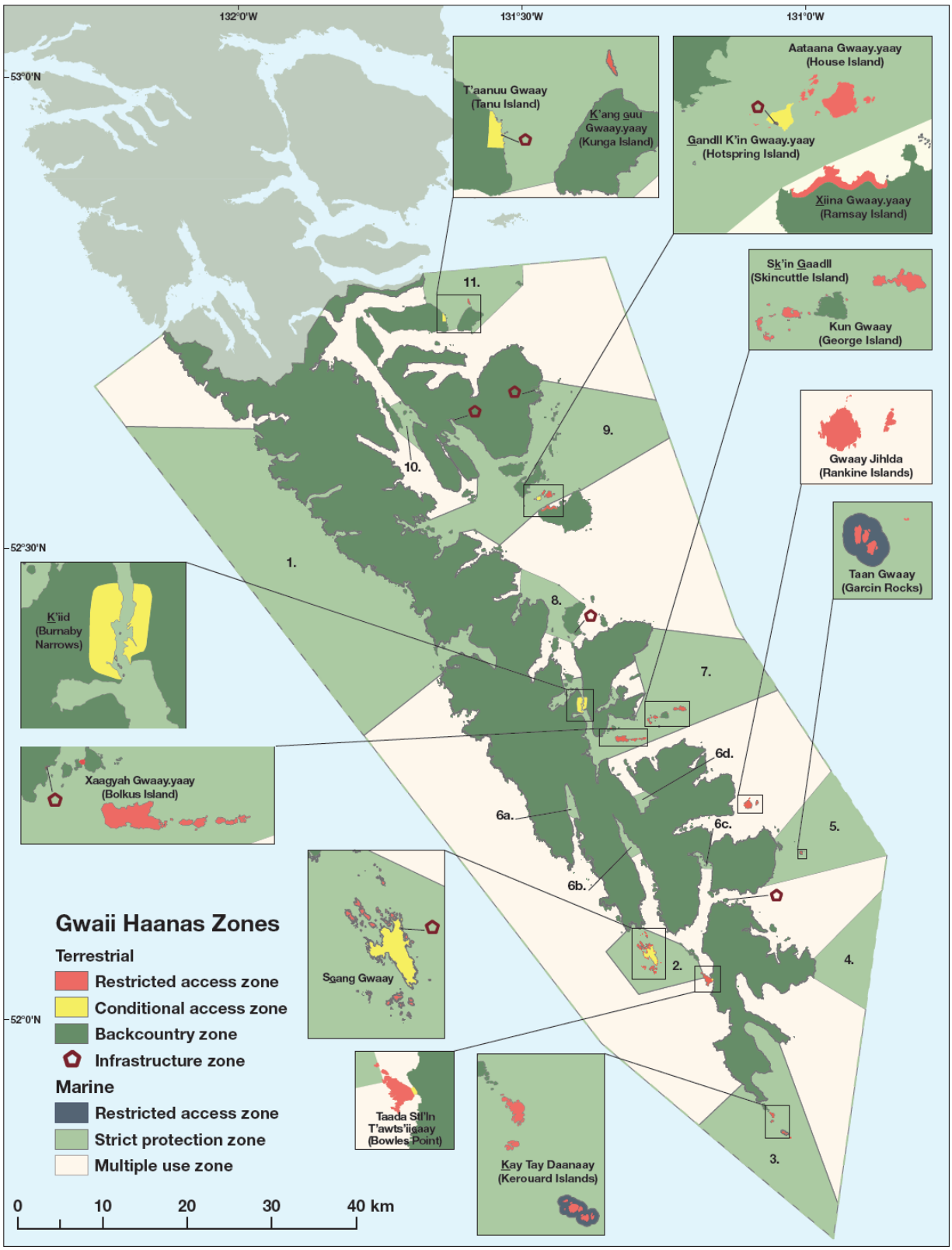


Figure 1. Gwaii Haanas National Marine Conservation Area Reserve and Haida Heritage Site (Current closures)

Area 2 Closures

Harvesting of all species is prohibited within Strict Protection Zones of Gwaii Haanas National Marine Conservation Area Reserve and Haida Heritage Site identified in the Gina 'Waadluxan KilGuhlGa Land-Sea-People Management Plan. This management plan was approved by Canada and the Haida Nation in November 2018. Strict Protection Zones include areas such as Gowgaia Bay, SGang Gwaay, Cape Saint James, Flamingo Estuary Louscoone Estuary, Rose Estuary, Huston Estuary, Burnaby Strait, Skincuttle Inlet, Pool Inlet, Matheson Inlet, Juan Perez Sound, Shuttle Passage and Klue Passage. Descriptions of strict protection areas are as follows:

Kun Skuujii sda GawGaay.ya (Kwoon Cove to Gowgaia Bay)

Those waters of Subareas 2-38 to 2-41 and 142-1 inside a line commencing at a point on land on T'aaxwii XaaydaGa Gwaay.yaay iinaGwaay (Moresby Island) at 52°23.311'N and 131°35.794'W northwesterly to a point on land on GuuGaalas Gwaay (south Gowdas Islands) at 52°23.340'N and 131°35.859'W, thence northerly following the shoreline of GuuGaalas Gwaay (south Gowdas Islands) to 52° 23.489'N and 131°36.092'W, thence southwesterly to a point in water at 52° 18.982'N and 131°43.957'W, thence northwesterly to a point in water at 52° 38.114'N and 132°10.004'W, thence southeasterly to a point on land on T'aaxwii XaaydaGa Gwaay.yaay iinaGwaay (Moresby Island) at 52°38.177'N and 131°56.374'W, and thence southerly following the western shoreline of T'aaxwii XaaydaGa Gwaay.yaay iinaGwaay (Moresby Island) to the beginning point.

