PACIFIC REGION

INTEGRATED FISHERIES MANAGEMENT PLAN

SEA CUCUMBER

BY DIVE

OCTOBER 1, 2020 TO SEPTEMBER 30, 2021

Sea Cucumber: *Apostichopus californicus*

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 Sea Cucumber fishery in the Pacific Region, as well as the management measures that will be used to achieve these objectives. This document also serves to communicate the basic information on the fishery and its management to Fisheries and Oceans Canada (DFO) staff, legislated co-management boards and other stakeholders. This IFMP provides a common understanding of the basic "rules" for the sustainable management of the fisheries resource.

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

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

TABLE OF CONTENTS

ATTACHMENTS

1. OVERVIEW

1.1. Introduction

In this document, 'Sea Cucumber' refers to the Giant Red (California) Sea Cucumber (*Apostichopus californicus,* formerly *Parastichopus californicus*).

The 2020/21 Pacific Region Sea Cucumber Integrated Fisheries Management Plan (IFMP) encompasses the period of October 1, 2020 to September 30, 2021.

The Sea Cucumber Commercial Harvest Plan is attached as Appendix 1 to this IFMP. Commercial fish harvesters are advised to review the attachments for harvest information.

1.2. History

The Giant Red Sea Cucumber (*Apostichopus californicus*) is the only Sea Cucumber species harvested in British Columbia (BC) and is harvested commercially under the authority of a limited "ZD" licence.

The commercial dive fishery began in BC in 1971. An experimental fishery occurred in southern waters during the early 1980s during which time markets were established for BC Sea Cucumbers. As a result, there was rapid escalation in effort during the 1980s which led to conservation concerns and the implementation of various management actions. Licence limitation came into effect in 1991 in an attempt to control an increase in fishing effort and the number of licence eligibilities was set at 85. In 1992 the commercial industry formed the Pacific Sea Cucumber Harvesters Association (PSCHA) which represents the interests of licence eligibility holders with regards to marketing and fishery sustainability. The PSCHA is a member of the Sea Cucumber Sectoral Committee (see Appendix 13) and provides advice and comments on this IFMP and other issues related to the commercial fishery.

A rotational style fishery began in 1993 in order to reduce the impacts of harvest by allowing a two year recovery period between openings and an Individual Quota (IQ) program was adopted for the commercial Sea Cucumber fishery in 1995. The implementation of the IQ program was beneficial for the BC Sea Cucumber industry since it gave an equal share of the Total Allowable Catch (TAC) to each licence eligibility holder which in turn promoted a safer fishery and reduced issues with quota overages.

An Adaptive Management Plan (AMP) was undertaken in the Sea Cucumber fishery from 1997-2007 (see section 2.4). Under the AMP, the Department restricted the commercial fishery to approximately 25 percent of the BC coastline. This restriction was not meant to be permanent and the PSCHA was told that areas closed for the AMP would be considered for reopening pending results from data collected during the plan. The fishery also moved from a rotational style fishery to an annual style fishery in order to allow the collection of time-series fishery dependent data. Arbitrary quotas in place prior to the AMP were replaced by a precautionary baseline TAC that was calculated using baseline density estimates and a precautionary fixed harvest rate. Provisions were built into the AMP that allowed increases in TAC based on data collected from stock assessment surveys. The TAC steadily increased from 1998 to 2005 due to a number of surveys that were completed and due to the doubling of the baseline density estimate in 2002. The TAC was set at

approximately 1.2 million pounds in 2006 and remained constant until an increase of approximately 9.5% in 2011.

In 2008, after reviewing the results of the 10 year AMP (Hand et al. 2009), the Department began allowing the commercial fishery to return into areas that were closed during the AMP. In 2011 the commercial fishery moved from an annual style fishery to a 3-year rotational style fishery. For the Adaptive Rotational Fishing Strategy (ARFS), each Sea Cucumber Quota Management Area (QMA) is harvested once every three years. Some QMAs were returned to an annual style harvest in 2017. The ARFS continues with a fourth round spanning 2020 to 2022.

Sea Cucumbers are important to coastal First Nations, who harvest them for food, social and ceremonial purposes. Recreational harvest of Sea Cucumbers is undocumented but is considered minimal.

1.3. Type of Fishery and Participants

1.3.1. First Nations

First Nations' harvest for food, social and ceremonial (domestic) purposes may occur where authorized by an aboriginal communal licence or, under treaty, a harvest document. The communal licence or harvest document may contain provisions for the designation of individuals by the First Nation or First Nation organization but the number harvesting Sea Cucumber is otherwise unknown.

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 T'aaq-wiihak First Nations) – have aboriginal rights to fish for any species of fish, with the exception of geoduck, within their Fishing Territories (their Fishing Territories are located within portions of Pacific Fishery Management Areas (PFMA) 25/125, 124, 26/126 and all of PFMA 24) and to sell that fish.

1.3.2. Recreational

A British Columbia Tidal Waters Sport Fishing Licence is required for the recreational harvest of all species of fish, including Sea Cucumbers. Tidal Waters Sport Fishing Licences are available online by using the internet at:

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

The number of recreational harvesters taking advantage of the bag limit for Sea Cucumbers is unknown. However, based on advice from the Sport Fishing Advisory Board of BC (SFAB), it is thought to be minimal.

1.3.3. Commercial

The commercial fishery is a limited entry fishery with 85 licence eligibilities. There is currently one communal commercial licence that is available for First Nations participation in the commercial fishery. First Nation organizations also hold regular commercial licences in this fishery. Vessel sizes in the commercial fishery range from 8 metres to 12 metres in length. It is common practice within the industry for vessels to stack multiple licence eligibilities in order to make fishing more economical.

A typical crew on a Sea Cucumber vessel consists of a vessel master and one or two crew members. One crew member will act as a dive tender while the others dive to harvest Sea Cucumbers.

1.3.4. Aquaculture

There is a keen interest by industry and investors to develop Sea Cucumber aquaculture technologies and methodologies both for aquaculture and enhancement of wild stocks. Further research, in the areas of hatchery and grow-out techniques for Sea Cucumber species native to BC, are required to support the growth of this sector. Further policy development is required to define DFO's approach to Sea Cucumber aquaculture interest.

Aquaculture licence conditions include pre-harvest notification and the provision of an aquaculture landing log when harvest occurs. Sea Cucumbers are a candidate species for integrated multi-trophic aquaculture systems, where they can be cultivated in containers below finfish and shellfish farms to feed on deposition material.

For more information, listing of licensed sites and Conditions of the Shellfish Aquaculture Licence see the Fisheries and Oceans Canada Pacific Aquaculture website at:

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

1.4. Location of Fishery

1.4.1. First Nations and Recreational

Aboriginal and recreational harvest may occur coast-wide, where appropriately licensed.

1.4.2. Commercial

As a result of the Adaptive Management Plan (see section 2.4), the Sea Cucumber fishery was restricted to approximately 27 percent of the BC coast from 1997 to 2008. This restriction was not meant to be permanent and the fishery is being reopened in some of the portions of the coast that were closed for the AMP. The commercial fishery occurs in units called Quota Management Areas. These management areas are a defined portion of Pacific fisheries waters. Areas and Subareas, as described in the *Pacific Fishery Management Area Regulations*, are referenced in describing each management area. (see Appendices 1, 9 and 10). There are also permanent closures for various purposes (see Appendix 1, Section 5).

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 FSC domestic purposes has not been limited by catch quantity, except in those Nations where the Council or fisheries program has established their own catch limits for band members, or where allocated under treaty (as in the Tla'amin treaty). While Sea Cucumbers were not allocated under the Maa-nulth, Tsawwassen or Nisga'a treaties, harvesting for domestic purposes is permitted. See Appendix 2.

1.5.2. Recreational

The recreational fishery is open year-round (except for areas closed to fishing) and is an open entry fishery with a daily limit and a two-day possession limit. There is no size limit for recreational harvesters and the type of gear permitted is limited to hand picking and diving.

1.5.3. Commercial

The commercial licence year runs from October 1 to September 30 of the following year. The fishery generally opens on the first Monday of October in the north coast licence area and the following Monday in the other licence areas. The season is scheduled for approximately 8 weeks. Harvest is by hand picking while diving.

The fishery operates under a Total Allowable Catch (TAC) with Individual Quotas (IQ). All commercial landings are tracked using a coast-wide Dockside Monitoring Program (DMP). Other management measures include limited entry licensing, area quotas and area licensing. For more information see Appendix 6.

1.5.4. Aquaculture

Sea Cucumber aquaculture is at an early stage of development in BC. Currently aquaculture harvests have consisted of wild Sea Cucumbers that have settled as juveniles on floating gear such as oyster strings and shellfish trays. Hatchery techniques are also under development, with some early indication of success. There is also keen interest by industry in outplanting hatchery raised juvenile Sea Cucumbers and in 'ocean ranching' methods. DFO is working to develop phased, integrated approaches for the development of aquaculture involving new and emerging species. Until these phased approaches are in place, DFO will not be considering new applications for Sea Cucumber aquaculture licences. See Appendix 4.

1.6. Governance

1.6.1. Fisheries Management

The Sea Cucumber fishery is governed by the *Fisheries Act* (R.S., 1985, c. F-14) and regulations made thereunder, including the *Fishery (General) Regulations* (e.g., conditions of licence), the *Pacific Fishery Regulations* (e.g., open times), the *British Columbia Sport Fishing Regulations (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 (MPAs) may be established under the *Oceans Act* (1996, c. 31). National marine conservation areas may be established under the *Canada National Marine Conservation Areas Act* (2002, 2. 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 derivative of an individual.

In addition, the Sustainable Fisheries Framework is a toolbox of policies for DFO to sustainably manage Canadian fisheries by conserving fish stocks while supporting the industries that rely on healthy fish populations. It provides planning and operational tools that allow these goals to be achieved in a clear, predictable, transparent, inclusive manner, and provides the foundation for conservation policies to implement the ecosystem and precautionary approaches to fisheries management. These policies include: A Fishery Decision-Making Framework Incorporating the Precautionary Approach, Policy for Managing the Impacts of Fishing on Sensitive Benthic Areas, Ecological Risk Assessment Framework for Coldwater Corals and Sponge Dominated Communities, Policy on New Fisheries for Forage Species, Policy on Managing Bycatch, Guidance on Implementation of the Policy on Managing Bycatch, and Guidance for the Development of the Policy of Rebuilding Plans under the Precautionary Approach Framework: Growing Stocks out of the Critical Zone. Along with existing economic and shared stewardship policies, these will help Fisheries & Oceans Canada (DFO) meet objectives for long-term sustainability, economic prosperity, and improved governance. More information is available on the internet at:

http://www.dfo-mpo.gc.ca/csas-sccs/index-eng.htm

Scientific advice for this fishery is peer-reviewed primarily through a committee called the Centre for Science Advice - Pacific (CSAP) (formerly, the Pacific Scientific Advice Review Committee (PSARC)).

The Sea Cucumber Sectoral Committee (Appendix 13) is the primary body guiding management decision-making processes for the Sea Cucumber fishery. The Sea Cucumber Sectoral Committee meets once a year in June for a post-season review and pre-season planning.

1.7. Approval Process

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

2. STOCK ASSESSMENT, SCIENCE AND TRADITIONAL KNOWLEDGE

2.1. Biological Synopsis

The Giant Red or California Sea Cucumber (*Apostichopus californicus*) is a member of the phylum Echinodermata, which includes sea stars and sea urchins. It is the largest of approximately 30 sea cucumber species in BC and is the only one that is commercially harvested. The species ranges from the Gulf of Alaska to southern California, in water depths ranging from the intertidal to 250 m. Sea Cucumbers occupy the seabed in a wide variety of substrate and current regimes, but are most abundant in areas of moderate current on complex boulder or bedrock substrates. Individuals have limited mobility, move an average of 4 metres per day while feeding, and are reputed to undertake seasonal migrations to different depths. Sea Cucumbers feed by picking up organic detritus with their mop-shaped adhesive tentacles as they move over the sea floor.

Sea Cucumbers have separate sexes and spawning occurs from spring through summer. Eggs and sperm are released directly into the water and the developing larvae remain planktonic for two to four months. Juveniles are 0.25 mm in length at settlement and grow to approximately 1 cm in one year and 4 to 10 cm at the end of two years. During this early life-stage, they have been observed

attached to the underside of rocks, in mats of stringy red algae in calm bays and among solitary tunicates, although juveniles have been reported from many different habitats. Adult populations tend to be uniform in size and rarely contain individuals less than 15 cm in length. Age at recruitment to the fishery is thought to be at least 4 years, since year classes can be distinguished through analysis of length frequency data for only the first three years.

The life history characteristics of importance to understanding the productivity of *Apostichopus californicus* are largely unavailable. No method has yet been found to age the animals, and therefore basic parameters for stock assessments (natural mortality and age at recruitment) are speculations. The body shape is plastic, and hence measurements of body dimensions are difficult to obtain. Furthermore, the animals undergo annual fluctuations in body mass, skin thickness and muscle weight from their yearly cycle of resorbing and regenerating their internal organs.

2.2. Ecosystem Interactions

Sea Cucumbers move slowly over the sea floor feeding on the organic component of detritus. They function in the ecosystem as nutrient recyclers. Adult Sea Cucumbers have few known predators, with the exception of Sea Otters (*Enhydra lutris*) and several species of sea stars. Sea stars can induce a violent escape response whereby the Sea Cucumber undulates its body, creating a swimming motion that allows it to move away from the predatory threat. Juveniles are probably more vulnerable and this may explain their secretive behaviour. Greater numbers of juvenile Sea Cucumbers have been reported over the last few years and it is suspected that one contributing factor could be the impact that 'sea star wasting disease' has had on one of their main predators, the sunflower star (*Pyncopodia helianthoides*). Sea Otters are also known to feed on Sea Cucumbers, although they appear to prefer other prey.

2.3. Aboriginal Traditional Knowledge/Traditional Ecological Knowledge

Both Aboriginal Traditional Knowledge (ATK) 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. ATK is knowledge held by Aboriginal peoples and communities, while TEK is local knowledge held by non-Aboriginal 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 used to improve the management process. The growing awareness of the value of ATK and TEK is reflected in the increasing requirements to be included in environmental assessments, co-management arrangements, species at risk recovery plans, and coastal management decision making processes. ATK and TEK may inform and fill knowledge gaps and aid decision making related to development and resource use. Government and the scientific community acknowledge the need to access and consider ATK 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, both by knowledge holders, and the broader community of First Nations, stakeholders, resource managers, fisheries scientists and policy makers involved in fisheries.

Aboriginal Traditional Knowledge is not generally available for Sea Cucumbers.

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

2.4. The Adaptive Management Plan (Phase 1 Fishery) 1997 to 2007

Due to the data-limited nature of the Sea Cucumber fishery, a phased approach for new and developing fisheries, following Perry et al. 1999, was recommended in order to evaluate the fishery. 'Phase 0' (collecting existing information) started in 1995 and a review of all existing data from the BC and Alaska fisheries was undertaken. Knowledge gaps were identified during Phase 0 and it was then recommended that the fishery enter 'Phase 1' (collecting new information) in order to collect important time-series fishery-independent and fishery-dependent data. In order to implement Phase 1, an Adaptive Management Plan (AMP) was developed and implemented for the Sea Cucumber fishery in 1997. This approach was based on advice from PSARC (*Boutillier et al 1998, Scientific Advice for the Management of the Sea Cucumber Fishery in British Columbia*). The AMP limited commercial fishing activity to approximately 25 percent of the BC coast.

After extensive research over a ten year period, analysis of harvest data, experimental fishery data and density survey data, risk-adverse sustainable exploitation rates were recommended that would ensure a sustainable fishery (*Hand et al. 2009; An Evaluation of Fishery and Research Data Collected During the Phase 1 Sea Cucumber Fishery in British Columbia 1998 to 2007*). Hand et al. (2009) made several recommendations, among which was to re-open areas that were closed during the AMP and consideration of a rotational harvest strategy. The commercial Sea Cucumber fishery started 'Phase 2' (fishing for commerce) in 2008 and since then large portions of the BC coast that were closed for the AMP have reopened.

2.5. Stock Assessment

The Department, in collaboration with First Nations and the Pacific Sea Cucumber Harvesters Association (PSCHA), continues to conduct stock assessment research leading towards an improved understanding of Sea Cucumber populations. Scientific research and stock assessment surveys are of vital importance to this fishery as it continues to be managed under the precautionary approach to Canadian fisheries.

Surveys of selected PFMA Subareas are conducted annually to obtain estimates of the density of *Apostichopus californicus*, expressed in number of Sea Cucumbers per metre of shoreline. Individual Sea Cucumbers are also collected and weighed to calculate the mean Sea Cucumber weight. From these, the total population biomass is estimated for each Subarea (see Appendix 6).

Density data from transect surveys have been collected in areas along the British Columbia coast (Hand et al. 2009, Duprey et al. 2011; Duprey 2011, 2012, 2014, 2015, 2018). Estimates from these surveys have shown that many areas have densities higher than the initial conservative assumption of 2.5 Sea Cucumbers per metre of shoreline.

In 2008, all survey data were reviewed and baseline densities for un-surveyed Subareas were calculated by Region. This resulted in baseline densities of 6.0, 4.1, and 1.9 Sea Cucumbers per meter shoreline for the North Coast/Central Coast, East Coast Vancouver Island, and West Coast Vancouver Island, respectively. Newly opened areas are surveyed before opening and their

densities are estimated using the collected survey data. The results of all surveys to date have been incorporated into this IFMP.

In 1997, four Experimental Fishing Areas (EFA) were implemented along the BC coast. These four EFAs (Laredo Inlet, Tolmie Channel, Zeballos, and Jervis Inlet) were used to compare differing harvest rates and the effects on the local population (Hand et al. 2009). Four sites at each EFA were harvested annually at different rates and density surveys were conducted at 2 and 4 year intervals including a fifth site which was never harvested. The results from 10 years of data were analyzed and modelled. The results indicated that it is highly probable that a 4.2% harvest rate would be sustainable for 75 years in all four EFAs (Hand et al. 2009).

The EFA project was discontinued in 2017 due to several factors that compromised the survey design and created uncertainty in the advice being provided. DFO Science is analyzing the entire time series of EFA data (1998 to 2015) and results will be published in a CSAS Research Document in 2021. DFO Science is now moving towards a new, multispecies approach for providing science advice (see Section 2.10).

A Limit Reference Point (LRP) was also recommended for the Sea Cucumber fishery using these survey and model results. A LRP of 50% B_o, the biomass of the population in the un-harvested state, was recommended and was considered highly precautionary for three of the four EFA datasets (Hand et al. 2009).

2.6. Stock Scenarios

There is no indication of concern for Sea Cucumber stocks at this time. The Sea Cucumber fishery is managed conservatively, and stocks generally appear healthy. A precautionary approach to management, which ensures the Department is meeting its conservation goals, will continue for the foreseeable future. This, in turn, will ensure sustainable harvests by all user groups. The long-term goal of the Department is to develop an ecologically-based management regime for a sustainable fishery through a better understanding of stock dynamics of the resource. Through collaboration with the PSCHA and coastal First Nations, tremendous gains have been made in the knowledge of the *Apostichopus californicus* population in BC.

Upon acceptance of the recommendations in the CSAS paper presented in 2007, the Department moved ahead with reopening sections of the coast that were closed for the Adaptive Management Plan. All new areas are surveyed prior to reopening to ensure that there are sufficient densities of Sea Cucumbers to support a commercial harvest. For more information on Sea Cucumber stock assessment see Appendices 6 and 7.

2.7. Precautionary Approach

The Department is implementing the Sustainable Fisheries Framework (SFF), which is a toolbox for DFO to sustainably manage Canadian fisheries by conserving fish stocks while supporting the industries that rely on healthy fish populations. It provides planning and operational tools that allow these goals to be achieved in a clear, predictable, transparent, inclusive manner, and provides the foundation for conservation policies to implement the ecosystem and precautionary approaches to fisheries management. These policies include: A Fishery Decision-Making Framework Incorporating the Precautionary Approach, Policy for Managing the Impacts of Fishing on Sensitive

Benthic Areas, Ecological Risk Assessment Framework for Coldwater Corals and Sponge Dominated Communities, Policy on New Fisheries for Forage Species, Policy on Managing Bycatch, Guidance on Implementation of the Policy on Managing Bycatch, and Guidance for the Development of Rebuilding Plans under the Precautionary Approach Framework: Growing Stocks out of the Critical Zone. Along with other economic and shared stewardship policies, these will help DFO meet objectives for long-term sustainability, economic prosperity, and improved governance.

The Sustainable Fisheries Framework is available on the internet at: http://www.dfo-mpo.gc.ca/reports-rapports/regs/sff-cpd/overview-cadre-eng.htm

Amendments to the *Fisheries Act* (Bill C-68) were passed into legislation in 2019 and include new authorities to amend the *Fishery (General) Regulations* and requirements to maintain major fish stocks at sustainable levels, and develop and implement rebuilding plans for stocks that have declined to their critical zone. The proposed regulatory requirements draw upon the 2013 Guidance for Developing Rebuilding Plans Under the Precautionary Approach.
Information on the regulatory proposal regarding fish stock and rebuilding plans is available at:

http://www.dfo-mpo.gc.ca/fisheries-peches/consultation/consult-maj-pri-eng.html

A Limit Reference Point (LRP) has been set for the Sea Cucumber fishery and is based on survey and model results from the Phase 1 fishery. A LRP of 50% B_o, the biomass of the population in the un-harvested state, was recommended and is considered highly precautionary (Hand et al. 2009).