SGang Gwaay (Wailing Island)

Those waters of Subareas 2-31 and 142-1 inside a line commencing at a point on the western shoreline of T'aaxwii XaaydaGa Gwaay.yaay iinaGwaay (Moresby Island) at 52°07.210'N and 131°15.838'W easterly following the shoreline to 52° 07.440'N and 131°14.307'W, thence southeasterly to a point on the northern shoreline of K'il (Flatrock Island) at 52°06.468'N and 131°10.300'W, thence easterly following the shoreline to 52°06.388'N and 131°10.079'W, thence southeasterly to the westernmost point of Sii.niihl Gwaay.yaay (Gordon Islands) at 52°06.018'N and 131°09.391'W, thence southerly following the shoreline of Sii.niihl Gwaay.yaay (Gordon Islands) to 52°05.884'N and 131°09.283'W, thence southeasterly to 52°05.806'N and 131°09.208'W, thence easterly following the shoreline of Sii.niihl Gwaay.yaay (Gordon Islands) to 52°05.787'N and 131° 09.097'W, thence northeasterly to the shoreline of Sii.niihl Gwaay.yaay (Gordon Islands) at 52°05.788'N and 131°08.938'W, thence easterly following the shoreline and thence crossing the channel to 52°05.778'N and 131°08.861'W, thence southeasterly following the shoreline to 52°05.741'N and 131°08.788'W, thence following the shoreline of Sii.niihl Gwaay.yaay (Gordon Islands) to 52° 05.708'N and 131°08.697'W, thence easterly across the channel to 52°05.709'N and 131°08.673'W, thence southerly following the shoreline of Sii.niihl Gwaay.yaay (Gordon Islands) to 52°05.468'N and 131°08.425'W, thence southeasterly to a point on the western shoreline of Gangxid Gwaay.yaay

(Kunghit Island) at 52°04.414’N and 131°07.720’W, thence northerly and southerly following the shoreline of Gangxid Gwaay.yaay (Kunghit Island) to 52° 04.366’N and 131° 07.720’W, thence southwesterly to a point in water at 52° 03.175’N and 131°14.399’W, thence northwesterly to a point in water at 52° 05.826’N and 131°17.913’W, and thence northeasterly back to the beginning point.

1.3.1.1. ..... Gangxid Tllgaay (South Kunghit Island)

Those waters of Subareas 2-19, 102-3, 130-3 and 142-1 inside a line commencing at a point on the western shoreline of Gangxid Tllgaay (South Kunghit Island) at 51°57.689’N and 131°03.375’W easterly following the southern shoreline of Gangxid Tllgaay (South Kunghit Island) to 52°00.343’N and 130° 59.788’W, thence southeasterly to a point in water at 51°50.159’N and 130° 53.207’W, thence southwesterly to a point in water at 51°47.954’N and 130° 53.613’W, thence northwesterly to a point in water at 51°54.927’N and 131° 07.801’W, and thence northeasterly to the beginning point.

Gangxid Xyuu Kun sda Kan ’Láas Kun (Lyman Point to Receiver Point)

Those waters of Subareas 102-2 and 102-3 inside a line commencing at a point on land of Kildaga T’awts’iiGaay (islet) at 52°04.541’N and 130°56.293’W following the shoreline of the islet to 52°04.598’N and 130°56.368’W, thence northwesterly to the eastern shoreline of Gangxid Gwaay.yaay (Kunghit Island) at 52°04.652’N and 130°56.414’W, thence northerly following the eastern shoreline of Gangxid Gwaay.yaay (Kunghit Island) to 52°05.734’N and 130° 56.365’W, thence northeasterly to a point in water at 52°10.225’N and 130° 49.512’W, thence southwesterly to a point in water at 52°02.632’N and 130° 50.910’W, thence northwesterly back to the beginning point.

1.3.1.2. ..... Kayjuu Kun (Benjamin Point)

Those waters of Subareas 2-17, 2-18 and 102-2 inside a line commencing at a point on the eastern shoreline of T’aaxwii XaaydaGa Gwaay.yaay iinaGwaay (Moresby Island) at 52°10.262’N and 131°01.993’W northerly following the eastern shoreline to 52°13.232’N and 131°00.777’W, thence northeasterly to a point in water at 52°17.724’N and 130°55.078’W, thence southeasterly to a point in water at 52°12.476’N and 130°49.103’W, and thence southwesterly back to the beginning point.

St’aa K’ii GawGa (Flamingo Inlet) – Head

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

GawGajaang (Louscoone Inlet) – Head

Those waters of Subarea 2-34 north of a line drawn from a point on land on T’aaxwii XaaydaGa Gwaay.yaay iinaGwaay (Moresby Island) at 52°11.841’N and 131° 15.670’W northeasterly

across the inlet to a point on the opposite shoreline of GawGajaang (Louscoone Inlet) at 52°12.245'N and 131°14.568'W.

K'insiGid (Rose Inlet) – Head
Those waters of Subarea 2-18 north of a line drawn from the western shoreline of K'insiGid (Rose Inlet) on T'aaxwii XaaydaGa Gwaay.yaay iinaGwaay (Moresby Island) at 52°11.327'N and 131°08.370'W northeasterly across the inlet to a point on the opposite shore at 52°11.328'N and 131°07.115'W.
GawGan (Huston Inlet) – Head
Those waters of Subarea 2-15 south of a line drawn from a point on the western shoreline of GawGan (Huston Inlet) at 52°15.732'N and 131°15.643'W northeasterly across the inlet to a point on the opposite shore at 52°16.111'N and 131°14.231'W.

Suu Kaahlii sda SGwaay Kun Gwaay.yaay (Skincuttle Inlet to Burnaby Island)
Those waters of Subareas 2-13 to 2-16 and 102-2 inside a line commencing at a point on the eastern shoreline of SGwaay Kun Gwaay.yaay (Burnaby Island) at 52°26.521'N and 131°14.153'W southeasterly to a point in water at 52°25.980'N and 131°04.477'W, thence southeasterly to a point in water at 52°22.825'N and 131°00.885'W, thence southwesterly to a point on the eastern shoreline of T'aaxwii XaaydaGa Gwaay.yaay iinaGwaay (Moresby Island) at 52°18.124'N and 131° 18.347'W, thence northerly following the eastern shoreline of T'aaxwii XaaydaGa Gwaay.yaay iinaGwaay (Moresby Island) to 52°23.055'N and 131°23.441'W, thence northeasterly to the western shoreline of Gwaay GudgiiGaagid (Kat Island) at 52° 23.082'N and 131°22.916'W, thence easterly following the southern shoreline of Gwaay GudgiiGaagid (Kat Island) to 52°23.147'N and 131°22.260'W, thence northeasterly to the western shoreline of SGwaay Kun Gwaay.yaay (Burnaby Island) at 52°23.276'N and 131°21.333'W, thence southerly following the western shoreline of SGwaay Kun Gwaay.yaay (Burnaby Island) to 52°20.949'N and 131° 15.569'W, thence northeasterly to the easternmost point of SGwaay Kun Gwaay.yaay (Burnaby Island) at 52°22.315'N and 131°14.689'W, thence following the western shoreline of SGwaay Kun Gwaay.yaay (Burnaby Island) to 52°22.377'N and 131°14.683'W, thence northwesterly to a point on the eastern shoreline of SGwaay Kun Gwaay.yaay (Burnaby Island) at 52°24.494'N and 131°15.832'W, and thence following the eastern shoreline to the beginning point.

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

Kuuniisii Xaw GawGa sda Gaaduu Gwaay (Matheson Inlet to Huxley Island)

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

Gandaawuu.ngaay Xyangs sda Tllga Kun Gwaay.yaay (Juan Perez Sound to Lyell Island
Those waters of Subareas 2-11 and 102-2 inside a line commencing on the eastern shoreline of Tllga Kun Gwaay.yaay (Lyell Island) at 52°42.074'N and 131° 26.535'W southeasterly to a point in water at 52°41.073'N and 131°14.523'W, thence southeasterly to a point in water at 52°38.666'N and 131°12.987'W, thence southwesterly to 52°35.106'N and 131°22.254'W, thence following the northern shoreline of Xiina Gwaay.yaay (Ramsay Island) to 52°34.964'N and 131° 22.963'W, thence southwesterly across to 52°34.116'N and 131°25.603'W, thence southwesterly across to 52°33.844'N and 131°26.324'W, thence southwesterly to a point on Gandaawuu.ngaay Gwaay.yaay (Marco Island) at 52°31.498'N and 131° 30.354'W, thence northwesterly to a point on Gandaawuu.ngaay Gwaayts'idaay (Hoskins Islets) at 52°32.405'N and 131°32.946'W, thence following the northern shoreline of Gandaawuu.ngaay Gwaayts'idaay (Hoskins Islets) to 52°32.435'N and 131°33.055'W, thence southwesterly to a point on the eastern shoreline of T'aaxwii XaaydaGa Gwaay.yaay iinaGwaay (Moresby Island) at 52°32.211'N and 131° 34.475'W, thence easterly following the eastern shoreline to 52°32.956'N and 131°37.729'W, thence northeasterly to a point on the shoreline of Kingts'ii Gwaay.yaay (Bischof Islands) at 52°34.143'N and 131°33.379'W, thence easterly following the southeastern shoreline of Kingts'ii Gwaay.yaay (Bischof Islands) to 52°34.340'N and 131°33.098'W, thence northeasterly to a point on an islet at 52°34.530'N and 131°32.890'W, thence northeasterly to a point on the southern shoreline of Tllga Kun Gwaay.yaay (Lyell Island) at 52°35.767'N and 131° 32.891'W, and thence easterly and northerly following the shoreline of Tllga Kun Gwaay.yaay (Lyell Island) to the beginning point.