In order for the LRP to be useful, Sea Cucumber harvest areas must be monitored on a regular basis to see whether changes are occurring. The time, money and effort required to survey all Sea Cucumber harvest areas multiple times would be prohibitive, so reference points are of limited use within the current assessment framework. DFO Science is developing a coast wide multispecies monitoring program, intended to collect the data necessary to assess stock status against reference points (see Section 2.10).

DFO Science is currently working on a scientific paper that will look at the full time-series of data from the Experimental Harvest Area research that occurred from 1998 to 2015. This paper is expected to provide advice on a range of harvest rates, update the current LRP and recommend an Upper Stock Reference (USR) for the commercial fishery, thereby aligning this fishery with the DFO Precautionary Approach Framework and the legislated requirements of Bill C-68.

More detailed information may be obtained by contacting DFO Science Branch personnel (see Appendix 15).

2.8. Commercial No-Take Reserves

Commercial No-take Reserves (CNTRs) are a management tool meant to provide an alternative to reference points, insurance against uncertainties in stock assessment and management, anticipated spill-over of adults and larvae into commercially harvested areas and for research opportunities. There are a number of other closures currently in place around the BC coast such as parks and marine reserves that likely also provide these same functions. The only difference between these types of closures and CNTRs is that CNTRs are surveyed prior to implementation to ensure there are Sea Cucumbers present. Since a survey is required prior to designation, CNTRs have only been

placed in the reopened portions of the coast to date. The criteria currently used by the Department to choose CNTR locations are: the area must be surveyed, have clear boundaries (for enforceability) and be based on best judgement of which areas would be representative of the surrounding commercially harvested area.

In 2011 resource managers requested advice from DFO Science to provide guidance on development of a coast-wide network of CNTRs. In 2013 the CSAS paper *Simulation Modelling Tools to Evaluate Alternative Fishery Closure Network Designs for Shallow-water Benthic Invertebrates in British Columbia* was presented and accepted by the Centre for Science Advice Pacific. Model results from the CSAS paper indicate that CNTRs may not be needed given the current precautionary management regime in place for the Sea Cucumber fishery. Despite these results, the Department still sees value in placing a limited number of CNTRs around the BC coast. As a result, CNTRs will continue to be placed in areas reopened for commercial harvest and will eventually be placed in the portions of the coast that were open during the Phase 1 fishery. There are currently twenty CNTRs in place around the BC coast that include a total of 930 kilometers of shoreline.

Over a number of years, the Department has been in extensive discussions with the Kitasoo/Xai'xais First Nation on the size, number and location of CNTRs to place within the First Nation's claimed traditional territory. As a result of these discussions, 6% of the shoreline within their claimed traditional territory was set aside for CNTRs in 2014. The locations of the CNTRs were chosen based on advice provided by the Kitasoo/Xai'xais and the PSCHA. Discussions on CNTRs in the Kitasoo/Xai'xais claimed traditional territory are ongoing.

2.9. Precautionary Exploitation Rate (Harvest Rate)

In 1997, the harvest rate for the Sea Cucumber fishery was set at 4.2% of the estimated biomass, based on conservative estimates of *Apostichopus californicus* harvest rates in the Alaska and Washington State fisheries. Experimental fisheries were undertaken throughout coastal British Columbia in collaboration with the PSCHA and First Nations. These experiments were designed to evaluate the effect of different exploitation rates on *Apostichopus californicus* populations. Results of these experiments led to the conclusion that the 4.2 percent annual harvest rate appears to be precautionary and is suitable for a variety of habitats and densities. If unproductive, low-density areas are avoided, a conservative annual harvest rate of 6.7 percent is recommended (Hand et al. 2009). From 2008 to 2010 a harvest rate of 6.7 percent was applied to newly surveyed and reopened areas and the 4.2 percent harvest rate continued to be applied to all areas open during the Phase 1 fishery.

In 2011 the fishery moved to a rotational style fishery in which each quota management area is fished once every three years. Instead of tripling the harvest rate for each quota management area as is done in most rotational style fisheries, managers chose a harvest rate within the range of 3.5 to 10.3 percent recommended in Hand et al 2009 for an annual style fishery. A triennial harvest rate of approximately 10 percent is applied to most quota management areas. This harvest rate is equivalent to a 3.3 percent annual harvest rate and is less than the 4.2 or 6.7 percent harvest rate used previously. The West Coast Vancouver Island licence area and portions of the East Coast of

Vancouver Island licence area remain as annual style fisheries and a harvest rate of between 3.3 and 4.2 percent is applied to these areas annually.

2.10. Research

The Department is working in collaboration with the PSCHA and First Nations to determine means of examining and measuring abundance, growth, recruitment, settlement, and mortality in Sea Cucumber populations.

Commercial no-take reserves are also being established along the coast as new areas are opened to commercial harvesting. These areas will provide an excellent opportunity to monitor the natural trends in local populations, which will be ideal for comparisons to neighbouring harvested areas and for province wide comparisons of population trends over time. Some initial work on quantifying deep water populations (50-250 metres) have been conducted using remotely operated vehicles to compare near shore densities to deep water densities. This is an important link to harvestable densities as the deep water population acts as a pseudo-reserve, being at depths unattainable by commercial divers.

DFO Science is developing a multispecies benthic invertebrate survey protocol that will promote an ecosystem approach to stock assessment and gain efficiencies by combining single species survey protocols for the commercial dive fisheries. This may allow more spatial and temporal coverage than is possible under the current single species approach, and is intended to monitor coast wide stock abundance over time. These new survey methods are also intended to allow assessment of stock status relative to the three zones (Healthy, Cautious, Critical) as identified in the DFO Precautionary Approach Framework and as legislated in Bill C-68. A CSAS research document with peer reviewed recommendations on this approach is expected to be delivered by 2022.

More detailed information about ongoing research projects and papers may be obtained by contacting DFO Science Branch personnel (see Appendix 15).

3. ECONOMIC PROFILE OF THE FISHERY

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

3.1. First Nations

The DFO programs, known as the Allocation Transfer Program (ATP) and Pacific Integrated Commercial Fishery Initiative (PICFI), have relinquished existing commercial licence eligibilities from fish harvesters on a voluntary basis and re-issued these to eligible First Nation organizations as communal commercial licences. The PICFI, announced in 2007, is aimed at achieving environmentally sustainable and economically viable commercial fisheries, where conservation is the first priority and First Nations' aspirations to be more involved are supported. The Government of Canada committed $175 million over the first five years (2007-2012) to implement the initiative. The program was renewed on a temporary basis until Budget 2017 when it was announced that PICFI is to receive permanent long term funding of $22.05 million annually.

As a result of these programs, one of the 85 commercial Sea Cucumber licence eligibilities is a communal commercial licence. First Nation organizations also hold a number of regular commercial licence eligibilities received during the licence limitation process in 1991.

For more information on the Aboriginal Fisheries Strategy Allocation Transfer Program, contact a resource manager listed in Appendix 15 or see the internet at:

www.pac.dfo-mpo.gc.ca/abor-autoc/atp-ptaa-eng.html

More information on the PICFI is available on the internet at:

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

3.2. Recreational

Recreational fishing may occur to provide food for personal use, as a leisure activity, or as a combination of the two. The recreational community includes local residents, multi-species charter operators and lodges, and visiting anglers and boaters. In the 2018/2019 recreational angling season, 341,000 anglers fished in BC's tidal waters recreational fishery. Most (84%) were BC residents, with the remainder divided between Canadians from outside BC and visitors to Canada. These activities provide a range of benefits to the participants as well as contribute directly and indirectly to economic activity.

Recreational fishing interests for harvesting shellfish species is directed mainly at crab, prawns and bivalves. The recreational harvest of Sea Cucumbers is believed to be minimal.

3.3. Commercial

The Pacific Region is home to the only commercial *Apostichopus californicus* fishery within Canada. There are also commercial fisheries for *Apostichopus californicus* in the states of Washington, California and Alaska in the USA as well as a drag fishery for a different species of sea cucumber (*Cucumaria frondosa*) on the east coast of Canada.

The 85 commercial Sea Cucumber licences are party-based, meaning that each licence eligibility holder may designate their licence to a registered commercial vessel of their choice each season. Licences are stackable, such that each vessel may hold numerous licences. In 2019, 85 licences were distributed across 35 vessels. Most of the vessels were also licensed for one or more other dive fisheries such as Geoduck, Green Sea Urchin or Red Sea Urchin. Overall, the dive fleet generates slightly more revenue from its harvest of non-Sea Cucumber species than from Sea Cucumber (Nelson 2011).

The annual Sea Cucumber fishery commences in October, when product quality is higher and weather conditions are still conducive to fishing. The fishery is scheduled for eight weeks and the majority of the TAC is usually harvested within the first three or four weeks of the opening.

The commercial Sea Cucumber fishery in BC has gone through a significant number of changes since 2008 when it moved from a Phase 1 fishery to a Phase 2 fishery (see section 2.4) in 2008. The fishery has expanded from approximately 25% of the BC coastline set aside in the Adaptive Management Plan (AMP) to approximately 48% in 2019. Since 2008 approximately 5,900 km of shoreline has reopened to commercial harvest and this number continues to grow as more areas are

surveyed. The amount of quota available for harvest has increased as a result of reopening portions of coastline and has allowed for an increase of approximately 9.5% in the commercial TAC and the implementation of a rotational style fishery (see Appendix 14). Another significant change has been the distribution of effort between the four licence areas (north coast, central coast, east coast of Vancouver Island and west coast of Vancouver Island). During the Phase 1 fishery, approximately 84% of the commercial TAC was in the north and central coast licence areas and approximately 8% in the east coast Vancouver Island licence area (Figure 1). Once the Phase 2 fishery started, effort started to spread more evenly amongst the licence areas (with the exception of the west coast of Vancouver Island licence area).

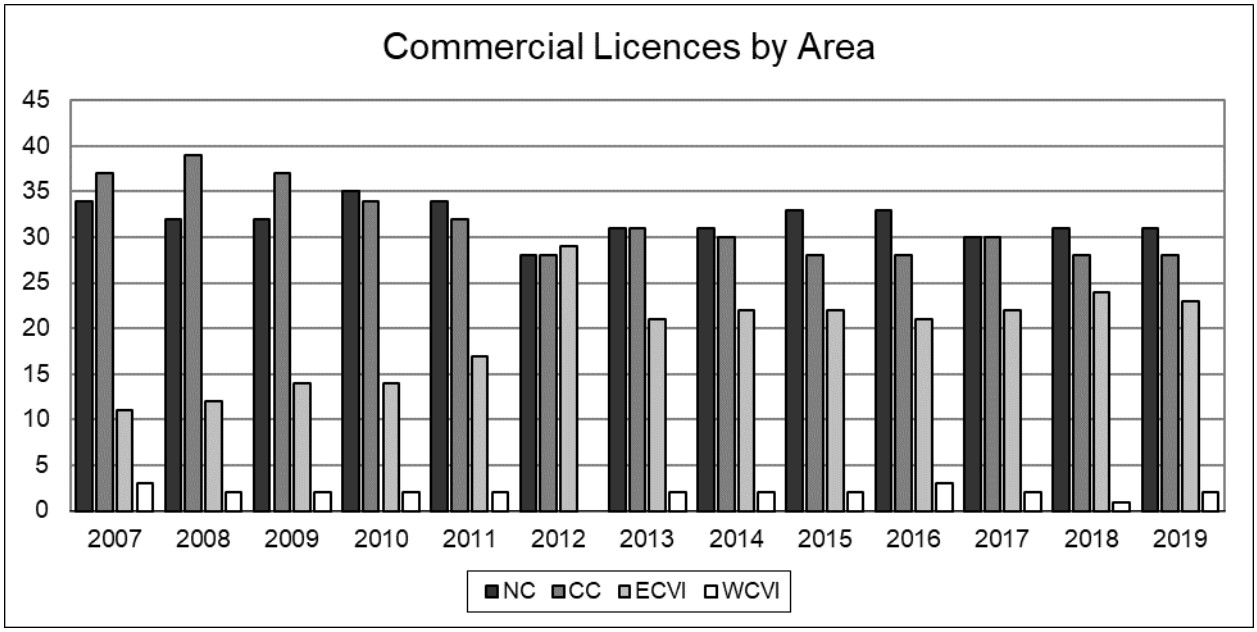

Figure 1. The number of commercial licences in each licence area from 2007 to 2019. NC = north coast licence area, CC = central coast licence area, ECVI = east coast of Vancouver Island licence area, WCVI = west coast of Vancouver Island licence area. The number of licences represents the share of the coast-wide commercial TAC in each licence area.

3.3.1. Viability and Market Trends

The total allowable catch (TAC) remained relatively constant from 2006 to 2010 (Figure 2). In 2011, the TAC increased from approximately 1.2 million pounds (split) to 1.36 million pounds (split) due to an increase in quota made available from portions of coastline that have been reopened since 2008 (see section 2.4). As more portions of the coastline are reopened in the future, it is possible that the TAC could increase further, however this is unlikely in the next few years since the fishery is transitioning from an annual style fishery to a rotational style fishery. The TAC has temporarily dropped from 1.36 million pounds to 1.275 million pounds for the 2020 season in anticipation of market difficulties due to the on-going COVID-19 pandemic. This temporary drop in TAC was recommended by the PSCHA at the 2020 Sea Cucumber Sectoral Committee meeting.

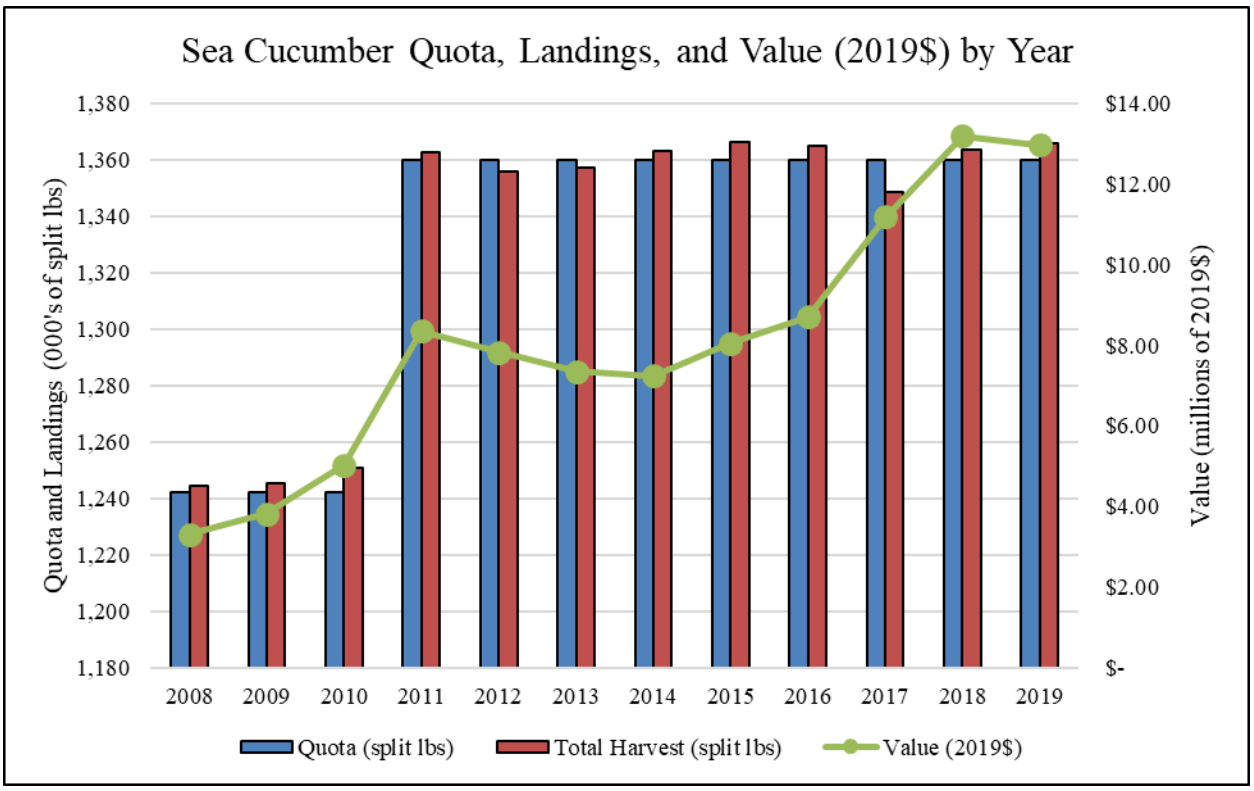

Figure 2. Annual Sea Cucumber quota, landings (split lb.) and value for British Columbia, 2008 to 2019. Source: DFO logbooks and fish slips. Average price from 2010 to present is based upon advice from the PSCHA.

Sea Cucumber harvesters have reliable access to the resource, with a catch share of a fishery that has had a consistent or increasing TAC over many years. The price paid to harvesters for Sea Cucumber has been on a long upward trend. The price received in 2008 was an average of $2.30 per split pound, while the price paid in 2019 was an average of $9.50 per split pound (according to the PSCHA). This increase in price reflects increased demand for BC Sea Cucumber in Asian markets. As a result of these fundamentals, licence values and lease rates are now almost 5 times larger than they were a decade ago.

Fleet-based financial modes using 2007 and 2009 data indicate that the Sea Cucumber fleet generated modest financial returns associated with the Sea Cucumber harvest. The average vessel generated an estimated $371,000 in landed value from its Sea Cucumber harvest in 2019. The total value of the fishery has more than tripled in the last 10 years, and the fleet returns have significantly improved as costs are relatively low and have not been experiencing an increase proportional to prices.

3.3.2. Processing & Exporting

Landed value does not reflect the total contribution of the Sea Cucumber fishery to the provincial economy. The processing and export of Sea Cucumbers landed in the province is another source of economic value. The wholesale value of Sea Cucumbers processed in BC in 2018 was $12.4 million (BC SYIR 2018).

Sea Cucumbers are hand picked off the sea floor by SCUBA divers and brought to tender vessels. Once on the tender vessel, Sea Cucumbers are cut open longitudinally to remove water and viscera in a process called 'splitting'. Sea Cucumbers are landed in split form and therefore all landings are in split pounds and the commercial TAC is calculated in split pounds.

Sea Cucumbers are processed into two products: frozen muscle strips and dried skin. The skin is semi-processed in plants where it is boiled, salted and then shipped to China where it is dried either outdoors or in drying machines. The meat is removed from the skin and then frozen and shipped to Asian markets.

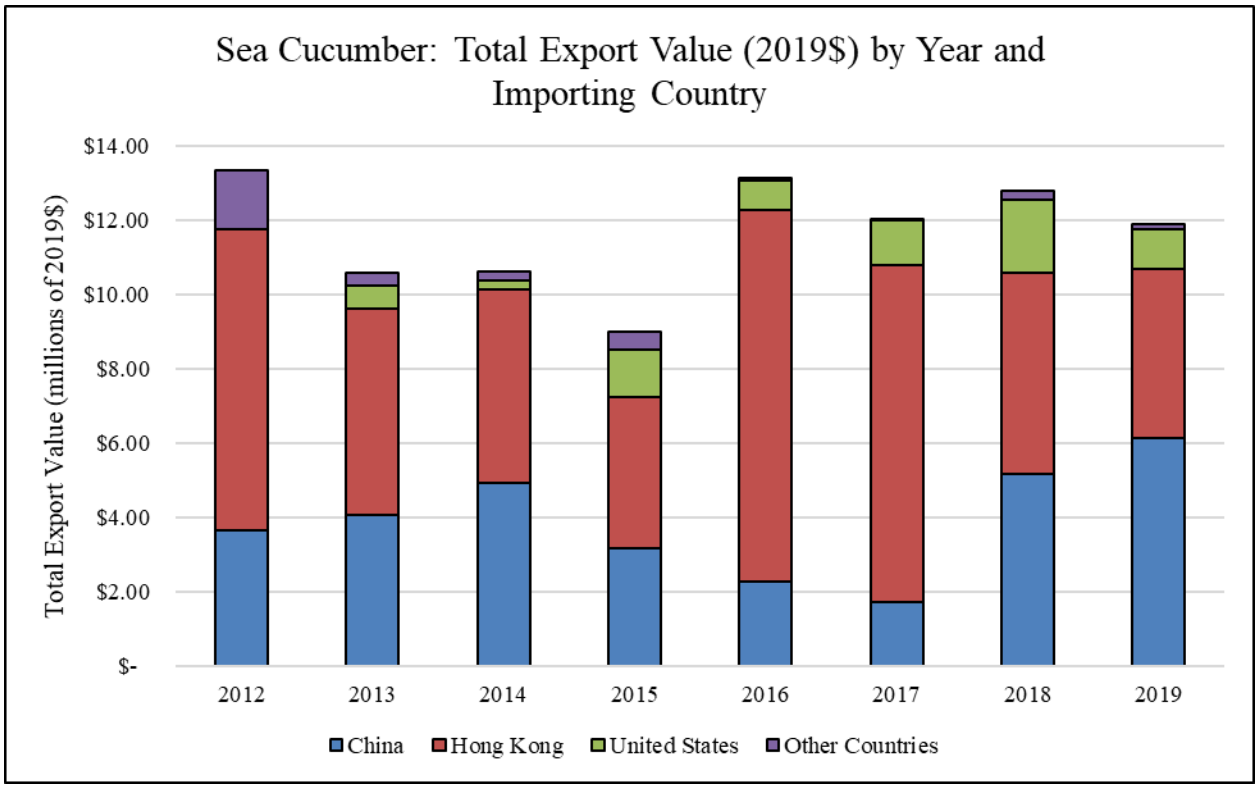

Figure 3. Value of British Columbia (BC) Sea Cucumber by Key Export Markets, 2012-2019. Source: Statistics Canada EXIM Database, multiple years.