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

western shoreline of Tllga Kun Gwaay.yaay (Lyell Island) to 52°37.301'N and 131°38.800'W, thence northwesterly to a point on land of Gwaay DaaGaaw (Shuttle Island) at 52°38.522'N and 131° 41.409'W, and thence following the eastern shoreline of Shuttle Island to the beginning point.

T'aanuu K'aadxwah Xyangs sda Gwaay Xaa'ans (Klue Passage to Lost Islands)
Those waters of Subareas of 2-7 and 2-8 inside a line commencing on a point of the eastern shoreline of T'aaxwii XaaydaGa Gwaay.yaay iinaGwaay (Moresby Island) at 52°48.570'N and 131°39.433'W northeasterly to a point in water at 52° 49.383'N and 131°29.039'W, thence southeasterly to a point in water at 52° 48.148'N and 131°28.849'W, thence southwesterly to a point in water at 52° 44.898'N and 131°34.035'W, thence northwesterly to 52°45.113'N and 131° 34.125'W, thence following the northern shoreline of K'ang.Guu Gwaay.yaay (Kunga Island) to 52°45.220'N and 131°35.574'W, thence southwesterly to a point on T'aanuu Gwaay (Tanu Island) at 52°45.002'N and 131°36.770'W, thence northerly following the eastern shoreline of T'aanuu Gwaay (Tanu Island) to 52° 46.725'N and 131°38.878'W, thence northwesterly across to a point on T'aaxwii XaaydaGa Gwaay.yaay iinaGwaay (Moresby Island) at 52°47.837'N and 131°39.371'W, and thence northerly following the eastern shoreline to the beginning point.

APPENDIX 12. RISK ASSESSMENTS (DRAFT)

A risk assessment tool has been used to assess monitoring levels required for the Recreational Crab fishery. The risk assessments were drafted by DFO in 2017. A summary and key findings from the draft risk assessments for this fishery are highlighted here. Comments on the findings are welcome and can be directed to Dillon Buerk (Dillon.buerk@dfo-mpo.gc.ca). Comments on the draft risk assessments will be considered where possible and, following this, the recreational crab risk assessments will be finalized in the 2021/22 season. Risk assessments for Indigenous FSC and commercial crab fisheries will be undertaken in the future. Refer to Section 4.4 of the Integrated Fisheries Management Plan for Crab by Trap for more information.

1 Recreational Crab

1.1 Fishery Overview

The recreational crab fishery is fished by trap or ringnet gear only and occurs coastwide. The fishery takes place year-round and requires a recreational tidal fishing licence issued by Fisheries and Oceans Canada. Dungeness crab is the primary species targeted, but retention of Red Rock, Tanner, King, Box and shore crab are also permitted. The fishery is not managed on a quota basis, and relies on size and sex restrictions as well as individual trap and possession limits in order to meet conservation targets. The size of the fishery is currently unknown, as there is no estimate of recreational catch or effort available except for limited data available through the iREC survey.

1.2 Ecosystem Risks

The stock status of crab is considered to be of low concern, and is likely that the recreational fishery has a low impact on the life-history of the stock. Additionally, there is a low likelihood of the fishery causing disruption to the behavior of crab. In terms of bycatch, the recreational fishery targets crab only, and bycatch of other species are unlikely to include species at risk. Released bycatch has a low likelihood of causing small impacts on the productivity of those species but there is a higher likelihood to have small impacts on the productivity of those bycatch species that are retained. Entanglement of marine mammals rarely occurs in the recreational fishery.
Finally, the fishery has a low impact on crab as a key predator/prey species. There are a few direct or indirect habitat impacts in this fishery due to lost gear and sedimentation related to contacting ocean floor substrate or potential destruction of fragile habitat features.

From this assessment, the preliminary fishery risk (comprised of risk to main species, bycatch, and community and habitat) was identified as moderate. Further analysis of additional resource management issues not incorporated into the preliminary risk calculations indicate there is a low potential to over-harvest in this fishery, but because of compliance and public relations concerns, the overall risk that the fishery poses to the stock was scored as moderate.

1.3 Monitoring Level

An overall risk score of moderate requires an “generic” monitoring level. The Risk Assessment for the recreational fishery also identifies that the fishery currently has low monitoring, with key information gaps identified around lack of catch and effort information. Increased monitoring and reporting is required to better describe recreational harvest and effort in order to inform and support discussions regarding access and management priorities.

1.4 Next Steps

As the fishery does not currently meet the generic target monitoring level prescribed by the risk assessment, further development of a recreational catch monitoring program is required. Information gaps that may be used for future assessment of the risks of this fishery include the uncertain impact of the fishery on smaller spatial stock areas, and an unknown amount of crab mortality from releases— especially during vulnerable life-history stages such as molting and softshell. There has also been recent discussion about crab stock recruitment in isolated habitats, such as remote fjords where crab larvae are slower to repopulate after significant removal.

Fishery Monitoring & Catch Reporting Risk Assessment Tool

Column Comments

1 PART A: FISHERY DESCRIPTION & LICENCING INFORMATION

1.1 Licencing

Column	Comments
DFO Mgmt Area	DFO management areas, Pacific Fishery Management Area. e.g., SC (South Coast); NC (North Coast); LFA (Lower Fraser Area); BCI (BC Interior); UFR (Upper Fraser River); YKTB (Yukon-Transboundary)
Name of Fishing Group	A name to describe the fishing group. e.g., First Nation name or aggregate (band, tribal council, permitting authority, etc), San Juan, Recreational, Area E commercial, etc
Licence Type	Licence type e.g., Food, social, ceremonial (FSC), commercial, Economic Opportunity, Recreational, etc

1.2 Description

Column	Comments
Gear Type	e.g., boat based angling, seine, trawl, etc.
Fish Species for Analysis	The fish species that is being analysed by this row. For example, in a directed or multi-species fishery, it would refer to the target species that is retained. In an opportunistic fishery, such as some recreational and FSC fisheries, multiple rows will analyse the impacts of the fishery. In a multi-stock fishery, please note the stock that is driving the fishery in brackets. e.g., Chinook (Spring 4-2), Sockeye (Fraser), chum salmon, geoduck, etc
Timing of Analysis	If the analysis is seasonally dependent, then note the timeframe. e.g., Recreational fisheries may have a larger impact from May-August and so separate rows should specify the timing of analysis. If the fishery is year round: "June-May" or "year round"

1.3 Size of Fishery

Column	Comments
Mean Catch (pcs/lbs)	Describe the size of the fishery in a method that provides context for the size of the fishery in relation to other users. - Record the average catch in appropriate units, over a representative time span for the fishery (the time period may differ between species).

	e.g., 40,000 lbs/yr, 2010-2014
Mean Effort (boat-days, fishers, etc)	Describe the size of the fishery in a method that provides context for the size of the fishery in relation to other users. - Record the average effort (number of boats, number of fishers, etc.) over a representative time span for the fishery. e.g., 2000 boat-days per year, 2012-2014
% TAC	Describe the size of the fishery in a method that provides context for the size of the fishery in relation to other users. -Record the range of percentages that the fishery takes of the total exploitation rate (e.g., 50-75%), or provide the mean total exploitation rate over a specified time period (e.g., 25%, 2005-2010)

2 PART B: ECOSYSTEM RISKS

2.1 Main Species

Could the mortality caused by fishery threaten the main fish species or stock that is being assessed?

"Main" can also be referred to as "target".

Column	Comments
Main Species or Stock Status	Does the fishery target a species/stock that is thought to be of concern in some way (e.g., Is it healthy and abundant? Is it listed under the *Species at Risk Act* (SARA)? Has it been assessed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) or Wild Salmon Policy (WSP)? Has it been identified as a concern according to the Salmon Outlook or its Integrated Fisheries Management Plan status or another assessment grouping? Or is the species or stock status presumed to be low but data deficient? Is there a co-migrating stock amongst the main species that is sensitive in some way?), and if so, what is the consequence of the impact? How likely is it that the fishery will have a negative impact of such consequence? Consequence: E.g. 0= This question isn't applicable. 1= There are minor concerns with how the fishery will impact the health of the main fish population being analyzed (but it is not listed or presumed to be weak). 2= The fishery may impact a species/stock that is of medium concern (e.g. listed as "of special concern" or "amber status"). 3= The fishery may impact a species/stock of high concern (e.g. listed as, "threatened" or "endangered" or "red status"). Likelihood: E.g. 0 = This question isn't applicable 1= The fishery has a low likelihood of causing the consequence listed above. 2= The fishery has a medium likelihood of causing the consequence listed above. 3= The fishery has a high likelihood of causing the consequence above. NOTE: If unknown, the consequence value cannot be zero but can be 1, 2, or 3 depending on presumed consequence of impact.
Vulnerability of Main Species or Stock	Can the fishery cause long-term harm to the main species/stock via impacts on life-history? Consider the life history characteristics (i.e., growth rate of animal, rate of reproduction, etc.) of the species/stock. Consequence: E.g. 0= This question isn't applicable. 1= The fishery may have small impacts on the life-history of the species. 2= The fishery may have medium impacts on the life-history of the species. 3= The fishery may have high impacts on the life-history of the species. NOTE: If Unknown, value cannot be zero but can be 1, 2, or 3 depending on presumed consequence of impact. Likelihood: E.g., 0= This question isn't applicable. 1= The fishery has a low likelihood of causing the consequence listed above. 2= The fishery has a medium likelihood of causing the consequence listed above. 3= The fishery has a high likelihood of causing the consequence above.
Species or Stock Behavioral Changes	Are there disruptions to the behaviour of the main species/stock resulting from fishing activities (e.g., noise, displacement and/or interruption to breeding, migration changes due to gillnets, etc.)?