Hong Kong is the largest market for Sea Cucumber (closely followed by China), where the skins (called trepang) have been used for centuries as a medicinal food. Many different species of Sea Cucumber from around the world compete with BC Sea Cucumber in Asian markets. The highest value species come from China and Japan. The domestic market for Sea Cucumber is small.

The most recent processing linkages survey found that Sea Cucumbers require 24 hours of human labour per metric tonne for processing (GS Gislason, 2017). As landings have consistently met the allowable quota of 1,360,000 lbs (617 metric tonnes) for the past several years, this equates to employing approximately the equivalent of 7 full time employees each year in the processing of Sea Cucumber harvested in BC (~$370,000 in wages).

4. MANAGEMENT ISSUES

The following emerging issues may impact the management measures in place for the Sea Cucumber fishery.

4.1. Conservation and Sustainability

4.1.1. Collection of Biological Information

The life history characteristics of importance to understanding the productivity of *Apostichopus californicus* are still largely unavailable and may lead to uncertainties in Sea Cucumber stock assessment. More research focusing on the life history, population dynamics and depth distribution of Sea Cucumbers is needed to better understand the effects of harvesting on Sea Cucumber populations.

4.1.2. Localized Over harvesting

The concentration of fishing effort in relatively small areas may lead to local depletion of Sea Cucumber stocks. The impact of localized depletions on Sea Cucumber populations, on the ecosystem in general, and the mechanisms involved in the re-establishment of populations are not well understood. However, repeated surveys in several locations have not shown detrimental effects on stocks from the annual harvesting that occurred during the Phase 1 fishery. In order to minimize the effects of localized over harvesting, managers may look at management measures to better spread harvest effort amongst quota management areas.

4.1.3. Sea Otters

Sea Otter populations are expanding in British Columbia and may become an issue in the management of the commercial fishery in the future. Sea Cucumbers are not generally the preferred prey of Sea Otters, but as other prey sources become scarce, it is likely that they will begin to target Sea Cucumber populations. A recent study done in Alaska showed that the long-term presence of Sea Otters resulted in an up to 100% decline in Sea Cucumber densities (Larson et al. 2013).

4.1.4. Impacts of Climate Change

Climate change will result in a wide variety of impacts, including rising sea levels, loss of marine habitat, shifting distribution ranges for marine organisms and an imbalance between growth and recruitment within ecosystems. Ocean acidification is one of the climate impacts that could impact Sea Cucumber populations in BC. Oceans absorb carbon dioxide (CO2) which increases the acidity of the water. There are concerns about the ability of marine ecosystems to adapt to acidification. Fecundity, juvenile survival and the ability to handle temperature stress may be impacted negatively by ocean acidification (Haigh et al. 2015). Another emerging issue has been higher than normal water temperatures over the last few years (Chandler et al. 2016). Higher water temperatures may place physiological stress on Sea Cucumbers and could lead to increased instances of disease.

4.1.5. Disease

It has been hypothesized that increasing sea temperature will lead to an increase in the frequency of disease outbreaks due to decreased host immunity, increased virulence of pathogens or pathogen range expansion (Burge et al., 2014). There have not been any recorded disease outbreaks involving Sea Cucumbers in BC, however a few reports of dead/dying Sea Cucumbers were reported in 2015

and 2016. Preliminary results from analysis of dying Sea Cucumbers collected from Howe Sound and the Sechelt area are inconclusive at this time but do not point to the same disease that caused the 'sea star wasting disease'.

4.1.6. Quota Overages

Any quota taken above the TAC is a conservation concern. Quota overages over the amount permitted on a licence may be transferred to another licence up to a limit of 500 pounds. Overages that are not transferred to another licence are considered a Non-Transferable Overage (NTO) and the limit permitted is zero. The Department will be monitoring quota overages each season and may pursue enforcement action for repeat violators.

4.1.7. Aquaculture

The practice of collecting wild-set juvenile Sea Cucumbers off of floating aquaculture gear (e.g. oyster strings) and growing them on tenures is a concern since potential impacts on wild stock and recruitment have not yet been assessed.

Stocking aquaculture sites with hatchery-raised juveniles raises additional questions for consideration. Sea Cucumbers are a mobile species and wild individuals could be attracted to tenure sites to forage or for shelter. Since cultured Sea Cucumbers cannot be distinguished from wild Sea Cucumbers, wild animals may get harvested along with cultured animals and could lead to detrimental effects to wild populations around tenures. The Department is in the process of drafting a framework for sustainable Sea Cucumber aquaculture.

4.2. Social, Cultural and Economic

4.2.1. First Nations

Coastal First Nations may have an interest in economic opportunities from the Sea Cucumber resource through access to the wild commercial fishery.

Currently there is one communal commercial Sea Cucumber licence eligibility to provide economic access to First Nations through participation in the commercial fishery. Several First Nation organizations hold regular commercial licences as well. See section 3.1 for more information.

4.2.2. Managing the Commercial Fishery to an Appropriate Scale

DFO works collaboratively with the PSCHA to make improvements to the management regime on an annual basis. For example, starting in 2008 large Quota Management Areas (QMAs) were split into multiple smaller QMAs in order to facilitate the start of a rotational fishery. Managers must consider several factors when determining the size of QMAs. They must be large enough that they are not too difficult to manage (i.e. ability to keep track of remaining quotas, hails, effort, etc.) and yet be small enough to spread effort over larger areas in order to minimize the effects of localized overharvesting. QMAs will likely continue to change as the fishery proceeds through the Adaptive Rotational Fishing Strategy.

4.2.3. Managing a Rotational Fishery

The 2011 season was the start of a three year rotational fishery in which different areas along the BC coast are be targeted in different years. There are both conservation and logistical advantages to a rotational harvest. Conservation advantages include a higher average animal weight and higher densities of spawning adults which would ultimately result in a higher number of Sea Cucumbers. Logistical advantages include concentrating harvest effort in smaller areas, reducing travel costs and reducing the cost of staffing multiple offloading ports.

The rotational fishery strategy will be adaptive since the process of reopening the sections of coastline that were closed for the Adaptive Management Plan is not complete. Harvest rate, licence distribution between licence areas, QMA size and order of QMA harvest will be examined prior to each new season.

4.2.4. Increase in the Number of Sea Cucumber Aquaculture Tenures

An increase to the number of aquaculture tenures licensed for Sea cucumber will require consideration in the biomass and TAC estimates for the wild commercial fishery. Aquaculture tenures are considered private property and Sea cucumber stocks, that include both hatchery-raised and wild that cannot be distinguished from cultured on the tenure, would be considered the property of the aquaculturist. If a large number of tenure sites are approved for Sea Cucumber aquaculture, there is potential for the wild fishery to be reduced in portions of the BC coast. However, as outlined in Appendix 4, DFO is not currently accepting new aquaculture applications for Sea Cucumbers in the marine environment.

4.3. Compliance

4.3.1. Hail Notification Infractions

During the 2010, 2011 and 2017 seasons there were issues with certain vessels not giving adequate hail notification. This creates difficulties for managing the fishery and may result in quota overages. Hail notification infractions are reported to the Department by the Sea Cucumber service provider in incident reports and are considered a high priority for enforcement. The Department will be monitoring hail infractions throughout each season and may pursue enforcement action for repeat violators.

4.3.2. Illegal Harvest

Illegal harvest activity has increased over the last few years. The increase in the value of Sea Cucumbers has made them a target for illegal harvesters. Sea Cucumbers are vulnerable to overharvest and any harvest outside the Total Allowable Catch is a conservation concern. Any large scale harvest of Sea Cucumbers seen outside the months of October to December (the timeframe of the commercial fishery) should be considered suspicious and reported to DFO's Observe, Record and Report line as soon as possible at 1-800-465-4336 (see Section 9).

4.4. Ecosystem

4.4.1. Depleted Species Concerns

The Sea Cucumber fishery is a selective fishery and there are no concerns or potential impacts on depleted species. Each Sea Cucumber is individually selected by the harvester which eliminates by-

catch of other species. Harvest of any species other than *Aposticopus californicus* is illegal under a commercial Sea Cucumber licence.

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 the *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.

The Northern Abalone is listed as Endangered under the *SARA*, and is a species that is sometimes found in the same habitat as Sea Cucumbers. All harvest of Northern Abalone is illegal, including commercial and recreational harvest and harvest for food, social and ceremonial purposes. If any harvest or harassment of Northern Abalone is observed, please call DFO's Observe, Record and Report line as soon as possible at 1-800-465-4336 (see Section 9).

Endangered, threatened, and special concern species in Pacific region currently listed under the *SARA* can be found at:

http://dfo-mpo.gc.ca/species-especes/sara-lep/index-eng.html

4.5. Oceans and Habitat

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

The *Oceans Act*, the *Canada Wildlife Act*, and the *National Marine Conservation Areas Act* have given rise to several initiatives on the BC coast, which are listed below. As goals, objectives, and management plans are finalized for these initiatives, the Department's management of fisheries will be adapted as appropriate, in consultation with interested parties through Integrated Fisheries Management processes.

For more information on the *Oceans Act*, please visit the following site: http://www.dfo-mpo.gc.ca/oceans/index-eng.html

In October 2017, the Government of Canada announced that it had reached its first milestone of protecting 5% of Canada's marine and coastal areas. On August 1, 2019, the government announced that Canada had surpassed its 2020 marine conservation target of 10 percent. To date, Canada has established 14 Marine Protected Areas (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 at:

http://www.dfo-mpo.gc.ca/oceans/conservation/index-eng.html

Northern Shelf Bioregion Marine Protected Area 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 was 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 is available at:

http://www.mpanetwork.ca

The Pacific North Coast Integrated Management Area Plan is available at:

https://www.dfo-mpo.gc.ca/oceans/management-gestion/index-eng.html

Future MPAs in this network may overlap or include Sea Cucumber fishing areas depending on the type and nature of the MPA.

Gwaii Haanas and Strait of Georgia National Marine Conservation Area Reserves

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 kilometers off the north coast of BC. The Haida Nation declared 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. 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 Red Sea Urchin fishing. An overview map is provided in Appendix 15. 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.

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

Southern Strait of Georgia National Marine Conservation Area Reserve

Parks Canada, in partnership with the Government of British Columbia, 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 British Columbia 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.

Parks Canada information on the proposed National Marine Conservation Area Reserve in the southern Strait of Georgia is available at:

https://www.pc.gc.ca/en/amnc-nmca/cnamnc-cnnmca/dgs-ssg

4.6. Gear Impacts

Sea Cucumber fishing occurs in rocky or soft bottom areas in less than 20 m depth by divers who hand pick Sea Cucumbers off the sea floor and place them into large mesh bags. The mesh bags are attached to lift bags or buoys that the diver will fill with air to lift the harvested Sea Cucumbers to the surface for pick up by the tender vessel. Gear impacts on the benthic environment are believed to be negligible, since Sea Cucumbers are picked by hand and there is no gear contact with the bottom. Sea Cucumber harvest is too shallow to impact most coral and sponge species.

5. OBJECTIVES

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

5.1. National

DFO aims to:

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

5.2. Pacific Region

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

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

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

5.3. Invertebrate Resource Management

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

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

5.4. Sea Cucumber

5.4.1. Conservation and Sustainability

DFO's species-specific objectives for the conservation and sustainability of Sea Cucumber stocks are:

- To conduct ongoing surveys and research to improve information on Sea Cucumber stocks, biological characteristics and impacts of the commercial fishery.
- To manage the commercial fishery to an appropriate scale in order to avoid any risks of localized over-harvesting.
- To place a limited number of commercial no-take reserves around the BC coast in order to help ensure that there are portions of the BC coast that will remain closed to commercial harvest.
- To track harvest information for all users. For the commercial fishery this will be accomplished through a Dockside Monitoring Program. There are currently no programs in place for tracking First Nations and recreational sector harvests.

- To conduct surveys of areas that were open during the Phase 1 fishery. Most of these areas have not been surveyed and their quotas are calculated using an estimated baseline density.

5.4.2. Social, Cultural and Economic

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

Commercial Fishery: DFO's objective is to continue to work collaboratively with the commercial industry on sustainable resource use and long-term economic viability of the Sea Cucumber seafood industry recognizing that commercial fisheries play a vital role in the 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 WorkSafeBC (Appendix 12). All parties acknowledge the role of vessel masters and crew in responsibility 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.

First Nations involvement in the commercial fishery is a shared goal between DFO and First Nations people. First Nation participation in the commercial fisheries is being addressed through the ATP and PICFI (Section 3.1).

First Nations Fishery: DFO's objective is to continue to provide opportunities for First Nations to harvest fish for food, social and ceremonial/domestic purposes, in a manner consistent with the decision of the Supreme Court of Canada in the *Sparrow Decision*, and other court decisions. For more information, see Appendix 2 or the Internet at:

www.pac.dfo-mpo.gc.ca/abor-autoc/index-eng.html

It is an objective to provide DFO treaty negotiators and First Nations with fishery related information in support of treaty negotiations, expeditiously.

Recreational Fishery: 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 environments 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.

5.4.3. Compliance

DFO's objective is to pursue opportunities to monitor and enforce the Sea Cucumber fishery in conjunction with the monitoring and enforcement priorities in the Pacific Region. For more information please see the Sea Cucumber compliance plan in section 9.

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

To date no limits have been placed on First Nations' harvest for food, social and ceremonial purposes. Sea Cucumbers may be allocated under treaty, but were unallocated under the Maa-nulth, Tsawassen and Nisga'a Treaties. The Tla'amin treaty came into effect on April 5, 2016 and is the first treaty in BC to include an allocation for Sea Cucumbers. The Tla'amin allocation is for a maximum of 8,500 pounds of whole Sea Cucumber.

Under the Individual Quota (IQ) program, two percent of the coast-wide TAC (CTAC) is reserved, for planning purposes, for First Nations fisheries for food, social and ceremonial/domestic purposes. The amount of Sea Cucumbers harvested for FSC purposes coast-wide is unknown. See Appendix 2.

6.2. Recreational

The daily recreational limit for Sea Cucumbers is 12 with a possession limit of 24. Gear is limited to handpicking and diving.

6.3. Commercial

The commercial fishery is managed using a total allowable catch, limited entry licensing, individual quotas, area licensing, area quotas and a precautionary harvest rate. For more information please see Appendices 1 and 6. All Sea Cucumber harvested commercially is monitored through a Dockside Monitoring Program.

6.4. Aquaculture and Enhancement

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

6.5. Experimental, Scientific, Educational or Public Display

DFO supports and facilitates scientific investigations related to Sea Cucumbers. Scientific licence requests received from scientific, educational and public display institutions, including biological collecting firms, are considered.

6.6. Request for Access

Through the AFS Program, DFO provides FSC fishery access to aggregate groups or individual First Nations through fisheries agreements and communal licences or, under Treaty, harvest documents for domestic purposes. Where requests are put forward by First Nations for changes in FSC access arrangements, these are evaluated against a common set of criteria. FSC access should reflect some balance between the diversity and abundance of resources that are locally available, community needs and preferences, and operational management considerations. First Nations

interested in bilateral discussion with DFO regarding FSC access should contact the Resource Manager for their area. (see Contacts in Appendix 14).

Information on the Aboriginal Fisheries Strategy is available at:

http://www.dfo-mpo.gc.ca/fisheries-peches/aboriginal-autochtones/afs-srapa-eng.html

7. MANAGEMENT MEASURES FOR THE DURATION OF THE PLAN

See the Commercial, Recreational and First Nations Harvest Plans, Appendices 1 to 3, and 6 for detail on the following:

- Total Allowable Catch (TAC), Individual Quotas (IQ);
- Fishing Season/Areas;
- Control and Monitoring of Removals
- Licensing

8. SHARED STEWARDSHIP ARRANGEMENTS

8.1. Commercial Fishery

The Pacific Sea Cucumber Harvesters Association (PSCHA) funds stock assessment activities for the commercial fishery. Their costs include vessel time, diver salaries, travel costs and a salary for a biologist. DFO Science analyses data from these surveys and provides biomass estimates to Fisheries Management for use in quota calculations.

The PSCHA funds all catch reporting and monitoring requirements for the commercial fishery including a dockside monitoring program and a hail program to track all commercial Sea Cucumber landings.

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

8.2. Fisheries and Oceans Canada

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

9. COMPLIANCE PLAN

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

www.dfo-mpo.gc.ca/fm-gp/enf-loi/index-eng.htm

C&P staff will pursue opportunities to monitor and enforce this fishery in conjunction with the monitoring and enforcement priorities directed by senior managers in the Pacific Region.

Users of the resource have a responsibility to report violations. Any suspected or actual fisheries, wildlife or pollution violations can be quickly and discretely reported to the appropriate enforcement officer by using the toll free observe, record and report hotline. This toll free number is available 24 hours a day.

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

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

9.1. Enforcement Issues and Strategies

Enforcement of the Sea Cucumber fishery will be tempered by commitments to higher priority issues, such as species at risk, the Canadian Shellfish Sanitation Program and fisheries that have conservation concerns. C&P staff will pursue opportunities to monitor and enforce issues and problems related to the fishery in conjunction with the monitoring and enforcement activities dedicated to the identified priority fisheries in the Pacific Region.

Dockside validation is a key component of the management of the fishery. C&P supports dockside validation by inspecting offloads and monitoring offloading practices.

Air surveillance resources will be utilized to patrol boundaries and conduct gear and vessel counts. Charter aircraft as well as DFO aircraft may be utilized for these activities.

Underwater harvest activity is observed by fishery officers trained in the use of SCUBA. On dive patrols fishery officers check for the harvest of prohibited species and for incidences of dumped product.

C&P strives to meet with First Nations groups to build relationships. Fishery Guardians are integral to this process and are very important to the enforcement program. C&P conducts joint patrols of First Nations fisheries and strives to complete enforcement protocols to better define the working relationship.

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

Issue	**Section**	**Strategy**
Licensing Verification • Vessel licensed. • Experimental licence. • No Fisher Registration Card (FRC). • Fail to produce FRC.	PFR S.22 F(G)R S.52 F(G)R S.68(1) PFR S.25 F(G)R S.11	At-sea and dockside inspections will occur when opportunities exist. These inspections may include checks of all licensing documents on board the vessel to ensure compliance with the regulations.

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

10. PERFORMANCE REVIEW

Performance indicators are reported in the Post-Season Review (Appendix 5)

10.1. Stock Assessment and Research

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

10.2. First Nations Fishery

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

10.3. Recreational Fishery

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

10.4. Commercial Fishery

DFO tracks the performance of the fisheries that it manages through the Sustainability Survey for Fisheries. The fish stocks in the survey are selected for their economic, ecological and/or cultural importance. The survey reports on DFO's progress to implement its Sustainable Fisheries Framework policies (Section 2.7), which guide the management of Canada's fisheries, and provides other information about these fish stocks.

The Sustainability Survey for Fisheries is available at:

www.dfo-mpo.gc.ca/reports-rapports/regs/sff-cpd/survey-sondage/index-en.html

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

10.5. Compliance

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

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Front cover drawing is from Royal B.C. Handbook on Sea Cucumbers by Philip Lambert.

12. 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 Aboriginal communities.

Aboriginal Traditional Knowledge (ATK)	Knowledge that is held by, and unique to Aboriginal 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 Aboriginal 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 fisheries 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.
Area	Defined in Section 2 of the *Pacific Fishery Management Area Regulations*. A map of Pacific Fishery Management Areas is available on the Department's Internet site at: http://www.pac.dfo-mpo.gc.ca/fm-gp/maps-cartes/areas-secteurs/index-eng.htm
aquaculture	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.
catch verification program	A program designed to monitor, record, and verify catches, also called the Validation Program or Dockside Monitoring Program.
Communal Licence	Issued to First Nations organizations pursuant to the *Aboriginal Communal Fishing Licences Regulations*, to carry on fishing and related activities.
communal commercial licence	Issued to First Nations organizations pursuant to the *Aboriginal Communal Fishing Licences Regulations* for participation in the general commercial fishery. Licences issued are equivalent to the capacity of licences that have been retired under the Treaty and Aboriginal Policy Directorate Licence Retirement/Allocation Transfer Program.
Centre for Scientific Advice – Pacific (CSAP)	Centre for Scientific Advice - Pacific (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.
enhancement	Adding to (enhancing) the biomass of a species in the wild by spawning and growing juvenile animals, subsequently releasing them to their natural habitat for further growth. Usually requires little or no further intervention after release.
Food, Social and Ceremonial (FSC)	A fishery conducted by First Nations for food, social and ceremonial purposes.
IFMP	Integrated Fisheries Management Plan.
IQ	Individual quota. In the Sea Cucumber fishery IQs are set at 1\85 of the commercial TAC.
invertebrate	An animal without a backbone.
landed or off-loaded	The transfer of Sea Cucumbers 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 Pacific Region pursuant to Section 39 of the *Fishery (General) Regulations*.
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.