	Consequence: E.g. 0= no disruptions (e.g. marine land-based angling, for instance from a rock where one line won't impact behaviour of a school of fish) 1= yes but minor (e.g. boat based angling causes noise that may cause fish to dive deeper, etc.) 2= yes, medium impact (e.g. gillnets in Fraser temporarily impact migration patterns) 3= yes, major impact. NOTE: If Unknown, value cannot be zero but can be 1, 2, or 3 depending on presumed consequence of impact. Likelihood: E.g., 0= This question is not applicable. 1= The fishery has a low likelihood of causing the consequence listed above. 2= The fishery has a medium likelihood of causing the consequence listed above. 3= The fishery has a high likelihood of causing the consequence above.

2.2 By-Catch

Could the mortality caused by fishery threaten a non-target fish species / stock?

Column	Comments
Retained By-Catch Status	Does the fishery retain a by-catch stock or species that is thought to be of concern in some way (e.g. Is it healthy and abundant? Is it listed under SARA? Has it been assessed by COSEWIC or WSP? Has it been identified as a concern according to the Salmon Outlook or its IFMP status or another assessment grouping? Or is the species status presumed to be low but data deficient?) and if so, what is the consequence of the impact? How likely is it that the fishery will have a negative impact of such consequence? This question refers to the by-caught species, not the individual. Identify in cell comment all retained by-caught species, starting with the species of most concern. Consequence: E.g. 0=not applicable. 1= yes, minor concerns with health of by-caught species. 2=yes, presumed to have concerns of medium consequence but not assessed/listed, or listed as "of special concern" or "amber status" and/or identified as a species/stock of concern via the Canadian Science Advisory Secretariat (CSAS). 3= yes, presumed to have concerns of high consequence but not listed/assessed, or is listed as "threatened" or "endangered" or "red status" and/or identified as a species/stock of high concern via CSAS. NOTE: If Unknown, value cannot be zero but can be 1, 2, or 3 depending on presumed consequence of impact. Likelihood: E.g., 0= Not applicable. 1= The fishery has a low likelihood of causing the consequence listed above. 2= The fishery has a medium likelihood of causing the consequence listed above. 3= The fishery has a high likelihood of causing the consequence above.
Vulnerability of Retained By-Catch	Can the fishery cause long-term harm to the retained by-caught species/stock via impacts on life-history? Consider the life history characteristics (i.e., growth rate of animal, rate of reproduction, etc.) of the species/stock. Consequence: E.g. 0= This question isn't applicable. 1= The fishery may have small impacts on the productivity of species/stock. 2= The fishery may have medium impacts on the productivity of species/stock. 3= The fishery may have high impacts on the productivity of species/stock. NOTE: If Unknown, value cannot be zero but can be 1, 2, or 3 depending on presumed consequence of impact. Likelihood: E.g., 0= This question isn't applicable. 1= The fishery has a low likelihood of causing the consequence listed above. 2= The fishery has a medium likelihood of causing the consequence listed above. 3= The fishery has a high likelihood of causing the consequence above.

Released By-Catch Status	Does the fishery impact a released by-catch stock or species that is thought to be of concern in some way (e.g. Is it healthy and abundant? Is it listed under SARA? Has it been assessed by COSEWIC or WSP? Has it been identified as a concern according to the Salmon Outlook or its IFMP status or another assessment grouping? Or is the species status presumed to be low but data deficient?) and if so, what is the consequence of the impact? How likely is it that the fishery will have a negative impact of such consequence? This question refers to the released by-caught species, not the individual. Identify in cell comment all released by-caught species, starting with the species of most concern. Consequence: E.g. 0=no 1= yes, minor concerns with health of released by-caught species. 2=yes, presumed to have concerns of medium consequence but not assessed/listed, or listed as "of special concern" or "amber status" and/or identified as a species/stock of concern via CSAS. 3= yes, presumed to have concerns of high consequence but not listed/assessed, or is listed as "threatened" or "endangered" or "red status" and/or identified as a species/stock of high concern via CSAS. NOTE: If Unknown, value cannot be zero but can be 1, 2, or 3 depending on presumed consequence of impact. Likelihood: E.g., 0= This questions isn't applicable 1= The fishery has a low likelihood of causing the consequence listed above. 2= The fishery has a medium likelihood of causing the consequence listed above. 3= The fishery has a high likelihood of causing the consequence above.
Vulnerability of Released By-Catch	Can the fishery cause long-term harm to the retained by-caught species/stock via impacts on life-history? Consider the life history characteristics (i.e., growth rate of animal, rate of reproduction, etc.) of the species/stock. Consequence: E.g. 0= This question isn't applicable. 1= The fishery may have small impacts on the productivity of species/stock. 2= The fishery may have medium impacts on the productivity of species/stock. 3= The fishery may have high impacts on the productivity of species/stock. NOTE: If Unknown, value cannot be zero but can be 1, 2, or 3 depending on presumed consequence of impact. Likelihood: E.g., 0= This question isn't applicable. 1= The fishery has a low likelihood of causing the consequence listed above. 2= The fishery has a medium likelihood of causing the consequence listed above. 3= The fishery has a high likelihood of causing the consequence above.

2.3 Community & Habitat

Could the mortality caused by fishery threaten other components of the eco-system, such as predators or prey or habitat?

Column	Comments
Key Predator or Prey	Does the fishery impact an important predator (e.g. resident orca) or prey (e.g. forage fish such as herring, sardine, eulachon, etc.)? Will removals in the fishery have a demonstrated impact on the survival of other species in the community? Consequence: e.g., 0= No (e.g. sea cucumber) 1= Minor impact. For instance, a fishery might discard a small amount of a plentiful forage fish (e.g. hake fishery impact on herring). Or discarded species has minor ecosystem role (e.g. sea urchins are food source for sea otters, but many alternatives) 2= Medium impact. For instance, fishery targets forage fish at low level, or discarded forage fish is large but not putting population at risk. Or entanglement of marine mammals in fishing gear can occur. 3= High/worrisome impact. For instance, the fishery has an impact on forage fish of low abundance (e.g. shrimp trawl impact on eulachon). Or the impact is on SARA listed species (e.g. chinook fishery limits resident killer whale diet). NOTE: If unknown, value cannot be zero but can be 1, 2, or 3 depending on presumed consequence of impact. Likelihood: E.g., 0= The fishery will not impact an important predator or prey.

	1= The fishery has a low likelihood of causing the consequence listed above. 2= The fishery has a medium likelihood of causing the consequence listed above. 3= The fishery has a high likelihood of causing the consequence above. NOTE: If unknown, value cannot be zero but can be 1, 2, or 3 depending on presumed consequence of impact.
Direct Habitat Impacts	Are there direct NEGATIVE changes to structure or composition of the habitat or is there destruction as a result of fishing activity? (e.g. impacts on identified sensitive areas, impacts on spawning habitat due to disturbing redds, ghost gear, overlap with marine protected areas, national marine conservation areas, marine parks, other protected areas, etc.) Consequence: e.g. 0= No impact (e.g. marine land-based angling) 1= Minor impact (e.g. clam digging by small digging crew) 2= Moderate impact (e.g. bottom contact gear such as crab traps) 3= Major impact (e.g. trawl impact on glass sponge coral) NOTE: If unknown, value cannot be zero but can be 1, 2, or 3 depending on presumed consequence of impact. Likelihood: E.g., 0= The fishery will not impact habitat. 1= The fishery has a low likelihood of causing the consequence listed above. 2= The fishery has a medium likelihood of causing the consequence listed above. 3= The fishery has a high likelihood of causing the consequence above. It can be 1, 2, or 3 depending on presumed consequence of impact.
Indirect Habitat Impacts	Are there indirect NEGATIVE changes to habitat feature/function due to indirect impacts of fishing activity? (e.g. sedimentation, displacement of marine mammal, pollution, noise from vessel traffic, accumulation of lead from lost fishing gear, etc.) Consequence: E.g. 0= no 1= yes but minor (e.g. marine boat-based angling noise) 2= yes, medium impact (e.g.) 3= yes, major impact (e.g.) NOTE: If unknown, value cannot be zero but can be 1, 2, or 3 depending on presumed consequence of impact. Likelihood: E.g., 0= The fishery will not impact habitat. 1= The fishery has a low likelihood of causing the consequence listed above. 2= The fishery has a medium likelihood of causing the consequence listed above. 3= The fishery has a high likelihood of causing the consequence above.

3 PART C: RESOURCE MANAGEMENT ISSUES

Column	Comments
Fishery Type	Is the fishery SHARE-BASED, DERBY, or OTHER? DERBY (i.e., Effort-based) SHARE (e.g., Quota, IVQ, ITQ) OTHER (e.g., other allocation type) N/A (Does not always apply to Recreational or FSC fisheries, unless there is a defined share)
Potential to Over-Harvest	Under current management conditions, does the fishery under consideration (not all of the impacting fisheries) have the potential/capacity to overharvest the fish species or stock that is being assessed and put it at risk biologically? For instance, does the fishery have the capacity (e.g., sufficient boats, nets, etc.) to catch more than its Total Allowable Catch (TAC) if quota overruns or unreported fishing occurs? Can the fishery be managed (e.g., through up-to-date catch accounting) to avoid overharvest? Is the expected level of impact that removals will have on species/stock size and productivity expected to be low, medium or high? NOTE: We are not considering cumulative impacts of multiple fisheries at this time.
Compliance & Enforcement	Are there routinely compliance or enforcement concerns (e.g. low reporting, using barbed hooks, using wrong sized mesh, selling recreational or FSC fish, etc.) that may impact the monitoring of the fishery? Are there incentives for non-compliance?

	(Y/N) This variable is not scored so please explain concerns in the comment box if they exist.
International or Treaty Requirements	Are there any international/treaty information requirements, such as Pacific Salmon Treaty (PST), Marine Stewardship Certification (MSC), traceability, First Nations Treaties, etc. that would require a higher level of monitoring? (Y/N) This variable is not scored but please explain relevant treaties and associated requirements for monitoring in the comment box.
Info to Manage Other Sectors or Fisheries	Is information required in-season to plan for other fisheries, such as FSC, recreational, commercial? (Y/N) This variable is not scored but please explain in-season reporting requirements in the comment box.
Public Relations	Is there a need for higher monitoring due to public requirements for more detailed explanation about the impacts of the fishery? (Y/N) For instance, there are examples of fisheries where a low level of monitoring is probably appropriate due to ecosystem risk, but DFO implements higher levels of monitoring because the public needs it (example is Area 6 seine). This variable is not scored but please provide information about public's concern for monitoring in the Comment field.