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.
PSCHA	Pacific Sea Cucumber Harvesters Association
PSARC	Pacific Scientific Advice Review Committee (now called CSAP).
Quota Management Area	A defined portion of Pacific fisheries waters. Areas and Subareas, as described in the *Pacific Fishery Management Area Regulations*, are referenced in describing Quota Management Areas (QMA). Each QMA has a name, e.g. 4A West Dundas, and is assigned a maximum allowable catch in pounds (lb.).
service provider	An agency contracted by fish harvesters or their harvesters association to co-ordinate notification, catch validation, fishery monitoring, biological sampling, and data submission requirements. The service provider may train and recommend candidates for certification by Fisheries and Oceans Canada as observers.
SFAB	Sports Fishing Advisory Board, which provides advice to DFO on matters of recreational (sport) fishing.
stakeholder	All people and groups with an interest in the fisheries resource.
stock assessment	Results of analyses of fisheries and research data used to evaluate the effects of fishing on a stock or population and to predict the reaction of populations to alternative management choices.
Subarea	As in Section 2 of the *Pacific Fishery Management Area Regulations*
TAC	Total allowable catch. The amount of catch that may be taken from a stock, determined by analytical procedures to achieve management objectives.
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.
Tranship	The transfer of Sea Cucumbers from a vessel to another vessel.
Validated	Sea Cucumbers that have been weighed by an observer and the weight entered into the Sea Cucumber Validation and Harvest Logbook, or an approved alternative log.

Appendix 1: 2020/2021 Sea Cucumber by Dive Commercial Harvest Plan

TABLE OF CONTENTS

1. MANAGEMENT SUMMARY FOR 2020/2021

Fish harvesters are advised to carefully review all information in the Commercial Harvest Plan.

1.1. **2020/2021 Fishing Season (NEW):** The commercial fishery will take place from October 1, 2020 through December 7, 2020 subject to scheduled area openings and in-season closures. A season extension beyond December 7, 2020 will be considered by the Department if requested by the Pacific Sea Cucumber Harvesters Association (PSCHA) in writing. Requests will generally be considered only if they are due to unforeseen weather events that have prevented the TAC from being completed during the regular scheduled season as identified above. See Section 4.

1.2. **Rotational Fishing Strategy:** The 3-year Adaptive Rotational Fishing Strategy (ARFS) will continue for a fourth cycle from 2020 to 2022. The AFRS has been developed collaboratively by the Department and the Pacific Sea Cucumber Harvesters Association. Please see Section 4 for quotas and open areas for the 2020 season and Appendix 14 for more information on the Adaptive Rotational Fishing Strategy.

1.3. **Quota Management Areas (QMAs) (NEW)**: A large QMA in Management Area 8 (8D) has been split into two smaller QMAs (8E and 8F). Four new QMAs were created in Management Areas 7 and 25. See Section 4 and Appendices 9 and 10 for descriptions of QMAs.

1.4. **Precautionary Harvest Rate**: A precautionary harvest rate of up to 10 percent will be applied to most QMAs once every three years as part of the Adaptive Rotational Fishery Strategy (equivalent to an annual harvest rate of approximately 3.3 percent). An annual harvest rate of 3.3 or 4.2 percent will be applied to some QMAs within the Central Coast, East Coast of Vancouver Island and West Coast of Vancouver Island licence areas for the duration of the 2020 to 2022 ARFS. See Appendix 14 for details.

1.5. **Total Allowable Catch (NEW):** 578.3 tonnes (1,275,000 pounds) split weight. See Section 4.

1.6. **Individual Quota (NEW):** 6.8 tonnes (15,000 pounds) split weight per licence. See Section 3.1.

1.7. **Harvest Questionnaire:** A harvest questionnaire will be added as an insert to the harvest logbook in order to get on-grounds observations from harvesters on each of the QMAs harvested in 2020. See Section 4.2.

1.8. **Area Licensing (NEW):** North Coast, 31 licences (31 in 2019); Central Coast, 25 licences (28 in 2019); East Coast Vancouver Island, 24 licences (23 in 2019) and West Coast Vancouver Island, 5 licences (3 in 2019). See Sections 2.6 and 4.

Note: The management measures section formerly found in Section 2 of past Commercial Harvest Plans has been moved to Appendix 6.

2. LICENSING REQUIREMENTS FOR THE COMMERCIAL FISHERY

2.1. National Online Licensing System (NOLS) Client Support – Licensing Services

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

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

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

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

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

Licence Renewal

In order to retain the privilege to be issued a commercial licence in the future, it is critical that you renew you licence and pay the applicable licence renewal fees through the online system on an annual basis, whether fishing takes place or not. Should the licence not be renewed by September 30th of the next calendar year, the licence eligibility will cease to exist and DFO will be unable to consider any licence issuance requests in the future.

2.2. Licence Category

A category ZD or FZD licence is required to commercially harvest Sea Cucumbers by dive.

2.3. Licence Application and Issuance

Renewal of a commercial Sea Cucumber licence and payment of fees must be done on an annual basis to retain the privilege to be issued a licence in the future regardless of whether or not fishing is carried out. Those commercial Sea Cucumber licences not renewed by September 30th will cease and licence issuance will be unable to be considered in the future.

Upon the Department receiving the required payment, and the appropriate information (e.g. designated vessel) and any required documentation, the licence will be issued and notification will be sent via email to advise licence holders/vessel owners that a change has been made to their online account. The licence documents, licence conditions and receipts will be available to be printed at that time.

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

- Ensure any Ministerial conditions placed on the licence eligibility are met.
- Ensure any conditions of the previous year's licence, such as completion and submission of logbooks, are met and accepted.
- Designate a registered commercial fishing vessel eligible for a commercial or communal commercial licence for salmon, schedule II, sablefish, halibut, crab, shrimp, prawn, geoduck or groundfish trawl.

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

The stacking limit has been discontinued. There is no limit on the number of ZD licences allowed to be designated to a vessel at any given time. Harvesters should, however, keep in mind that the season is scheduled for only 8 weeks and should plan accordingly. Season extensions will not be granted for harvesters that have not finished quotas due to attempting to complete too many Individual Quotas (licences) within the short 8 week season.

2.4. 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.

First Nations licence holders interested in obtaining an example template to use to designate their fish harvesters may contact a DFO Resource Manager or Pacific Fishery Licensing Unit office (see Contacts in Appendix 15)

2.5. Individual Quotas (IQ)

The holder of a licence eligibility to commercially harvest Sea Cucumbers is provided the opportunity to harvest up to 6.8 tonnes (15,000 pounds) split weight of Sea Cucumbers.

All diving and fishing operations must take place from the licensed vessel. All products must be brought directly onto the licensed vessel following harvest. Vessels used to hold or transport Sea Cucumbers must conform to Canadian Food Inspection Agency inspection regulations for holding or transporting fish and have appropriate licences.

2.6. Area Licensing

The commercial Sea Cucumber fishery is licensed over four geographic areas. Licence eligibilities will be assigned to one of the following licence areas: North Coast, Central Coast, East Coast of Vancouver Island or West Coast of Vancouver Island. To ensure equal quotas, the coast-wide distribution of licences will be as follows:

Licence Area	Number of Licences
North Coast (Areas 2, 3, 4, 5 and 6)	31
Central Coast (Areas 7, 8, 9 and 10)	25
East Coast Vancouver Island (Areas 11, 12, 13, 14, 15, 16 and 18)	24
West Coast Vancouver Island (Areas 23, 24 and 25)	5
Total	**85**

2.7. Licence Area Selection

Licences may need to be moved between licence areas if the TAC in a licence area changes. Currently, the Department advises the PSCHA on the number of licences permitted in each licence area and the PSCHA advises the Department on which licences will move each year. If the PSCHA cannot agree on which licences will move, the Department may implement an area selection process.

2.8. Licence Documents

Sea Cucumber licence documents are valid from the date of issue to September 30 of the following calendar year.

2.9. Vessel Re-designation

Re-designation of Sea Cucumber licences is allowed as long as all Conditions of Licence, such as the completion of logbooks, have been met and accepted by the Shellfish Data Unit.

Navigate to ‘Submit a Request’ Re-Designate a vessel. Full instructions can be found at

https://www.pac.dfo-mpo.gc.ca/fm-gp/licence-permis/forms/vessel-redesignation-transfert-bateau-eng.htm

2.10. Licence Eligibility Nominations

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

The following requirements must be met:

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

b) Communal commercial (category FZD) licence eligibilities may not be nominated as these are allocated annually to First Nations groups.

2.11. Licence to Transport Sea Cucumbers

Any registered vessel with a commercial or communal commercial salmon, Schedule II, geoduck, sablefish, halibut, crab, shrimp, groundfish trawl and prawn licence; a current year transporting, category D, or a herring seine (HS) licence may transport Sea Cucumbers under Conditions of Licence which are included with all vessel-based licences. For further information contact the Pacific Fishery Licence Unit.

Note: When product is transferred from one vessel to another vessel or a vehicle, that vessel or vehicle requires a provincial Fish Buying Station licence. This licence is required for all types of vessels and vehicles including aircraft. The licence may also be required for personal vehicles in some instances, when a vehicle is carrying the catch from more than one vessel, even if the licence holder owns both vessels. Fish harvesters should check the Province of British Columbia's website for additional information:

http://www2.gov.bc.ca/gov/content/industry/agriculture-seafood/fisheries-and-aquaculture/seafood-industry-licensing

2.12. Processing

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

3. CONTROL AND MONITORING OF COMMERCIAL FISHING ACTIVITIES

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

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

The agency (service provider) contracted by the PSCHA to provide notification, validation, biological sampling, and data services for the 2020/2021 Sea Cucumber fishery is:

D&D Pacific Fisheries Ltd.
Box 1445, Gibsons, BC V0N 1V0

Tel. (604) 886-4819
Fax (604) 886-8288
Hail-in Line: (800) 775-5505

The following sections mirror those in the Conditions of Licence (issued with each commercial licence) that outline the requirements for fishery control and monitoring. See Appendix 11 for an example of the Conditions of Licence.

3.1. Quantities Permitted to be Taken (Condition #3)

The Sea Cucumber IQ equals 1/85 of the coastwide commercial TAC or 6.8 tonnes (15,000 pounds split weight). Harvest of Sea Cucumbers over the IQ after the permitted quota overage adjustments (see Section 3.7.5) may be subject to prosecution and seizure of the overage.

3.2. Fishing Multiple Quota Management Areas (Condition #6)

All Sea Cucumbers caught in a Quota Management Area must be landed or transhipped prior to the commencement of fishing in a new Quota Management Area. In this way, area quotas and individual quotas are closely monitored to avoid over-harvesting of either.

3.3. Containers used to Hold or Transport Sea Cucumbers (Condition #7)

There are several requirements for:

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

Any containers used in the transport of "fish" (including Sea Cucumbers) for export must meet the requirements of Schedule III and V of the *Fish Inspection Regulations*. Contact CFIA's Shellfish Program Specialist at (604) 666-3578 for further information.

3.4. Transhipment (Condition #8)

All product harvested under a Sea Cucumber licence must be harvested from and retrieved by the vessel designated on the licence. If that product is to be retrieved at a later time by the licensed vessel, it must be appropriately tagged. If that product is going to be transferred to another vessel (i.e. for landing purposes), the vessel to which it is transferred must be appropriately licensed for packing purposes (see Section 3.10). At no time should unlicensed vessels be used to harvest, retrieve, store, or tranship product.

Sea cucumbers may be transhipped from the licensed vessel to a packer vessel provided that the vessel master complies with the following conditions:

a) All Sea Cucumbers are in tagged containers.
b) The numbers of containers are recorded on the Validation and Harvest Log.
c) The "packer weight" (determined by adding the weight of the Sea Cucumbers and the weight of the container), is recorded on the Log.
d) The product is landed at a designated port and validated by an observer.

All Sea Cucumbers delivered to packers shall be in tagged containers. The container tags must provide the following information:

a) Name of the harvesting vessel.
b) "ZD" tab number.
c) Vessel registration number (VRN).
d) Harvest date.
e) Fishery management Area and Subarea of harvest.

Transport vessel masters are reminded that there are Conditions of Licence that apply to the transhipment of Sea Cucumbers. There are several requirements, including:

a) Hail at least 24 hours prior to landing.
b) Transport in the tagged container received from the catcher vessel.
c) Carry copies of the validation and harvest log received from the master of the licensed catcher vessel.

3.5. Locations Permitted for the Landing of Sea Cucumbers (Condition #9)

All Sea Cucumbers must be landed at one of the designated landing ports listed in the Conditions of Licence. The specific landing ports have been established as part of the IQ validation program. Fisheries and Oceans Canada certified observers are available at these ports to oversee offloading and validation of Sea Cucumber catch. This condition applies to both the licensed vessel and the packer vessel, if one is used.

3.6. Oral Reports (Condition #11)

Fishing notification requirements that are described in the Conditions of Licence must be followed by each licensed vessel in order for the service provider and the Department to track effort and harvest on a daily basis.

When vessels do not hail into a harvest area, there is a risk of exceeding the quota. In order to maintain a sustainable fishery, it is extremely important that effort and landings in a particular harvest area be reported and recorded accurately.

Observer phone numbers are available from D&D Pacific Fisheries Ltd. If weather results in a change in arrival time the vessel master must immediately advise the observer via telephone of these changes.

3.7. Validation of Catch (Condition #10)

All Sea Cucumbers harvested or removed from the sea bed floor must be validated by a Fisheries and Oceans Canada certified observer at the point and time the fish are landed, to track daily harvests and ensure that area quotas are not exceeded.

The vessel master must be in possession of a Fisheries and Oceans Canada approved catch Validation and Harvest logbook assigned to the Sea Cucumber licence. The Validation and Harvest logbook must be on board the licensed vessel while fishing for Sea Cucumbers or while Sea Cucumbers are on board. Validation and Harvest logbooks that meet the Department's

approval are available from the service provider or from the Pacific Sea Cucumber Harvesters Association.

At the first point of offloading, all Sea Cucumbers will be weighed with a government certified scale, by a Fisheries and Oceans Canada certified observer, and the weight entered on the Validation and Harvest Log. Weights will be recorded as split and eviscerated weights. If whole product is landed then a conversion factor of 2.73 will be used to convert to split weight. The Validation and Harvest logs must remain with the licensed vessel, with copies of the validation accompanying the product to its destination.

3.7.1. Validation and Harvest Log Entries

The vessel master is responsible for completing Sections A and C of the Validation and Harvest Log. The vessel master shall also ensure that chart entries are completed showing all locations fished for that validation. The observer shall complete Section B of the Validation and Harvest Log, and confirm that Sections A and C have been completed. The service provider will collect all harvest charts and ensure that they also have been completed. The original white copy of the Validation and Harvest Log handed to the observer, along with the harvest charts for each day's harvest, must be received by the service provider contracted by the Pacific Sea Cucumber Harvesters Association within one month of the harvesting having occurred. To meet the one month requirement for submission of data, it is recommended that fish harvesters forward their information to the service provider well in advance of this time limit.

When a vessel has been assigned more than one "ZD" licence, care must be taken to complete and submit the logbook that corresponds to the licence quota being harvested. The correct "ZD" licence number is printed on the cover of the logbook. One logbook is intended to be used for all Sea Cucumber landings for a single "ZD" licence, even though the logbook may have more pages than required. Fish harvesters must provide the observer with two Validation and Harvest Logs when one licence quota is being completed and another licence quota on that vessel is to be started.

3.7.2. Examination of Logbooks

The vessel master must produce the Validation and Harvest log on the request of a fishery officer, fishery guardian or an observer.

3.7.3. Biological Sampling

Fish harvesters will, from time to time, be required to assist Fisheries and Oceans Canada personnel and Fisheries and Oceans Canada certified observers in the sampling of Sea Cucumbers for fishery management and stock assessment purposes.

3.7.4. Quota Confirmation

Prior to fishing, the vessel master must confirm the remaining vessel quota from the Validation and Harvest Log.

3.7.5. Quota Overages

The amount of quota overage permitted to be transferred to another Sea Cucumber licence (referred to as a Same Vessel Transfer (SVT) or a Different Vessel Transfer (DVT)) has increased from a limit of 200 pounds to a new limit of 500 pounds. This increase in the transferable overage limit reflects a change in the size of totes used to land Sea Cucumbers. When the 200 pound limit was first implemented, the industry landed Sea Cucumbers in smaller containers such as geoduck cages. Over time industry has moved to larger containers such as barrels and totes and it has become more difficult to estimate (at the time of harvest) the weight of Sea Cucumbers in these containers within 200 pounds.

Overages that are not transferred to another licence are considered a Non-Transferable Overage (NTO) and the limit for this type of overage is zero. The Department will be monitoring NTO quota overages and may pursue enforcement action for repeat offenders.

Any Quota Management Area TAC overages may be deducted from the next year's Quota Area TAC.

Small quantities of Sea Cucumbers which exceed the licence's annual IQ (up to 500 pounds) may be transferred to another Sea Cucumber licence provided the following conditions are fulfilled. If all of these conditions are not met, observers will not transfer the overage to another licence. In the following descriptions, the Sea Cucumber licence which has exceeded its IQ is called Licence "A" and the licence to which landings are being transferred is called Licence "B".

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

a) Transfer of landings to a Second Licence on the Same Vessel - If two or more licences are assigned to the same vessel then landings in excess of quota from one licence may be transferred to another Sea Cucumber licence on that vessel which has quota remaining. Overage of the last Sea Cucumber licence on the same vessel may be transferred to another vessel's Sea Cucumber licence in accordance with procedure described below.
b) Maximum Allowable Transfer of Landings between Licences on Different Vessels - In the event of a quota overage on Sea Cucumber Licence "A", a maximum of 500 pounds of Sea Cucumber may be transferred to another vessel's Sea Cucumber licence (Licence "B"). Only one transfer of quota overage is allowed per licence. The quota overage cannot be divided between a number of licences.
c) Remaining Quota on Second Licence - The amount of landings transferred from licence "A" cannot exceed the remaining quota of Sea Cucumber Licence "B".
d) Sea Cucumber Licence Area - Both vessels involved in a transfer of landings must be licensed to fish in the same area and have active licences for that licence year.
e) Documentation - The Sea Cucumber Validation and Harvest Log for each of the licences involved in the transfer must be present at the time of the validation. Both vessel masters must make their intention to transfer or receive overage clear to the Observer prior to unloading. In the event of a packer landing, a note signed by both vessel masters should accompany the product to advise the observer that there is a mutual agreement to transfer.

3.8. Catch and Fishing Data (Condition #12)

It is a Condition of Licence and the responsibility of the licence holder to ensure that harvest and chart information is received by Fisheries and Oceans Canada Shellfish Data Unit and meets the conditions outlined below. Fish harvesters having validation services completed by D&D Pacific Fisheries Ltd. will receive these services as part of that contract.

Validation and Harvest Logbooks meeting Fisheries and Oceans Canada requirements (see example in Appendix 8) are available from service providers. The service provider will, for a fee, provide the Validation and Harvest Log coding and keypunch service, including the electronic capture of harvest chart location information into Geographic Information System (GIS), (as well as fishing notification and catch validation). Thus, the service providers provide compliance with the licence requirements for a hard (paper) and electronic copies, including fishing location information, for harvest log data.

Fish harvesters are required to have their portions of both the validation and harvest sections completed before validation, or by midnight of the day on which fishing occurred, whichever comes first. An accurate chart record must be completed for each Validation and Harvest log entry.

3.8.1. Harvest Data

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

The vessel master is also responsible for the provision of a daily harvest chart record of each location fished by each diver. This harvest chart must have marked directly on it the VRN, the licence tab number and validation ID numbers. The harvest site must be clearly marked on the chart with dive or record numbers pertaining to each harvest log catch record and dates that fishing activity occurred at each site. The vessel master is also responsible for the electronic capture of harvest location data into GIS. This chart must be completed and a copy submitted in both hard copy (paper) and electronic form in an approved format as defined by Fisheries and Oceans Canada Aquatic Resources Research and Assessment Division's Shellfish Data Unit.

The original white page copy of the log, the accompanying chart record, and the electronic copies must be available to the Department within one month of the harvesting having occurred. Fish harvesters who have validation services completed by D&D Pacific Fisheries Ltd. will receive this service as part of that contract.

3.8.2. Submission and Release of Harvest Log Data

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

3.8.3. Nil Report for Harvest Log - Licence Issued But Not Fished

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

Fisheries and Oceans Canada wishes to remind fish harvesters that harvest logs must be completed accurately during fishing operations and submitted to Fisheries and Oceans Canada in accordance with the timing set out in Conditions of Licence. Delay of completion or submission of logs is a violation of a Condition of Licence.

3.8.4. Confidentiality of Harvest Data

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

3.9. Fish Slip Data (Condition #13)

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.

3.10. Export Requirements

It is important to note that Sea Cucumbers being processed for export out of the province must be processed at a federally registered facility. Each country receiving Sea Cucumbers may have different import requirements. The Canadian Food Inspection Agency posts export requirements on the following website:

http://www.inspection.gc.ca/english/fssa/fispoi/export/coupaye.shtml.

However, as these requirements can vary, exporters of Sea Cucumbers are encouraged to verify foreign country import requirements though their customers prior to export.

The Dive Harvest Log and fish slip Conditions of Licence must be complied with, even for Sea Cucumbers exported from British Columbia, which have not gone through a federally registered processing plant.

4. OPEN TIMES AND QUOTA MANAGEMENT AREAS

4.1. General Information

The 2020/2021 fishery will be conducted from October 1, 2020 through December 7, 2020. The North Coast licence area will open on October 1 and is scheduled to remain open until November 30. The Central Coast, and West Coast Vancouver Island licence areas will open on October 8 and are scheduled to remain open until December 7. For the 2020 season certain QMAs in the East Coast Vancouver Island licence area will open on October 1 and the rest will open on October 8. The East Coast of Vancouver Island licence area is scheduled to remain open until December 7. Licence areas may close prior to their scheduled end dates if licence area TACs are completed earlier than the scheduled season end. An extension to the scheduled season will be considered by the Department only if requested by the Pacific Sea Cucumber Harvesters Association in writing. Requests will generally be considered only if they are due to unforeseen weather events that have prevented the TAC from being completed during the regular scheduled season.

For proper management of the fishery, Quota Management Areas will be opened and fished in the sequence shown below. **Due to the many changes to the commercial Sea Cucumber fishery in the last few years, harvesters are advised to maintain good contact with the fishery manager, the service provider, or the On-Grounds Co-ordinators, to avoid fishing in a closed area.**

4.2. Quota Management Area Table

IMPORTANT: Please see Section 5 for descriptions of all closures and Appendix 9 for a full description of all Quota Management Areas (QMA). Ptn. = Portion of a Subarea.

Opening Schedule	Quota Management Area	Name	Description (by Subarea)	Quota (t)*	Quota (lb.)*
North Coast Licence Area (31 licences)					
TBA	3A	Work Channel	3-6	20.8	45,791
TBA	3B	Portland Inlet	3-7	17.4	38,264
TBA	3C	Steamer Pass	3-8, 3-10	13.7	30,241
TBA	3D	Pearse Canal	3-3, ptn. 3-11	21.0	46,339
TBA	4A	West Dundas	3-1, 4-1	49.8	109,868
TBA	4B	East Dundas	Ptn. 4-5	35.1	77,336

TBA	5H	Grenville North	5-1, ptn. 5-23	21.3	46,886
TBA	6E	Princess Royal Channel	Ptn. 6-20; 6-21, 6-22, 6-24	14.4	31,845
TBA	6F	West Aristazabal	Ptn. 6-13	17.4	38,430
North Coast Total				**210.9**	**465,000**
Central Coast Licence Area (25 licences)					
TBA	7C	Fisher/ Dean Channels	7-30, 8-5 to 8-7	55.6	122,609
TBA	7M	Chatfield/Briggs	Ptn. 7-14; 7-15	18.1	40,000
TBA	7N (NEW)	Finlayson North	Ptn. 7-6	7.7	17,000
TBA	7O (NEW)	Finlayson South	7-4	5.9	13,000
TBA	8E (NEW)	FitzHugh/Burke South	8-4, ptn. 8-13	52.0	114,680
TBA	8F (NEW)	Burke North	Ptn. 8-13; 8-14	9.1	20,000
TBA	9C	North Rivers Inlet	Ptn. 9-4, 9-6; 9-5, 9-9	9.1	20,000
TBA	10A	Smith Inlet	10-3, 10-4, 10-6 to 10-11, ptn. 10-5, 10-12	12.6	27,711
Central Coast Total				**170.1**	**375,000**
East Coast Vancouver Island Licence Area (24 licences)					
October 1	11A	Belize Inlet	11-4, 11-5, 11-6	11.3	25,000
October 1	11B	Seymour Inlet	11-3, 11-10	9.1	20,000
October 1	11D	Slingsby Channel	Ptn. 11-2	4.5	10,000

TBA	12E	Broughton	12-40	14.1	31,000
TBA	12F	Wells Passage	12-41	37.2	82,000
TBA	12J	Johnstone Strait	12-1; ptn. of 12-2; 12-3, 12-4, 12-21, 12-24, ptn. of 13-35	15.6	34,500
TBA	12L	Tribune Channel	12-35, 12-37	6.1	13,500
TBA	13A	Quadra/Cortes	13-12 to 13-16	18.1	40,000
TBA	13D	Loughborough	Ptn. 13-35; 13-36 to 13-43	9.1	20,000
TBA	15A	West Redonda	Ptn. 15-5	3.6	8,000
TBA	15B	East Redonda	Ptn. 15-5	3.2	7,000
TBA	15C	South Desolation	15-4, ptn. 15-5	3.2	7,000
TBA	16A	Sechelt Inlet	16-6 to 16-8, ptn. of 16-9	8.2	18,000
TBA	16B	Jervis Inlet	16-10, ptn. of 16-11; 16-12, 16-13	9.1	20,000
TBA	16D	Lasqueti Island	14-3, 16-19, 16-20	6.8	15,000
TBA	18A	Gulf Islands South	18-1, 18-2, 18-4, 18-5, 18-9, 18-11	4.1	9,000
ECVI Total				**163.3**	**360,000**
West Coast Vancouver Island Licence Area (5 licences)					
October 8	24A	North Clayoquot	24-4 to 24-6, 24-14	8.2	18,000
October 8	24B	South Clayoquot	24-7, 24-10	5.4	12,000
October 8	25A (NEW)	Nootka/Tahsis	25-6, 25-8, 25-9, 25-12, 25-15	10.0	22,000

October 8	25B (NEW)	Muchalat/Tlupana	25-1 to 25-5	10.4	23,000
WCVI Total				**34.0**	**75,000**
Coastwide Commercial Total Allowable Catch				**578.3**	**1,275,000**

**All weights are in split pounds or split tonnes.*
*Quota amounts in **bold** have changed from last season.*

Note:

a) Vessel masters must ensure there is quota remaining in a Quota Management Area prior to, and during fishing in that area. This is particularly important on the final days of fishing when it may be necessary for a vessel to change Quota Management Areas mid-day once the area quota is attained.

b) Any area quota overruns may be deducted from the next year's Quota Management Area quota.

4.3. Fallback Quota

For the 2020 season, fallback quota has been set aside in the East Coast Vancouver Island licence area and Central Coast licence area.

The use of fallback quota will be considered by DFO only if recommended in writing by the Pacific Sea Cucumber Harvesters Association. For more information on fallback quota and how it is calculated please see Appendix 14.

2020 Fallback Quota in Central Coast Licence Area			
Quota Management Area		**Description (by Subarea)**	**Fallback Quota (lb.)***
8E	FitzHugh/ Burke South	8-4, ptn. 8-13	10,000

**All weights are in split pounds*

2020 Fallback Quota in ECVI Coast Licence Area			
Quota Management Area		**Description (by Subarea)**	**Fallback Quota (lb.)***
13D	Loughborough	13-35, 13-36 to 13-43	9,500
15A	West Redonda	Ptn. 15-5	18,000

15B	East Redonda	Ptn. 15-5	24,000
15C	South Desolation	15-4, ptn. 15-5	32,000
16C	Texada Island	15-1, 16-18, 16-21, 16-22	25,000
16D	Lasqueti Island	14-3, 16-19, 16-20	30,000
18A	Gulf Islands South	18-1, 18-2, 18-4, 18-5, 18-9, 18-11	10,000

**All weights are in split pounds*

4.4. Disruptions Due to Unforeseen Issues (Environmental Contamination, Other)

The Department may, at its discretion and upon request from the PSCHA, transfer quota in-season between QMAs not included in this IFMP. For example, an impacted QMA may be substituted with a QMA from a different year in the Adaptive Rotational Fishing Strategy. In this scenario, quota is 'borrowed' from a QMA not included in the current rotation, and paid back in the appropriate year either by reducing quota in the QMA in the future or by foregoing harvest in the QMA. Other scenarios may be considered as well. Industry is advised that in-season changes due to unforeseen issues must be made through written request by the PSCHA to the lead manager for the fishery (see Contacts, Appendix 15).

4.5. On-grounds Communication

The PSCHA has designated certain members to act as "On-Grounds Co-ordinators" for the 2020/2021 fishing season in order to aid in keeping track of fleet movement and QMA quotas. For a list of On-Grounds Co-ordinators please contact the service provider. Information on open areas, remaining quotas, and upcoming closures can be obtained by contacting the service provider or a fishery manager. See Contacts in Appendix 15.

4.6. Harvest Questionnaire

The Department and the PSCHA are seeking on-grounds observations from harvesters about each of the QMAs. To gather this important information, a harvest questionnaire will be inserted into the harvest logbook. Harvesters are encouraged to fill out the questionnaire and return it to the Service Provider along with the harvest logbook. The questionnaires will be provided to the Department and will provide important information to be considered in the management of the fishery.

4.7. Harvesting on Aquaculture Tenures

Aquaculture leases are considered private property. Aquaculture licences of occupation are activity (or species) specific and do not legally restrict access unless there are impacts to the species being cultured. The Department recommends that commercial fishers familiarize

themselves with the location of aquaculture tenures in fishing areas and, if harvest is being considered from the tenure area, that explicit permission be sought from the aquaculturist to access Sea Cucumbers for commercial purposes.

4.8. Human Waste Containment Regulation

Disposal of human waste into waters where shellfish are harvested or adjacent to shellfish harvest areas creates unnecessary and potentially serious health risks for shellfish consumers. In accordance with the Canadian Shellfish Sanitation Program (CSSP) and 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 by spillage or leakage.
- The contents of toilets or other designated human waste receptacles shall be emptied only into an approved sewage disposal system.

5. CLOSURES

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

5.1. Notification of Closures

Additional closures may be announced in-season by Fishery Notice. Prior to fishing in an area, fish harvesters are advised to contact the local Fisheries and Oceans Canada office or to contact a resource manager listed in the Contacts section of the IFMP (Appendix 15).

5.2. Closures

The following areas will be closed to commercial Sea Cucumber harvest.

5.2.1. Area 2E

5.2.1.1. Kwoon Cove to Gowgaia Bay: Those waters of Subareas 2-38 to 2-41 and 142-1 inside a line commencing at a point on land on T'aaxwii XaaydaGa Gwaay.yaay iinaGwaay (Moresby Island) at 52°23.311'N and 131°35.794'W northwesterly to a point on land on GuuGaalas Gwaay (south Gowdas Islands) at 52°23.340'N and 131°35.859'W, thence northerly following the shoreline of GuuGaalas Gwaay (south Gowdas Islands) to 52°23.489'N and 131°36.092'W, thence southwesterly to a point in water at 52°19.074'N and 131°43.794'W, thence northwesterly to a point in water at 52°38.115'N and 132°09.939'W, thence southeasterly to a point on land on T'aaxwii XaaydaGa Gwaay.yaay iinaGwaay (Moresby Island) at

52°38.177’N and 131°56.374’W, and thence southerly following the western shoreline of T’aaxwii XaaydaGa Gwaay.yaay iinaGwaay (Moresby Island) to the beginning point. [Kun Skuujii sda GawGaay.ya (Kwoon Cove to Gowgaia Bay)]

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

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

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

52°02.635’N and 130°50.918’W, thence northwesterly back to the beginning point. [Gangxid Xyuu Kun sda Kan ’Láas Kun (Lyman Point to Receiver Point)]

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

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

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

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

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

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

the easternmost point of SGwaay Kun Gwaay.yaay (Burnaby Island) at 52°22.315'N and 131°14.689'W, thence following the western shoreline of SGwaay Kun Gwaay.yaay (Burnaby Island) to 52°22.377'N and 131°14.683'W, thence northwesterly to a point on the eastern shoreline of SGwaay Kun Gwaay.yaay (Burnaby Island) at 52°24.494'N and 131°15.832'W, and thence following the eastern shoreline to the beginning point. [Suu Kaahlii sda SGwaay Kun Gwaay.yaay (Skincuttle Inlet to Burnaby Island)]

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

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

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

northeasterly to a point on an islet at 52°34.530’N and 131°32.890’W, thence northeasterly to a point on the southern shoreline of Tllga Kun Gwaay.yaay (Lyell Island) at 52°35.767’N and 131°32.891’W, and thence easterly and northerly following the shoreline of Tllga Kun Gwaay.yaay (Lyell Island) to the beginning point. [Gandaawuu.ngaay Xyangs sda Tllga Kun Gwaay.yaay (Juan Perez Sound to Lyell Island)]

5.2.1.14. Darwin Sound: Those waters of Subarea 2-10 inside a line commencing at a point on land on Shuttle Island at 52°40.053’N and 131°42.328’W northeasterly to a point on the western shoreline of Tllga Kun Gwaay.yaay (Lyell Island) at 52°40.466’N and 131°41.105’W, thence southerly following the western shoreline of Tllga Kun Gwaay.yaay (Lyell Island) to 52°37.301’N and 131°38.800’W, thence northwesterly to a point on land of Gwaay DaaGaaw (Shuttle Island) at 52°38.522’N and 131°41.409’W, and thence following the eastern shoreline of Shuttle Island to the beginning point. [Didxwahxyangs (Darwin Sound)]

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

5.2.2. Area 3

5.2.2.1. Nasoga Gulf CNTR: Subarea 3-9. (Established 2010: Commercial No-Take Reserve)

5.2.2.2. Winter Inlet: That portion of Subarea 3-11 South of a line starting at the entrance to Winter Inlet at 54° 50.328’ N and 130° 27.857’ W across to a point at 54° 50.455’ N and 130° 27.461’ W. (Established 2011: Fisheries Management Closure)

5.2.3. Area 4

5.2.3.1. West Stephens Island CNTR: Portion of Subarea 4-2 North of a line starting at the subarea boundary at View Point on Arthur Island [54° 03.249’ N and 130° 37.544’ W] then West to a point at 54° 04.000’ N and 130° 42.500’ W, then Southwest to the surfline at 53° 59.983’ N and 130° 52.025’ W, excluding a portion in Stephens Passage East of a line from 54° 07.388’ N and 130° 38.755’ W to 54° 07.197’ N and 130° 38.449’ W. (Established 2010: Commercial No-Take Reserve)

5.2.4. Area 5

5.2.4.1. Kitkatla Inlet and adjacent waters: Subarea 5-3 and Subarea 5-10. (First Nations access for food, social and ceremonial purposes)

5.2.4.2. Kumealon Inlet, Baker Inlet, Kxngeal Inlet, and Klewnuggit Inlet in Subarea 5-23 and Lowe Inlet in Subarea 5-24 (Established 1998: Fisheries Management Closure).

5.2.5. Area 6

5.2.5.1. Giltoyees and Miskatla Inlets: That portion of Subarea 6-1 north of a line from Point Ashton [53° 46.245'N/128° 56.920'W] west to a point at 53° 46.092'N and 128° 58.589'W. (Established 2015: Fisheries Management Closure – created after discussion with the Haisla First Nation)

5.2.5.2. Sue Channel CNTR: That portion of Subarea 6-1 that encompasses both Sue Channel and Loretta Channels within the following boundaries:

Easterly of the Subarea boundary between Maitland Island [53° 41.197'N/129° 04.789'W and Hawkesbury Island [53° 40.494'N/129° 04.797'W] and westerly of a line that begins at 53° 41.205'N/129° 04.898'W (Kersey Point) then to 53° 45.620'N/128° 50.849'W (Walbran Point) then following the easterly shoreline of Loretta Island to 53° 43.341'N/128° 49.939'W then to 53° 42.645'N/128° 50.071'W (Gaudin Point). (Established 2015: Commercial No-Take Reserve – created after discussion with the Haisla First Nation)

5.2.5.3. Hartley Bay: Those portions of Subareas 6-2, 6-6 and 6-28 in the vicinity of Hartley Bay, Promise Island and Coghlin Anchorage, inside the 20 fathom depth contour running from Halsey Point at the entrance to Hartley Bay, around Cape Farewell on Promise Island, then to Sainty Point on the mainland coast as shown on Charts No. 3711 and 3742 published by the Canadian Hydrographic Service. (Established 2005: First Nations access for food, social and ceremonial purposes)

5.2.5.4. Kitkiata Inlet: That portion of Subarea 6-2 that is Kitkiata Inlet West of a line from Gertrude Point to Helen Point. (Established 2006: First Nations access for food, social and ceremonial purposes)

5.2.5.5. Kiskosh Inlet: That portion of Subarea 6-2 that is Kiskosh Inlet West of a line running across the entrance of the inlet. (Established 2006: First Nations access for food, social and ceremonial purposes)

5.2.5.6. Bishop Bay: That portion of Subarea 6-3 that is Bishop Bay East of a line from Riordan Point to Tomkinson Point. (Established 2006: First Nations access for food, social and ceremonial purposes)

5.2.5.7. Cornwall and Drake Inlets: Subarea 6-8. (Established 2006: First Nations access for food, social and ceremonial purposes)

5.2.5.8. Northwest Price Island CNTR: That portion of Subarea 6-17 along the western shoreline of Price Island from the Subarea boundary at 52° 27.488'N and 128° 45.802'W south to the Subarea boundary at 52° 24.222'N and 128° 45.690'W. (Established 2014: Commercial No-Take Reserve)

5.2.5.9. Mid Princess Royal Channel: That portion of Subarea 6-20 South of a line from a point at Nomel Creek (53° 07.106'N and 128° 36.006'W) then East to the Subarea boundary at (53° 07.123'N and 128° 34.164'W). North of a line from point at Big Creek (53° 02.029'N and 128° 31.508'W), West to a point at 53° 01.924'N and 128° 32.560'W. (Established 2014: First Nations access for food, social and ceremonial purposes)

5.2.5.10. Tolmie Channel CNTR: That portion of Subarea 6-20 south of a line starting at the Subarea boundary at Netherby Point (52° 55.314'N and 128° 30.007'W) west to a point at 52° 55.320'N and 128° 31.540W and north of a line starting from the Subarea boundary at Sarah Head (52° 53.012'N and 128° 30.634'W) west to a point on Tolmie Head at 52° 53.068'N and 128° 31.796'W. (Established in 2011: Commercial No-Take Reserve)

5.2.5.11. Khutze Inlet CNTR: Subarea 6-23. (Established 2011: Commercial No-Take Reserve)

5.2.5.12. Meyers Pass: Subarea 6-25. (Established 2014: First Nations access for food, social and ceremonial purposes)

5.2.6. Area 7

5.2.6.1. Mid-Finlayson Channel: Subarea 7-5. (Established 2014: First Nations access for food, social and ceremonial purposes)

5.2.6.2. Mussel Inlet CNTR: Subarea 7-7 (Established 2014: Commercial No-Take Reserve)

5.2.6.3. Oscar Pass CNTR: That portion of Subarea 7-9 west of a line starting at Miall Point (52° 29.595'N and 128° 16.147'W) and a point along Buckley Head at 52° 28.494'N and 128° 16.494'W (Established 2014: Commercial No-Take Reserve)

5.2.6.4. Berry Inlet CNTR: Subarea 7-8 (Established 2011: Commercial No-Take Reserve – formerly designated as a research area).