4 PART D: PRELIMINARY RISK SCORING (CALCULATED)

Column	Comments
Risk to Main Species	Auto-calculated from MAIN SPECIES CATEGORY RISK SCORES PROTECTED: user may NOT over-ride.
Risk to By-Catch	Auto-calculated from BY-CATCH CATEGORY RISK SCORES PROTECTED: user may NOT over-ride.
Risk to Community and Habitat	Auto-calculated from COMMUNITY & HABITAT CATEGORY RISK SCORES PROTECTED: user may NOT over-ride.
Overall Fishery Risk	Auto-calculated from maximum value of CALCULATED RISK SCORES PROTECTED: user may NOT over-ride.
Target Monitoring Level	Assigned from FINAL RISK OF FISHERY score Low: 1-2 General: 3-5 Enhanced: 6-9 PROTECED: user man not over-ride

5 PART E: FINAL RISK SCORING (ASSIGNED)

Column	Comments
Risk to Main Species	DEFAULTS to preliminary MAIN SPECIES RISK SCORE; user may over-ride.
Risk to By-Catch	DEFAULTS to preliminary BY-CATCH SPECIES RISK SCORE; user may over-ride.
Risk to Community and Habitat	DEFAULTS to preliminary COMMUNITY & HABITAT RISK SCORE; user may over-ride.
Overall Fishery Risk	DEFAULTS to maximum value of FINAL RISK SCORES; user may over-ride.
Target Monitoring Level	Assigned from FINAL RISK OF FISHERY score Low: 1-2 General: 3-5 Enhanced: 6-9 PROTECTED: User many NOT override

6 PART F: RISK ASSESSMENT NOTES

Column	Comments
Current Monitoring Level	What is the current monitoring level?
Information Gaps	Are there any specific information gaps in the monitoring program? E.g. Need to record by-catch. Should sample 10% of scales
Comments	Further comments and suggestions pertaining to current monitoring level, apparent quality and comprehensiveness of Catch Monitoring & Reporting effort, data gaps, issues of current and future risk, etc
Contact Info – Name & Date	Who supplied this information and when.

Risk Assessment Tool - Working Draft

Crab for Recreational by Non-commercial trap, ringnet

Part A: Fishery Description & Licensing Information

Licensing

DFO MGMT AREA	Coastwide
NAME of FISHING GROUP	All Recreational Harvesters
LICENCE TYPE	Recreational

Description

GEAR TYPE	trap, ringnet
FISH SPECIES for ANALYSIS	Crab
TIMING of ANALYSIS	Year- Round

Size of Fishery

MEAN CATCH (pcs/lbs)	Unknown
MEAN EFFORT (boat-days, fishers, etc)	Unknown
% TAC	N/A

Part B: Ecosystem Risks

Main Species

MAIN SPECIES or STOCK STATUS	0
VULNERABILITY OF MAIN SPECIES or STOCK	3
SPECIES or STOCK BEHAVIOURAL CHANGES	1

By-Catch

RETAINED BY-CATCH STATUS	0
VULNERABILITY OF RETAINED BY-CATCH	1
RELEASED BY-CATCH STATUS	3
VULNERABILITY OF RELEASED BY-CATCH	1

Community & Habitat

KEY PREDATOR or PREY	1
DIRECT HABITAT IMPACTS	2
INDIRECT HABITAT IMPACTS	1

Part C: Resource Management Issues

FISHERY TYPE	N/A
POTENTIAL to OVER-HARVEST	No
COMPLIANCE and ENFORCEMENT	Yes
INTERNATIONAL or TREATY REQUIREMENTS	No
INFO to MANAGE OTHER SECTORS or FISHERIES	Yes
PUBLIC RELATIONS	Yes

Part D: Preliminary Risk Scoring (calculated)

RISK to MAIN SPECIES (D)	3
RISK to BY-CATCH (D)	3
RISK to COMMUNITY and HABITAT (D)	2
OVERALL FISHERY RISK (D)	3
TARGET MONITORING LEVEL (Low, Generic, Enhanced) (D)	Generic

Part E: Final Risk Scoring (assigned)

RISK to MAIN SPECIES (E)	3
RISK to BY-CATCH (E)	2
RISK to COMMUNITY and HABITAT (E)	2
OVERALL FISHERY RISK (E)	3
TARGET MONITORING LEVEL (Low, Generic, Enhanced) (E)	Generic

Risk Assessment Notes

CURRENT MONITORING LEVEL (Low, Generic, Enhanced)	Low
INFORMATION GAPS	- require spatial information with respect to areas fished- lack of catch and effort info in general
COMMENTS	increased monitoring and reporting is required to better describe FSC and recreational harvest and effort, to inform and support discussions regarding access and management priorities