5.2.7. Area 9

5.2.7.1. Sandell Bay CNTR: That portion of Subarea 9-4 North of a line from 51° 38.340' N and 127° 32.880' W to 51° 38.460' N and 127° 32.040' W. (Established 2008: Commercial No-Take Reserve)

5.2.7.2. Moses Inlet CNTR: Subareas 9-7 and 9-8. (Established 2008: Commercial No-Take Reserve)

5.2.7.3. Kilbella Bay: That portion of Subarea 9-6 East of a line at 127° 21.90’ W latitude. (Established 2008: Fisheries Management Closure)

5.2.8. Area 10

5.2.8.1. Margaret Bay CNTR: That portion of Subarea 10-5 East of a line from Ripon Pt. (51° 19.32’ N and 127° 32.40’ W) to Olive Pt. (51° 20.22’ N and 127° 32.16’ W). (Established 2008: Commercial No-Take Reserve)

5.2.8.2. Takush Harbour CNTR: That portion of Subarea 10-12 West of 127° 35.52’ W latitude and South of the Subarea Boundary Line (Wakas Pt. (51° 17.46’ N and 127° 38.16’ W) to Gikumi Pt. (51° 17.70’ N and 127° 36.78’ W). (Established 2008: Commercial No-Take Reserve)

5.2.9. Area 11

5.2.9.1. Nugent Sound CNTR: Subarea 11-8. (Established 2012: Commercial No-Take Reserve)

5.2.10. Area 12

5.2.10.1. Lower Queen Charlotte Strait CNTR: Subarea 12-6. (Established 2009: Commercial No-Take Reserve)

5.2.10.2. Port Neville CNTR: Subarea 12-25. (Commercial No-Take Reserve)

5.2.11. Area 13

5.2.11.1. 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)

5.2.11.2. Mitlenatch Nature Park: (As described in Area 15 Closures).

5.2.11.3. Okisollo Channel CNTR: Subarea 13-10. (Established 2008: Commercial No-Take Reserve)

5.2.12. Area 14

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

5.2.12.2. Mitlenatch Nature Park: (As described in Area 15 Closures).

5.2.13. Area 15

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

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

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

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

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

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

5.2.13.7. Toba Inlet CNTR: Subarea 15-6 (Established 2012: Commercial No-Take Reserve).

5.2.14. Area 16

5.2.14.1. Subareas 16-3 (Bargain Bay), 16-4 (Pender Harbour) and 16-5 (Head of Sechelt Inlet). (Navigational Closure)

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

5.2.14.3. Jervis Inlet CNTR: Subarea 16-14. (Established 2011: Commercial No-Take Reserve)

5.2.14.4. Malaspina CNTR: Subareas 16-2 and 16-17 (Established 2012: Commercial No-Take Reserve).

5.2.15. Area 18

5.2.15.1. Satellite Channel CNTR: Subarea 18-6. (Established 2011: Commercial No-Take Reserve)

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

5.2.16. Area 19

5.2.16.1. 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)

5.2.16.2. 10 Mile Point: Those waters of Subareas 19-4 and 19-5 within 0.4 nautical miles of Cadboro Point navigation light. (Marine Reserve)

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

5.2.17. Area 20

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

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

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

5.2.18. Area 23

5.2.18.1. 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)

5.2.18.2. Bamfield Marine Station Research Area Closure: Those waters of Pacific Fishery Management Subareas 23-4, 23-5, 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)

5.2.19. Area 24

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

5.2.20. Area 25

5.2.20.1. Subareas 25-8 and 25-9: Zeballos Experimental Fishing Area (Established 1997: Research).

5.2.21. Area 26

5.2.21.1. 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 degrees 59 minutes to 50 degrees 6.3 minutes north and 127 degrees 26 minutes to 127 degrees 39 minutes west. (Ecological Reserve)

5.2.21.2. Kyuquot Bay: A portion of 26-6 inside or northerly of a line from White Cliff Head to Racoon Point. (Research Closure)

5.2.21.3. Entrance to Crowther Channel: A portion of 26-6 on the west side of Union Island commencing at position 50 degrees 0.4 minutes north, 127 degrees 19.3 minutes west. (Research Closure)

5.2.22. Area 28

5.2.22.1. Horseshoe Bay: That portion of Subarea 28-2 bounded by a line commencing from Whytecliff Point, thence in a straight line to the most southerly point of Bowyer Island, thence in a straight line 112 degrees true to the mainland. (Navigational Closure)

5.2.22.2. 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 metres east of the most southeasterly point of Whyte It.; thence following the southern shoreline of Whyte It. at a distance of 100 metres to a point lying 100 metres from the most southwesterly point of Whyte It.; thence in a straight line to a point lying 100 metres west of White Cliff Point; thence following the shoreline at a distance of 100 metres in a northerly direction to a point 100 metres north of Lookout Point; thence following the shoreline at a distance of 100 metres in an easterly direction to a point 100 metres perpendicular to the most northerly point of Whytecliff Park; thence to the most northerly point of Whytecliff Park on the mainland. (Marine Reserve)

5.2.22.3. 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)

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

5.2.23.1. Bowie Seamount: Area bounded by a series of rhumb lines drawn from a point 53° 03.076’ N, 135° 50.259’ W, to a point 53° 16.209’ N, 134° 59.554’ W, then to a point 53° 39.492’ N, 135° 17.049’ W, then to a point 53° 39.180’ N, 135° 53.465’ W, then to a point 53° 52.167’ N, 136° 30.231’ W, then to a point 53° 49.196’ N, 136° 47.331’ W, then to a point 53° 40.025’ N, 136° 57.035’ W, then to a point 53° 13.592’ N, 136° 10.000’ W, then back to the

point of commencement as laid out in the Bowie Seamount Marine Protected Area Regulations. (Marine Protected Area)

6. WORKSAFEBC

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

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

www.worksafebc.com

For further information, contact an Occupational Safety Officer:

Mark Lunny	Courtenay	(250) 334-8732
Cody King	Courtenay	(250) 334-8733
Gregory Matthews	Courtenay	(250) 334-8734
Jessie Kunce	Victoria	(250) 881-3461

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

For information on projects and initiatives related to commercial fishing health and safety please contact Tom Pawlowski (604) 233-4062 or by email: tom.pawlowski@worksafebc.com

Appendix 2: 2020/2021 Sea Cucumber by Dive First Nations Harvest Plan

1. OVERVIEW OF THE FISHERY

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

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

- To provide a framework for the management of fishing by Aboriginal groups for food, social and ceremonial purposes.
- To provide Aboriginal groups with an opportunity to participate in the management of fisheries, thereby improving conservation, management and enhancement of the resource.
- To contribute to the economic self-sufficiency of Aboriginal communities.
- To provide a foundation for the development of self-government agreements and treaties.
- To improve the fisheries management skills and capacity of Aboriginal groups.

AFS fisheries agreements may identify the amounts that may be fished for FSC purposes, terms and conditions that will be included in the communal fishing licence, and fisheries management arrangements. The Minister of Fisheries and Oceans may also issue a communal fishing licence to a group to fish for FSC purposes.

There are approximately 203 First Nations in British Columbia (BC), of which 187 qualify for AFS funding. Fisheries and the harvest and management of aquatic resources have particular importance to many Aboriginal communities. Many Aboriginal communities are located adjacent to key fishing sites, oceans and aquatic resources, and consider the management of these resources to be matters of importance to these communities. There are Aboriginal groups who are seeking greater access to economic opportunities from aquatic resources as a potential driver for economic development in their communities; more stability in food, social and ceremonial (FSC) fisheries; a greater role in the aquatic resource and oceans management decisions that affect them; and a greater role in stewardship, including stock assessment, oceans and habitat management, conservation and protection, and recovery strategy development and implementation.

2. MANAGEMENT MEASURES FOR THE FIRST NATIONS FISHERY

Under the Individual Quota (IQ) program for the commercial Sea Cucumber fishery, two percent of the coast-wide Total Allowable Catch (TAC) for Sea Cucumber is reserved, for planning purposes, for First Nations fisheries for FSC purposes. Additional allocations of Sea Cucumbers will be provided to First Nations who demonstrate further requirement for FSC purposes. Fisheries and Oceans Canada is confident that with the precautionary approach to this fishery, the reserved allocation of TAC, and the provision of additional allocations where necessary, First Nations in all areas will have sufficient opportunities to harvest Sea Cucumbers for FSC (domestic) purposes.

A number of closures to the commercial fishery have been implemented for First Nations' access to Sea Cucumbers for FSC purposes – see Appendix 1, Section 5 for a list of these closures.

3. OPEN TIMES

First Nations fishing for FSC purposes is open coast-wide throughout the year.

4. LICENSING

Communal licences and harvest documents (under treaty) are issued annually to First Nations under the authority of the *Aboriginal Communal Fishing Licences Regulations* made under the *Fisheries Act*.

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

www.pac.dfo-mpo.gc.ca/abor-autoc/index-eng.html

5. CONTROL AND MONITORING OF ABORIGINAL FISHING ACTIVITIES

This fishery is regulated through the issuance of communal licences to First Nations organizations. Further arrangements for Aboriginal fishing may be identified in agreements between the Department and individual First Nations organizations.

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

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

5.1. Treaty Fisheries

The Nisga'a Treaty came into effect on May 11, 2000. Tsawwassen and Maa-nulth First Nations Treaties came into effect on April 3rd, 2009 and April 1, 2011 respectively. These treaties do not

include allocations for Sea Cucumbers. The first treaty in BC to include an allocation for Sea Cucumbers is the Tla'amin (Sliammon) treaty which came into effect on April 5, 2016. The allocation is for 8,500 pounds of whole Sea Cucumber from within the Tla'amin Fishing Area which includes portions of Management Areas 13, 14, 15 and 16.

Under each treaty, Fisheries Operational Guidelines (FOG) set out the operational principles, procedures and guidelines needed to assist Canada, BC, Tsawwassen, Maa-nulth and Tla'amin in implementing Fisheries Chapters of their respective treaties. The FOG's provide guidance on how management decisions with respect to treaty fisheries will be made via the Joint Fisheries Committee, how abundance is estimated, biological and harvesting considerations, catch monitoring and reporting requirements, etc. Each year the Joint Fisheries Committees, established under each treaty, make recommendations to the Minister on the issuance of specific 'Harvest Documents' to authorize harvesting for domestic purposes.

More information on these Treaties can be found at:

www.bctreaty.net/

5.2. Five Nations Right-Based Sale Fishery

Five Nuu-chah-nulth First Nations located on the West Coast of Vancouver Island - Ahousaht, Ehattesaht, Hesquiaht, Mowachaht/Muchalaht, and Tla-o-qui-aht (the T'aaq-wiihak First Nations) - have aboriginal rights to fish for any species of fish, with the exception of Geoduck, within their Fishing Territories and to sell that fish. The Department has developed a 2020/21 Five Nations Multi-species Fishery Management Plan (FMP) for salmon, groundfish, crab, prawn and gooseneck barnacle. Feedback provided by the Five Nations during consultations was considered and incorporated into the 2020/21 FMP by DFO where possible. The FMP includes specific details about the fishery, such as allocation/access, licensing and designations, fishing area, harvesting opportunities, and fishery monitoring and catch reporting. For further information see the FMP at: http://waves-vagues.dfo-mpo.gc.ca/Library/40869374.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 a Management Plan for the 2020 Five Nations Sea Cucumber by Dive Fishery FMP which may contain changes from last year's Management Plan. This Management Plan describes the provisions for a communal sale fishery for the Five Nations. 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.

Appendix 3: 2020/2021 Sea Cucumber by Dive Recreational Harvest Plan

1. INTRODUCTION

Decision-making, setting priorities and operational activities around the recreational fishery are guided by a broad policy and legislative framework, "Recreational Fisheries in Canada, An Operational Policy Framework" (Fisheries and Oceans Canada, 2001):

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

The following principles represent a collaborative attempt to bring together the existing guidance from a multitude of sources and, where necessary, clarify more general directions in the context of managing the recreational fishery. The following principles also define the underlying values that should guide decision-making, priority setting, and operational activities affecting the recreational fishery. They provide a context against which we can go about achieving the vision and fulfilling the mission.

1. Conservation of naturally reproducing fish and their habitat is the highest priority.
2. Shared responsibility for conservation, stewardship and careful harvesting of the fisheries resource is essential.
3. Fish are a common property resource and fisheries are managed for the benefit of all Canadians.
4. After conservation, First Nations fishing for food, social and ceremonial purposes has priority.
5. Recreational fishing is a socially and economically valuable use of fishery resources and is the means by which many Canadians access and experience these resources.
6. The needs of the recreational fishery, such as for stable and predictable fishing opportunities, will be explicitly considered and clearly reflected in integrated fishery management plans.
7. Prior to making decisions on recreational fishery management issues, governments will seek advice through appropriate inclusive, transparent and accountable consultation processes.
8. Stock enhancement and habitat restoration may be used to rebuild fish stocks and create fishing opportunities.
9. The recreational fishery will be managed to foster its current and future potential.

More information is available on the Internet:

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

2. LOCATION OF THE FISHERY

Recreational harvest of Sea Cucumbers occurs coast-wide.

3. OPEN TIMES AND AREAS

Recreational fisheries for Sea Cucumbers are generally open year-round in all areas, or as described in the British Columbia Tidal Waters Sport Fishing Guide for the recreational fishery.

4. LICENSING

A British Columbia Tidal Waters Sport Fishing Licence is required for the recreational harvest of all species of fish.

5. CONTROL AND MONITORING OF RECREATIONAL FISHING ACTIVITIES

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

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

5.1. Gear

Sea Cucumbers may be harvested by handpicking.

5.2. Daily Limits

The daily recreational limit for Sea Cucumbers is 12.

5.3. Possession Limits

Possession limits for Sea Cucumbers are two times the daily limit.

5.4. Size Limit

There is no size limit for the recreational Sea Cucumber fishery.

Appendix 4: 2020/2021 Sea Cucumber Aquaculture Management Measures

1. MANAGEMENT APPROACH

Current Status of Sea Cucumber Aquaculture Management

There is significant interest in Sea Cucumber aquaculture in British Columbia (BC). Given the range of issues and potential uncertainty regarding Sea Cucumber aquaculture, DFO is not currently accepting new applications for Sea Cucumber in the marine environment. The Department is developing a new management approach that will provide additional opportunities for the culture of Sea Cucumber in the marine environment while managing potential concerns related to environmental impacts and interaction between cultivated and wild stocks. Development of this approach will incorporate a review of current science regarding Sea Cucumber aquaculture.

There are a small number of existing shellfish aquaculture licenses issued for Sea Cucumber in the marine environment, as well as several land-based hatchery licences.

The collection of broodstock for hatchery aquaculture purposes is facilitated through an Access to Wild Aquatic Resources licence and a licence from the Introductions and Transfers Committee to permit transfer of broodstock to a hatchery. The Access to Wild Aquatic Resources policy can be found at: http://www.dfo-mpo.gc.ca/aquaculture/ref/AWAR_e.pdf.

Further information regarding shellfish aquaculture can be obtained from the following website: http://www.dfo-mpo.gc.ca/aquaculture/index-eng.htm

Harvesting on Aquaculture Tenures

Licensed aquaculture facilities are considered private property. Under the Fisheries Act, fishing within an aquaculture facility already under federal licence (PAR aquaculture licence) is prohibited unless otherwise permitted by the occupant under the licence. The Department recommends that commercial and recreational harvesters familiarize themselves with the location of aquaculture tenures in fishing areas and that permission be sought from the aquaculturist for access.

Regulatory Regime

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

DFO assesses, makes decisions and issues aquaculture licences.

DFO requires comprehensive environmental monitoring to be undertaken by the marine finfish industry, and the department also conducts additional monitoring, audits, and investigations

(where warranted). Public reporting is undertaken to ensure the transparency and accountability of the management of aquaculture in BC. Associated reporting can be found on the DFO web pages: http://www.pac.dfo-mpo.gc.ca/aquaculture/reporting-rapports/index-eng.html.

Within the BC Aquaculture Regulatory Program there is a Compliance and Enforcement Unit, dedicated to aquaculture compliance, as well as an Aquaculture Environmental Operations Unit, which monitors the activities of industry on an on-going basis. The Program provides oversight and works to ensure the orderly management of the industry, including planning and licencing, linkages with national and regional policy, as well as consultation and communications. Contact information for staff with responsibilities related to aquaculture management within DFO can be found in the Departmental Contacts section of this plan.

Integrated Management of Aquaculture Plans

Integrated Management of Aquaculture Plans (IMAPs) provide an overview of each aquaculture sector and associated management and regulation. IMAPs are available on the DFO Consultations web pages: http://www.pac.dfo-mpo.gc.ca/consultation/aquaculture/index-eng.html. IMAPs complement IFMPs and the two are reviewed periodically to ensure consistency of management approaches.

Aquaculture Management Advisory Committees

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

Meetings are open to the public.

More information on IMAPs and AMACs is available through IMAPS@dfo-mpo.gc.ca.

Appendix 5: Sea Cucumber Post Season Review for 2019

1. Stock Assessment and Research

There were transect surveys completed in portions of Management Areas 23 and 25 in 2019. For past survey results and more information, please see Appendices 6 and 7.

DFO Science concluded the long term Experimental Fishing Areas (EFA) project in 2017 due to several changes that compromised the integrity of the experimental design. Work is underway on a CSAS research document that will update the Limit Reference Point (LRP), recommend and Upper Stock Reference (USR) and update recommended annual harvest rates using data from all the years of the EFA (1998 to 2015). This research document is scheduled be delivered in 2021.

For more information please contact Science branch personnel (see contacts in Appendix 15).

DFO Science is also working on the development of a coast wide multispecies monitoring program. The objective of the program is to collect the data necessary to assess stock status against reference points. Recommendations on survey design will be presented in a CSAS research document in 2022.

2. First Nations Fishery

Catch information is collected by some First Nations, by fisheries program personnel or by Band administration offices. DFO is working on initiatives to receive, store and manage shellfish FSC harvest information. Some catch data have been collected under Aboriginal Fisheries Strategy (AFS) agreements. Sea Cucumbers constitute roughly 0.2% of the reported catch by weight of any shellfish species (1991-2008).

3. Recreational Fishery

No advice or comments were received from the recreational sector in 2019/20. The amount of Sea Cucumbers harvested by the recreational sector is unknown but is believed to be minimal.

4. Commercial Fishery

<u>Sea Cucumber Sectoral Committee Meeting</u>

The annual Sea Cucumber Sectoral Committee meeting was held on June 12, 2019 in Nanaimo. Representatives from DFO (Resource Management and Science), the Pacific Sea Cucumber Harvesters Association (PSCHA) and D&D Pacific Fisheries attended. Key issues discussed included: a review of the 2018 season, the Integrated Fisheries Management Plan timeline for 2019/20 and proposed fishing areas for the 2019 season.

<u>Sea Cucumber Research Subcommittee Meeting</u>

A Sea Cucumber Research Subcommittee Meeting was held on March 15, 2019.

Representatives from DFO (Resource Management and Science), the Pacific Sea Cucumber Harvesters Association (PSCHA), D&D Pacific Fisheries, Kitasoo Fisheries Program, T'aaq-wiihak, Tla-o-qui-aht CFE, Ditidaht First Nation and Ahousaht Fishing Corporation participated. Key issues discussed included: Phase 2 fishery progress, DFO Science update, possible areas to reopen and biomass surveys for 2019.

Meeting records from previous Sectoral Committee and Research Subcommittee meetings are available from a resource manager (see contacts, Appendix 15).

Overview of the 2019 season

The 2019 season was the third year of the third application of the 3-year Adaptive Rotational Fishing Strategy (ARFS) that began in 2011.

The fishery opened in the North Coast licence area on October 1, 2019 and in all remaining licence areas on October 8, 2019. Approximately 100% of the TAC was achieved by December 7, 2019. All 85 licences were active and were fished by 35 vessels.

North Coast Licence Area

The north coast licence area opened on October 1, 2019 and fishing started in Management Area 6. The fleet worked north to portions of Management Area 5. A total of 17 vessels fished and the licence area was open for a total of 19 fishing days. 31 licence eligibilities were assigned to the north coast licence area in 2019. 100.6% of TAC was achieved for the North Coast licence area. The licence area was closed on October 20, 2019.

Quota Management Area	**Open**	**Close**	**Days Fished**	**Number of Vessels**	**Landings (lb.)***
5E Anger Island	Oct 9	Oct 13	4	15	100,376
5F Principe North	Oct 13	Oct 20	6	9	80,413
5G Principe South	Oct 7	Oct 9	2	16	87,752
6A Gil Island	Oct 1	Oct 5	4	16	132,793
6C Trutch Island	Oct 5	Oct 8	3	16	97,449

* Landings should be considered preliminary, all weights are split pounds.

Central Coast Licence Area

The central coast licence area opened on October 8, 2019 in Management Area 7. Fishing occurred in portions of Management Areas 7, 9 and 10 in 2019. A total of 17 vessels fished and the licence area was open for a total of 36 fishing days. 7J Spiller Channel was closed in-season due to complaints from harvesters and fallback quota was made available in QMA 10A Smith Inlet to make up for the quota left in 7J. 28 licence eligibilities were assigned to the Central Coast licence area in 2019. 100.8% of the TAC was achieved for the Central Coast licence area. The majority of the TAC was achieved by the first week of November however due to a vessel issue harvest ceased until early December when a vessel was found to complete the quota. The Central Coast licence area closed on December 7, 2019.

Quota Management Area	**Open**	**Close**	**Days Fished**	**Number of Vessels**	**Landings (lb.)***
7B Milbanke Sound/ Seaforth Channel	Oct 17	Oct 22	6	11	112,845

7G Sheep Pass	Oct 8	Oct 13	3	4	27,046
7H Upper Mathieson	Oct 13	Oct 15	3	8	49,472
7I Lower Mathieson	Oct 15	Oct 17	3	9	58,958
7J Spiller	Oct 23	Oct 25	2	9	42,728
9B South Rivers Inlet	Oct 26	Oct 28	10	9	130,533
10A Smith Inlet	Oct 26	Dec 7	9	2	30,444

* Landings should be considered preliminary, all weights are split pounds.

East Coast of Vancouver Island Licence Area

The East Coast of Vancouver Island (ECVI) licence area opened on October 1, 2019 and fishing occurred in portions of Management Areas 11, 12, 13, 16 in 2019. A total of 14 vessels fished and the licence area was open for a total of 41 fishing days. 23 licence eligibilities were assigned to the East Coast of Vancouver licence area in 2019. The TAC was 100.3% completed in the ECVI licence area in 2019 and it closed on November 9, 2019 .

Quota Management Area	**Open**	**Close**	**Days Fished**	**Number of Vessels**	**Landings (lb.)***
11A Belize Inlet	Oct 1	Oct 5	4	2	20,188
11B Seymour Inlet	Oct 4	Oct 8	3	5	19,803
11D Slingsby Channel	Oct 6	Oct 9	2	4	10,051
12G SW QC Strait	Oct 8	Oct 11	3	10	30,578
12H Turnour Island	Oct 15	Oct 18	7	8	88,400
12I Gilford Island North	Oct 10	Oct 15	7	12	114,944
16A Sechelt Inlet	Oct 25	Oct 26	2	6	18,657
16B Jervis Inlet	Oct 20	Oct 24	4	6	20,724
16C Texada Island	Oct 26	Oct 28	3	6	25,122
16D Lasqueti Island	Oct 29	Nov 9	6	4	20,697

* Landings should be considered preliminary, all weights are split pounds.

West Coast of Vancouver Island Licence Area

The West Coast of Vancouver Island licence area opened on October 8, 2019 but fishing did not start until October 28, 2019. The TAC was achieved by two vessels in 19 fishing days. The TAC was 96.3% completed in the WCVI licence area in 2019 and it closed on December 7, 2019.

Quota Management Area	Open	Close	Days Fished	Number of Vessels	Landings (lb.)*
24A North Clayoquot	Oct 8	Nov 3	10	2	20,190
24B South Clayoquot	Oct 8	Dec 7	8	2	11,810
23A Southeast Barkley	Oct 8	Nov 3	5	1	14,231

* Landings should be considered preliminary, all weights are split pounds.

Issues encountered during the 2019 season

In the North Coast Licence Area:

No issues reported.

In the Central Coast Licence Area:

Harvesters reported having issues completing the quota in QMA 7J. Fallback quota was opened in QMA 10A to make up for the quota left in 7J. A vessel issue resulted in last minute completion of the central coast TAC.

In the East Coast Vancouver Island Licence Area:

Some harvesters reported having issues harvesting around weather patterns (ie. heavy rainfall) that can hinder water visibility.

In the West Coast Vancouver Island Licence Area:

There were communication issues with one of the vessels that resulted in the last minute completion of the WCVI TAC.

5. 2019 Harvest Questionnaire Results

DFO Fisheries Management included a harvest questionnaire with the 2019 harvest logbook with the hopes that harvesters would take time to record any observations they may have had on each QMA they harvested. Of the 100 questionnaires distributed, 17 were returned.

Respondents were pleased with the way the north coast fishery went. Several respondents commented on QMA 7J in the central coast and how it needs a rest from harvest and how its quota and boundaries need to be reviewed. Comments were received that fishing was slow in QMA 7I in the central coast. Several QMA boundary changes were suggested. On-grounds observations from each QMA are extremely helpful and will be considered in management decisions.

6. Compliance

In general compliance with the catch validation program and other management programs was considered good. The majority of non-compliance issues are dealt with during the course of the fishery by the service provider, fishery officers or fishery managers.

Table 1. History of Management Actions for the Commercial Sea Cucumber Fishery

Year	Management Actions
1971	Commercial exploitation of Sea Cucumbers began in British Columbia (the first landings were recorded)
1980	Fishery began as an experimental fishery
1985	Fishery licensed under category "Z-D"
1986	First quotas in round pounds and pieces.
1987	Area quotas and time and area openings set for management of the commercial Sea Cucumber fishery
1989	A consultative process, which included the Sea Cucumber Sectoral Committee, was initiated and is a major part of the planning for the commercial fishery
1989	Designated vessels must have a vessel survey on record with the Pacific Fishery Licence Unit
1991	Licence limitation to a total of 85
1993	Rotational fishery began to reduce the impacts of harvest by allowing a two year recovery period between openings
	Reduced quotas in south coast areas to address conservation concerns
	The Department and the Kitasoo Fisheries Program developed a survey methodology for Sea Cucumbers, based on the protocol used in Alaska, and conducted multiple transect surveys to determine optimal sampling frequency
1995	First year of DFO-sanctioned IQ program (2 year pilot program of IVQ's). Individual quota (IQ) set to 6049 lb.
	Dockside monitors began to conduct product-weight surveys to estimate the average weight of Sea Cucumbers, by geographical area
	Quota overage not permitted
1996	150 lb. Quota overage permitted
1997	Introduction of adaptive management plan - 25% coast open, 25% coast for research, 50% coast closed for long term.
	Baseline precautionary TAC established
	200 lb. Quota overage permitted (through until 2009)
1998	Survey in Area 7; IQ increase to 7150 lb.
1999	Survey in Area 6; IQ increase to 9,000 lb.
2000	On-grounds communication through voluntary industry representatives facilitates the transmission of information (continued through 2011)
	Survey in Area 12; IQ increase to 9,600 lb.
2001	Survey in Area 6 and 24; IQ increase to 10,000 lb.
2002	Survey in Area 8; IQ increase to 11,000 lb.
	Doubling of the basline density estimate used to calculated the TAC in un-surveyed open fishery areas, from 2.5 to 5.08 Sea Cucumbers per metre of shoreline
	Re-survey in Area 7
2003	Licence stacking allowed to a maximum of 5 active licences per vessel
	Survey in Area 6 and new PSARC paper on BC data - large increase in available TAC; PSCHA chose to take only a small increase, so as to not flood markets; IQ increase to 13,500 lb.
2004	Survey in Area 12; IQ kept the same as markets not wanting more product at this time.
2005	Survey in Area 6 and 24; TAC decreased from 2004, but still room to increase IQ as full allocation was not taken in previous years. IQ increase to 15,225 lb.
	Experimental fisheries were designated and implemented on the Central Coast

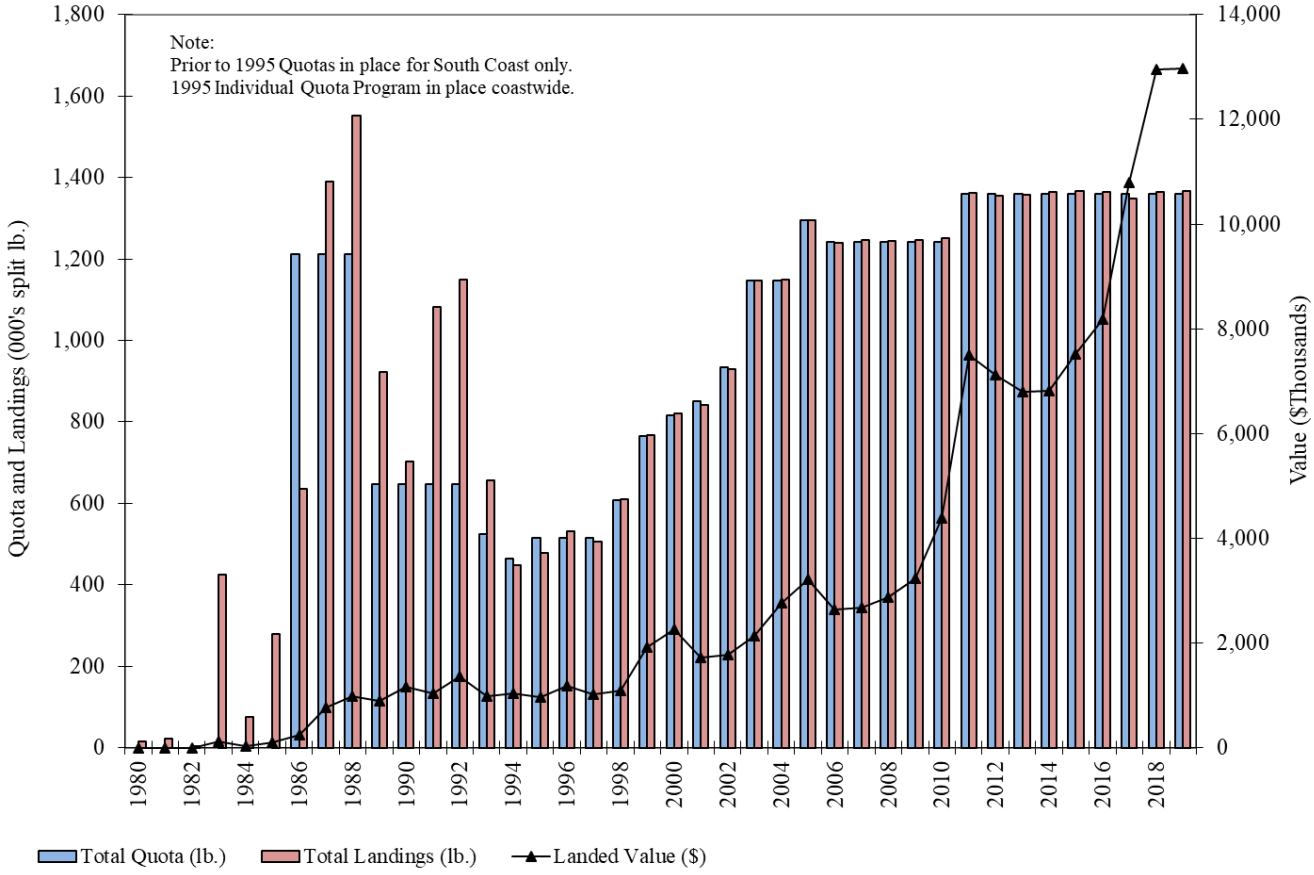
2006	Experimental fisheries were designated and implemented on the west coast of Vancouver Island
	Survey in Areas 7 and 8. Decrease in densities from 2002 survey, IQ decrease to 14,615 lb.
2007	Survey in Area 6. No change in IQ.
	Re-survey in Areas 7 and 8
2008	Five new Quota Management Areas (QMAs) created (these include PFMAs 9, 10 and new portions of PFMA's 7, 12 and 13). Within these new QMA zones, designation of "no take zones" where no commercial cucumber harvesting will be permitted and Area Quota reductions occurred in QMA's 8A and 13B in exchange for the opening of new QMA's. Large QMAs in the north and central coast were split into smaller QMAs in order to prepare for a rotational style fishery and to spread out harvester effort.
	All survey data reviewed and baseline densities were calculated by Region. This resulted in baseline densities of 6.0, 4.1 and 1.9 Sea Cucumbers per metre of shoreline for the North Coast, East Coast Vancouver Island and West Coast Vancouver Island respectively.
2009	Four new QMA's created including PFMAs 3, 4 and new portions of PFMA 12. Several existing QMAs were rotated out of and fishing effort moved to the new QMAs.
2010	Three new QMA's created in PFMA 3. Several existing QMAs were rotated out of and fishing effort moved to the new QMAs.
2011	Adaptive Rotational Fishery Strategy put into place: Each QMA will be harvested once every three years. A precautionary harvest rate of10% will be applied to all QMAs once every three years (equivalent to a 3.3% annual harvest rate). The WCVI QMAs will retain the 4.2% harvest rate. Five new QMAs created in PFMAs 3, 6, 16 and 18. Subareas were added to QMA 12C. No-Take Zones created in PFMAs 6, 16 and 18. Commercial TAC was increased from 1.24 million pounds to 1.36 million pounds (an increase of approximately 9.5%).
2012	Year 2 of the 2011-2013 Adaptive Rotational Fishing Strategy. In year 2 the WCVI QMAs were not harvested. Eight new QMAs created in PFMAs 2, 11, 15 and 16. No-Take Zones created in PFMAs 11, 15 and 16. The commercial TAC remained at 1.36 million pounds. The licence stacking limit was waived as a pilot program for the 2012 season.
2013	Year 3 of the 2011-2013 Adaptive Rotational Fishing Strategy. The WCVI licence area was returned to an annual style fishery as requested by the PSCHA. No new QMAs reopened in 2013 due in most part to DFO Science's transition from Larocque Relief Funding to Industry Funding for Sea Cucumber surveys. As a result of this transition, Sea Cucumber surveys were not completed in time to be included in the 2013 IFMP. The licence stacking limit was waived as a pilot program for the 2013 season. The transferable overage amount was raised from 200 lb. per licence to 500 lb. per licence.
2014	Year 1 of the 2014-2016 Adaptive Rotational Fishing Strategy. A new QMA was created in portion of Management Area 6 and several large QMAs were split into smaller QMAs. The commercial TAC remained at 1.36 million pounds. 3 new Commercial No-Take Reserves (previously known as No-Take Zones) and 3 new closures for First Nations Food, Social and Ceremonial (FSC) purposes were created. Harvest questionnaires were added as an insert to the harvest logbook in order to get on-grounds observations from harvesters. Licence stacking limit was waived once again.
2015	Year 2 of the 2014-2016 Adaptive Rotational Fishing Strategy. New QMAs were created in portions of Management Area 6 and 11 and one large QMA in Management Area 6 was split into two smaller QMAs. 1 new CNTR and fisheries management closure was created in Management Area 6 as the result of discussions with the Haisla First Nation. The requirement to fill out a separate harvest logbook page for every Subarea fished was waived. The licence stacking limit was waived indeterminately. The commercial TAC remained at 1.36 million pounds. Harvest questionnaires were added as an insert to the harvest logbook once again.
2016	Year 3 of the 2014 to 2016 Adaptive Rotational Fishing Strategy. New QMA created in Management Area 23. 2 large QMAs in Management Area 7 were split into smaller QMAs. A diesel spill occurred in the Central Coast licence area in October 2016 and led to a closure of the commercial fishery in the Seaforth Channel and lower Mathieson Channel areas for the remainder of the 2016 season. The fishery was reopened in January 2017 in the ECVI licence area to allow those with quota remaining in the Central Coast to finish their Individual Quota.
2017	Year 1 of the 2017 to 2019 Adaptive Rotational Fishing Strategy. New QMA created in Management Area 12. Large QMA in Management Area 12 was split into 3 smaller QMAs. The commercial TAC remained at 1.36 million pounds. Harvest questionnaires were added as an insert to the harvest logbook once again.
2018	Year 2 of the 2017 to 2019 Adaptive Rotational Fishing Strategy. Large QMAs in Management Areas 5, 7 and 9 were split into smaller QMAs.
2019	Year 3 of the 2017 to 2019 Adaptive Rotational Fishing Strategy. Changes made to the boundary between QMA 11D and 11E.

Table 1 **Annual sea cucumber landings (split lb.), value and effort for British Columbia, 1983 to 2019 as reported on Validation and Harvest Logs. Since 2002, harvest logs have provided the best estimate of catch and fish slips are no longer used.**

Year		Licences Issued	# Vessels	Quota Split (lb)	Quota Split (t)	Landings Split (lb)[1]	Landings Split (t)[1]	$/lb	$/kg	Calculated Value ($)	Dive Time (hours)	Effort (lb/hr)
1983			16			969,850	439.9	0.27	0.59	260,068	855.4	1,133.8
1984			12			175,980	79.8	0.29	0.63	50,210	210.1	837.6
1985		Z 40	17			490,203	222.4	0.34	0.75	165,786	498.3	983.8
1986		Z 63	39	1,211,319	549.5	1,229,894	557.9	0.37	0.82	457,265	1,516.7	810.9
1987		Z 151	63	1,211,319	549.5	2,553,457	1,158.2	0.55	1.22	1,410,274	3,365.5	758.7
1988		Z 160	97	1,211,319	549.5	3,307,134	1,500.1	0.63	1.40	2,097,264	4,387.9	753.7
1989		Z 245	115	646,037	293.0	1,873,628	849.9	0.97	2.15	1,823,526	2,787.4	672.2
1990		Z 215	132	646,037	293.0	1,556,729	706.1	1.66	3.67	2,588,095	3,157.3	493.1
1991		Z 78	108	646,037	293.0	1,158,535	525.5	0.95	2.10	1,101,823	2,538.2	456.4
1992		Z 84	102	646,037	293.0	1,079,033	489.4	1.19	2.62	1,280,543	2,091.3	516.0
1993		Z 84	102	524,695	238.0	705,322	319.9	1.50	3.30	1,056,251	1,726.3	408.6
1994	[5, 6]	Z 85	77	464,068	210.5	480,816	218.1	2.31	5.08	1,108,516	1,189.0	404.4
1995	[7]	Z 85	47	514,165	233.2	479,040	217.3	2.01	4.43	961,733	1,315.4	364.2
1996		Z 85	45	514,165	233.2	530,748	240.7	2.22	4.88	1,175,858	1,204.9	440.5
1997		Z 85	41	514,165	233.2	506,736	229.9	2.01	4.43	1,017,786	1,300.3	389.7
1998		Z 85	41	607,750	275.7	608,963	276.2	1.79	3.95	1,090,880	1,518.7	401.0
1999		Z 85	39	765,000	347.0	766,857	347.8	2.51	5.52	1,921,135	1,959.4	391.4
2000		Z 85	34	816,000	370.1	819,833	371.9	2.75	6.07	2,255,868	2,119.5	386.8
2001		Z 85	32	850,000	385.6	841,491	381.7	2.04	4.50	1,717,805	2,100.4	400.6
2002		Z 85	33	935,000	424.1	928,818	421.3	1.91	4.21	1,775,601	2,289.9	405.6
2003		Z 85	32	1,147,500	520.5	1,148,040	520.7	1.85	4.09	2,127,643	2,730.0	420.5
2004		Z 85	31	1,149,217	521.3	1,149,217	521.3	2.41	5.31	2,769,613	2,569.9	447.2
2005		Z 85	33	1,295,833	587.8	1,295,833	587.8	2.48	5.48	3,218,661	3,135.5	413.3
2006		Z 85	33	1,242,307	563.5	1,240,643	562.8	2.13	4.69	2,639,895	3,167.4	391.7
2007		Z 85	31	1,242,307	563.5	1,245,456	564.9	1.97	4.35	2,457,969	3,411.4	365.1
2008		Z 85	28	1,242,275	563.5	1,244,650	564.6	2.30	5.07	2,863,658	3,374.7	368.8
2009		Z85	28	1,242,275	563.5	1,245,556	565.0	2.59	5.72	3,230,660	3,173.5	392.5
2010	[9]	Z85	30	1,242,275	563.5	1,250,885	567.4	3.50	7.72	4,378,098	3,141.3	398.2
2011	[9]	Z85	33	1,360,000	616.9	1,362,865	618.2	5.50	12.13	7,495,758	3,946.3	345.4
2012	[9]	Z85	30	1,360,000	616.9	1,356,166	615.2	5.25	11.57	7,119,872	4,293.1	315.9
2013	[9]	Z85	32	1,360,000	616.9	1,357,541	615.8	5.00	11.02	6,787,705	3,621.9	374.8
2014	[9]	Z85	30	1,360,000	616.9	1,363,468	618.5	5.00	11.02	6,817,340	4,064.4	335.5
2015	[9]	Z85	32	1,360,000	616.9	1,366,641	619.9	5.50	12.13	7,516,526	3,883.0	352.0
2016	[9, 10]	Z85	31	1,360,000	616.9	1,365,028	619.2	6.00	13.23	8,190,168	4,001.5	341.1
2017	[9, 10]	Z84	31	1,360,000	616.9	1,348,526	611.7	8.00	17.64	10,788,208	4,294.9	314.0
2018	[9]	Z85	35	1,360,000	616.9	1,363,918	618.7	9.50	20.94	12,957,221	4,127.3	330.5
2019*	[9]	Z85	35	1,360,000	616.9	1,365,913	619.6	9.50	20.94	12,976,174	4,079.6	334.8

1 Quota, landings and CPUE for 1986 to 1991 were reported in round weight. Quota, landings and CPUE are all converted to split weight. Conversion factor of 2.73 (round to split weight) used.
2 Number of pieces calculated from standardized wet weight per sea cucumber, 1.4 lb (0.635 kg).
5 Quota was reduced by 27.5 t split weight due to overages in the 1992 Inside Waters fishery.
6 A reported 20,255 lb were spoiled and dumped - it is not known if they are included in this landing record.
7 Total # active vessels does not equal # vessels per area as several vessels harvested quotas in 2 fishing areas and have been counted twice.
8 Figures preliminary - extrapolated from validation logs.
9 Price information estimated by the President of the Pacific Sea Cucumber Harvesters Association. Fish slip data no longer available.
10 Part of 2016 TAC achieved in January and February of 2017 due to environmental incident. 53,195 lbs moved from 2017 landings to 2016 landings to reflect this.
*** Data Preliminary**

Figure 1. Annual Sea Cucumber applied quota, landings (split lb.) and value for British Columbia, 1980 to date.
Note: 1983 to 1994 Landings from fish slips.
1995 to date landings from harvest logs.
Annual value calculated using harvest log landings and fish slip price per pound. Value from 2010 onwards is calculated using harvest logs and average price information from the PSCHA.



APPENDIX 6: MANAGEMENT MEASURES FOR THE COMMERCIAL SEA CUCUMBER FISHERY – 2020/2021

The purpose of this section is to bring all the management measures currently in use for the commercial Sea Cucumber fishery into one document. More information on many of the topics below can be found throughout the IFMP and Commercial Harvest Plan (Appendix 1).

1. SCIENTIFIC BASIS OF THE CURRENT MANAGEMENT REGIME

The current management regime is based on recommendations from the following peer-reviewed scientific papers:

An Evaluation of Fishery and Research Data Collected during the Phase 1 Sea Cucumber Fishery in British Columbia (Hand et al. 2009).
http://www.dfo-mpo.gc.ca/csas-sccs/publications/resdocs-docrech/2008/2008_065-eng.htm

Assessment Framework for Sea Cucumber (*Parastichopus californicus*) in British Columbia (Duprey et al. 2011)
http://www.dfo-mpo.gc.ca/csas-sccs/Publications/ResDocs-DocRech/2010/2010_105-eng.html

There are a number of other important scientific papers that have contributed to our knowledge of Sea Cucumbers and to the current management regime. Please see section 11 in the IFMP for a full list of references.

2. MANAGEMENT MEASURES TO CONTROL HARVEST EFFORT

2.1. Limited Entry Licensing

Licence limitation was implemented in 1991 in order to control fishing effort. There are currently 85 licence eligibilities for the commercial fishery.

2.2. Area Licensing

Area licensing is a measure put in place to spread harvest effort over a wide geographic area. Every year each of the 85 licence eligibilities is assigned to one of four geographic areas: West Coast of Vancouver Island (Areas 23 and 24), East Coast Vancouver Island (Areas 11, 12, 13, 14, 15, 16 and 18), Central Coast (Areas 7, 8, 9 and 10), and North Coast (Areas 2, 3, 4, 5 and 6). The number of licences that can be accommodated in each licence area is dependent on the quota available for an area in any given year. The PSCHA advises Fisheries and Oceans Canada regarding annual licence area selections by providing a list of licence holders and their desired licence area. If the licence requests for a given area cannot be accommodated by the quota available in the area, discussions with the PSCHA occur to move licences to areas where there is sufficient quota. If the PSCHA is unable to provide advice regarding the licence area selections, the Department will determine area designation through a process of voluntary placement and lottery for over-subscribed areas.

2.3. Quota Management Areas

The commercial fishery is managed in units called Quota Management Areas (QMA). QMAs are comprised of entire Pacific Fishery Management Subareas, or in combination with portions of Subareas. QMAs are much smaller than licence areas and are used to further spread fishing effort within each licence area. Each QMA has a name, e.g. 4A West Dundas Island, and is assigned a quota. For a complete list of QMAs please see Appendix 9.

3. MANAGEMENT MEASURES TO CONTROL HARVEST

3.1. Total Allowable Catch

The amount of Sea Cucumbers harvested commercially in BC is limited by a Total Allowable Catch (TAC). The commercial TAC has been fixed at 1.36 million pounds since 2011. Two percent of the coast-wide TAC is reserved, for planning purposes, for First Nations use for food, social and ceremonial purposes. This two percent is removed from the coast-wide TAC (or CTAC) prior to calculating the commercial TAC. See section 4 for information on how the commercial TAC is calculated.

3.2. Individual Quota Program

Each of the 85 licence eligibilities is assigned 1/85 of the commercial TAC as an Individual Quota (IQ). The use of IQs in the commercial Sea Cucumber fishery has resulted in a more orderly fishery, a safer fishery, has given the industry more flexibility in opening times and locations, and allows the Department to better meet conservation goals.

3.3. Area Quotas

In conjunction with area licensing, the coast-wide commercial TAC is divided into licence area quotas. The licence area quota is directly related to the number of licences allocated to each licence area. The commercial TAC is further divided into QMA quotas which are based on biomass estimates provided by DFO Science.

4. CALCULATION OF TOTAL ALLOWABLE CATCH

Transect surveys are conducted, following the Sea Cucumber density survey protocol, to estimate the density and biomass of Sea Cucumber populations. The survey results are used to calculate annual commercial Total Allowable Catch (TAC). Quota is calculated for each PFM Subarea as follows:

TAC = ER * PDE * SL * ASW

Where:

ER = Exploitation Rate (Harvest Rate)

The Exploitation Rates (ER) applied in the commercial Sea Cucumber fishery are considered precautionary as they are in the lower one percentile range of model results and recommendations documented in Hand et al. 2009. Hand et al. 2009 recommends an ER within the range of 3.5 and 10.3% for an annual style fishery. As per the Adaptive Rotational Fishing Strategy, a rate of

approximately 10% is applied to most QMAs once every three years. This triennial rate is roughly equivalent to an annual exploitation rate of 3.3%. An annual rate of 4.2% is applied to QMAs in the WCVI and ECVI licence areas that are fished annually.

PDE = Precautionary Density Estimate

The Precautionary Density Estimate (PDE) is a linear density estimate of the number of Sea Cucumbers per metre of shoreline (c/m-sh). In many areas of the coast surveys have been completed in order to establish Subarea-specific density estimates. Many of the Subareas open throughout the Phase 1 fishery have not yet been surveyed and as such, continue to use a baseline PDE.

The Precautionary Density Estimate (PDE) used in quota calculations depends on whether or not survey information is available for a given Subarea. The PDE by Subarea is selected based on the following conventions:

a) <u>For Subareas that have been surveyed:</u>
   - Use the lower 90 percent confidence limit of estimated density for shoreline classified as 'protected'.
   - Use 2.5 c/m-sh or survey estimate if lower for shoreline classified as 'exposed'.
   - Use 0 c/m-sh for shoreline classified as 'very exposed'.

b) <u>For Subareas that have not been surveyed:</u>
   - Use a precautionary baseline density estimate for shoreline classified as 'protected': 6.0 c/m-sh for North Coast and Central Coast licence areas, 4.1 c/m-sh for the East Coast of Vancouver Island licence area and 1.9 c/m-sh for the West Coast of Vancouver Island.
   - Use 2.5 c/m-sh or baseline density estimate if lower for shoreline classified as 'exposed'.
   - Use 0 c/m-sh for shoreline classified as 'very exposed'.

Baseline density estimates for non-surveyed Subareas have been calculated from all available survey data collected to date. The lowest 90% CB calculated for any surveyed Subarea within a Region was used as the baseline density estimate for non-surveyed Subareas in that Region.

Sea cucumber populations deeper than 15 metres are not included in density estimates. These deeper Sea Cucumber stocks likely act as an additional spawning reserve.

Only Sea Cucumbers larger than 15cm (the length of a pencil) are included in density estimates. Sea cucumbers less than 15 cm in length are considered to be juveniles. Sea Cucumber harvesters generally target larger animals as they are preferred by Sea Cucumber processors. Appendix 7 shows the most recent PDEs used to calculate the commercial TAC.

SL = Shoreline Length

In 1996 the shoreline length used to calculate Sea Cucumber quota was estimated using a raster-based GIS system. Although vector-based GIS and more accurate basemaps have become available over time, the original raster-based measurements are still used in quota calculation since they are more precautionary. Vector-based GIS measurements of shoreline are approximately 10% longer than raster-based measurements (Duprey et al. 2011).

Shoreline length estimates for non-navigable areas, unsuitable habitat and areas that were open during the Phase 1 fishery but not fished are excluded from quota calculations.

Shoreline used to calculate quota is classified according to exposure (Duprey et al. 2011) and different precautionary density estimates are applied to each exposure classification. Three types of exposure are used to classify shoreline: Protected, Exposed and Very Exposed.

ASW = Average Split Weight

Average Split Weight (ASW) is used in the calculation of the commercial TAC. ASW by Subarea is determined using biosample data obtained during density surveys, or from 'bio-transect' data which are permanent transects, independent of surveys, where Sea Cucumbers are collected. For Subareas that lack survey data, the most conservative estimate of mean weight is used when calculating biomass. Appendix 7 shows the most recent ASW estimates used to calculate the commercial TAC.

5. OTHER MANAGEMENT MEASURES

5.1. Catch Monitoring and Reporting Requirements

The Dockside Monitoring Program (DMP) is a catch verification (validation) program designed to monitor, record and verify all Sea Cucumbers harvested in the commercial fishery. A DMP is required to ensure proper management and control of the IQ program. Third party validation of all catch is required at the first point of landing.

Commercial harvesters are responsible for keeping an accurate record of their daily harvest operations in a harvest logbook and a record of each location fished by each diver on a harvest chart. Additional harvest information is collected from fish slips. Harvest data are submitted to DFO for use in the proper assessment, management and control of the Sea Cucumber fishery. For more details see Section 3 in Appendix 1.

5.2. Adaptive Rotational Fishing Strategy

An adaptive management regime called the Adaptive Rotational Fishing Strategy (ARFS) is in place for the commercial Sea Cucumber fishery. Adaptive management allows flexibility when new information becomes available. In the case of the ARFS it is especially important to be flexible since the reopening process is not yet complete. New information is continually becoming available, often from new surveys or from research projects. Advice received from commercial harvesters is also an important piece of information that is considered in the management of the fishery.

A rotational-style fishery has been adopted for a number of reasons. There are possible conservation advantages such as a higher average Sea Cucumber size and higher densities of spawning adults which may lead to a higher number of Sea Cucumbers within harvest areas. The logistical advantages include concentrating harvest into smaller areas that reduces travel costs and the cost of staffing multiple offloading ports. For more information on the ARFS please see Appendix 14.

5.3. Survey Requirement for all Re-opened Areas

As of 2009, each Subarea considered for reopening as part of the Phase 2 fishery/Reopening Process, must be surveyed first. This is to ensure that there are commercially harvestable densities of Sea Cucumbers present and that quotas are precautionary and based on biological information.

5.4. Minimum Density Threshold

All Subareas considered to reopen for commercial harvest as part of the Phase 2 fishery (Re-opening Process) must have a precautionary density estimate (based on survey information) of at least 2.5 cucumbers per metre of shoreline. The minimum density threshold is for areas that have been surveyed and that were closed for the Phase 1 fishery only. Sea Cucumber populations in areas closed during the Phase 1 fishery are considered to be at a 'virgin' state as they have not been harvested in ten or more years.

Since 2008 a number of Subareas that have been open since the start of the Phase 1 fishery have been surveyed for the first time. A few of these Subareas have had density estimates below 2.5 cucumbers per metre of shoreline. In these cases the minimum density threshold does not apply since these Subareas have been open throughout the Phase 1 fishery. Since their 'virgin' biomass is unknown, it is not possible to ascertain whether the low density is due to harvest, or due to some other factor. A low density is not necessarily an indication of overharvest, as it is likely that some areas are naturally more productive than others. Phase 1 fishery Subareas with low densities are examined on a case-by case basis. Often harvest information is queried to look at harvest levels in the area over time and in all cases observations and advice from the PSCHA is requested.

5.5. Limit Reference Point

A main aspect of the Precautionary Approach is the use of reference points and stock status zones. A Limit Reference Point (LRP) of 50% of B_0 ('virgin' biomass) has been recommended for the Sea Cucumber fishery (Hand et al. 2009), but its use has been restricted to small portions of the coast that have been surveyed multiple times. In order for reference points to be useful, the resource needs to be assessed multiple times to get an idea of whether stock status changes over time. The time, money and effort required to survey all Sea Cucumber QMAs multiple times would be prohibitive, so reference points are of limited use within the current assessment framework.

DFO Science is developing a multispecies coast wide monitoring program intended to collect the data necessary to assess stock status against reference points. A CSAS research document with peer reviewed recommendations on this approach is expected to be delivered by 2022. DFO Science is also working on a scientific paper that is expected to provide advice on a range of harvest rates, update the current LRP and recommend a USR for the commercial fishery, thereby aligning this fishery with the DFO Precautionary Approach Framework and the legislated requirements of Bill C-68. For more information see Section 2 of the IFMP.

5.6. Commercial No-Take Reserves

Commercial No-Take Reserves (CNTRs) are used in the management of the commercial Sea Cucumber fishery. They are used in addition to reference points and provide Sea Cucumber refuge areas for additional insurance against uncertainties in stock assessment information and management decisions. It is anticipated that they also provide spill-over of adults and larvae into

commercially harvested areas and provide areas for research opportunities (Duprey et al. 2011). CNTRs to date have been placed in the portions of the coast that have reopened to commercial harvest since 2008 (Phase 2), totalling approximately 3.2% (930 km) of the coastal shoreline in BC. The goal is to eventually place CNTRs in the portions of the coast that were open during the Phase 1 fishery. For more information on CNTRs see section 2.8 of the IFMP. CNTRs are listed in Section 5 of Appendix 1.

5.7. Enforcement

DFO's Conservation and Protection (C&P) program is informed of any enforcement issues that may arise in the commercial fishery. For more information on the compliance plan for the Sea Cucumber fishery please see Section 9 in the IFMP.

6. OTHER IMPORTANT INFORMATION

6.1. No Size Limit

The use of a size limit for the Sea Cucumber fishery is not feasible since Sea Cucumbers have a plastic body shape that makes it very difficult to obtain measurements of body dimensions. Sea Cucumbers also undergo annual fluctuations in body mass, skin thickness and muscle weight from their yearly cycle of resorbing and regenerating their internal organs.

6.2. Gear

Sea Cucumbers are collected by hand by SCUBA divers. Gear impacts on the benthic environment are believed to be negligible since Sea Cucumbers are picked by hand and there is no gear contact with the bottom. Handpicking also eliminates any by-catch concerns since Sea Cucumbers are individually selected by harvesters.

Appendix 7: Sea Cucumber Stock Assessment Information – 2020/2021

Open surveys are the standard survey method used in BC to assess the *Apostichopus californicus* population and are used to assess density and biomass. Permanent biotransect surveys are also conducted to provide estimates of mean weight used in biomass calculations. Please see the *Assessment Framework for Sea Cucumber (Parastichopus californicus) in British Columbia* (Duprey et al. 2011) for more information.

Table 1. Precautionary Density Estimates (PDE). The lower 90 percent confidence interval of mean density estimates from all surveys to date are shown in the table below.

Survey Year	PFM Subareas	Density Estimate (Lower 90%) (Sea Cucumbers per Metre of Shoreline)
1998	7-15, 7-17, 7-30	6.6, 13.4, 11.94 respectively
1999	6-3, 6-5, 6-6, 6-7, 6-27, 6-28	17.0 overall
2000	12-40, 12-41	6.43 and 5.08 respectively
2001	6-9	5.76
2001	24-4 to 24-10, 24-14	5.45 overall
2002	7-15, 7-17, 7-30	8.84, 11.66, 10.25 respectively
2002	8-3 & 8-4, 8-5, 8-6, 8-16	14.25, 12.29, 21.46, 10.54 respectively,
2003	6-3, 6-5, 6-6, 6-7, 6-27, 6-28	17.85 overall; separated in 2005: 11.68, 16.01, 16.55, 13.53, 16.01, 9.75 respectively
2004	12-40, 12-41	5.44 overall; adjusted in 2005: 4.04 and 7.54 respectively; recalculated to 4.1 and 7.8 in 2008
2005	6-9	5.76; recalculated to 6.0 in 2008
2005	24-4 to 24-10, 24-14	5.45 overall; adjusted in 2006: 8.46, 5.12, 2.27, 3.55, 1.90, 2.90 respectively (excluding 24-8 & 24-9);
2006	8-3 & 8-4, 8-5, 8-6, 8-16 7-15, 7-17, 7-30	9.67, 8.98, 27.4, 7.71 respectively 6.23, 12.41, 8.94 respectively

Survey Year	PFM Subareas	Density Estimate (Lower 90%) (Sea Cucumbers per Metre of Shoreline)
2007	6-3, 6-5, 6-6, 6-7, 6-27, 6-28	11.90, 13.80, 16.40, 15.2, 10.31, 10.23 respectively; 6-27 and 6-28 combined in 2008 11.7
2008	(9-3 to 9-6), (9-7 to 9-9), 9-11	2.7, 3.5, 10.1 respectively
2008	(10-3 to 10-5), 10-6, 10-7, (10-8 to 10-10), 10-12	2.0, 2.2, 2.6, 2.2, 2.6 respectively
2008	(13-7 to 13-9), 13-25, (13-24,-26,-27), (13-35, -36), (13-37 to 13-39), (13-40,-41), 13-42, 13-43	3.6, 3.7, 5.8, 2.8, 2.2, 5.7, 5.0, 2.0 respectively
2009	3-1	4.1
2009	4-1, 4-2, 4-4, 4-5, 4-6, 4-7, 4-8, 4-9, 4-12, 4-13, 4-14	4.7, 4.8, 5.3, 11.2, 11.6, 11.6, 11.6, 5.3, 4.0, 1.0, 11-6 respectively
2009	12-1, 12-2, 12-6,12-20, 12-22, 12-23, 12-24 , 12-26, 12-38, 12-39	3.0, 4.7, 6.3, 6.3, 5.7, 3.6, 3.0,, 5.1, 4.4, 4.4 respectively
2009	6-9	3.1
2010	3-3, 3-4, 3-6, 3-7, 3-8, 3-9, 3-10	8.1, 11.1, 7.8, 7.6, 7.6, 6.8, 3.2 respectively
2010	4-5, 4-9	11.6, 9.0 respectively
2010	7-7, 7-9, 7-10, 7-11, 7-24, 7-29	6.0, 9.7, 10.8, 5.7, 9.7, 11.6 respectively
2010	12-3, 12-4, 12-5, 12-18, 12-19, 12-21	3.6, 3.6, 1.1, 1.6, 1.0, 3.6 respectively
2010	17-3, 17-4, 17-5, 17-18, 17-19, 17-20, 17-21	2.3, 0, 0.1, 8.1, 0.7, 0.7, 8.1 respectively
2011	3-11, 3-12, 3-13, 3-14, 3-15, 3-16, 3-17	7.5, 1.1, 2.4, 0.2, 0.7, 0.0, 1.0 respectively
2011	6-20, 6-21, 6-22, 6-23, 6-24	11.7, 4.2, 7.4, 3.4, 7.5 respectively

Survey Year	PFM Subareas	Density Estimate (Lower 90%) (Sea Cucumbers per Metre of Shoreline)
2011	15-4, 15-5, 15-6	4.3, 16.3, 3.6 respectively
2011	14-3, 15-1, 16-1, 16-2, 16-3, 16-4, 16-16, 16-17, 16-18, 16-19, 16-20, 16-21, 16-22	9.8, 6.0, 2.0, 5.1, 0.2, 0.2, 1.2, 5.1, 10.9, 4.8, 6.9, 7.4, 7.4 respectively
2011	16-5, 16-6, 16-7, 16-8, 16-9, 16-10, 16-11, 16-12, 16-13, 16-14, 16-15	2.3, 13.0, 3.5, 5.0, 19.3, 7.2, 6.5, 5.3, 5.4, 4.5, 1.7 respectively
2011	17-9, 18-7	0, 1.1 respectively
2011	18-1, 18-2, 18-3, 18-4, 18-5, 18-6, 18-9, 18-10, 18-11	11.3, 5.7, 0.4, 3.7, 3.4, 2.5, 5.7, 0.1, 4.7 respectively
2012	2-3, 2-4, 2-5, 2-6	0.4, 0.6, 0.8, 5.6 respectively
2012	11-3, 11-4, 11-5, 11-6, 11-7, 11-8, 11-10	12.0, 8.8, 4.2, 3.1, 1.3, 5.4, 4.5 respectively
2012	28-1, 28-2, 28-3, 28-4, 28-5, 28-6, 29-3	0.8, 1.8, 2.4, 1.8, 0.3, 1.8, 0.8 respectively
2012	5-14, 5-16, 5-17	4.9, 7.9, 5.8 respectively
2012	6-9, Portion of 6-13	4.8, 3.2 respectively
2012	7-12, 7-13, 7-22, 7-23	6.2, 3.0, 2.1, 2.1 respectively
2013	12-35, 12-36, 12-37, 12-42, 12-43, 12-45, 12-46, 12-47, 12-48	2.5, 0.4, 2.5, 1.1, 0.5 0.6, 0.6, 0.2, 0.2 respectively
2013	27-7, 27-8, 27-9, 27-10	0.1, 0, 0.1, 0, 0 respectively
2013	6-11, 6-12, 6-14, 6-15, 6-16	2.8, 3.2, 2.8, 1.5, 2.5 respectively
2013	7-18, 7-19, 7-25	2.4, 0.0, 3.8 respectively
2014	6-1	4.6
2014	19-3, 19-4, 19-5, 20-5	1.4, 1.3, 1.0, 1.9 respectively
2015	8-13, 8-14, 11-2, 12-27 to 12-29	5.6, 8.2, 6.4, 1.0, 0.4, 0.4, 0.1 respectively
2016	23-2 to 23-6	2.0, 2.6, 1.3, 4.4, 2.6 respectively

Survey Year	PFM Subareas	Density Estimate (Lower 90%) (Sea Cucumbers per Metre of Shoreline)
2017	13-7, (13-8, 13-9),13-12, (13-13, 13-14), 13-15, 13-16, 13-24, 13-26, (13-27, 13-28)	4.5, 6.3, 7.8, 7.8, 1.2, 13.8, 1.7, 3.6, 4.9, 2.6 respectively
2017	7-4, 7-6	8.5, 11.4
2019	23-8, 23-9, 23-10 25-1, 25-2, 25-3, 25-4, 25-5, 25-6, 25-8, 25-9, 25-10, 25-11, 25-12, 25-13, 25-15	0.02, 0.1, 1.9 respectively 6.2, 9.7, 6.3, 7.3, 5.5, 5.0, 5.2, 6.4, 2.2, 2.4, 5.2, 2.0, 4.4 respectively

Table 2. The Average Split Weight (ASW) of surveyed Subareas is shown in the table below.

Survey Year	PFM Subareas	Average Split Weight (g)
2004	12-40, 12-41	405, 314
2005	6-9	319
2005	24-4 to 24-10, 24-14	377, 489, 313, 346, 322, 322, 419, 373
2006	8-3, 8-4, 8-5, 8-6, 8-16 7-15, 7-17, 7-30	236, 285, 258, 252, 340 355, 310, 313
2007	6-3, 6-5, 6-6, 6-7, 6-27, 6-28	248, 239, 237, 228, 244, 224
2008	(9-3 to 9-6), 9-7, 9-8, 9-9, 9-11	321, 224, 280, 224, 307
2008	(10-3 to 10-5), 10-6, 10-7, (10-8 to 10-10), 10-12	278, 391, 162, 215, 165
2008	(13-7 to 13-9), 13-25, (13-24,-26,-27), (13-35, -36), (13-37 to 13-39), (13-40,-41), 13-42, 13-43	328, 299, 285, 265, 210, 308, 231, 363
2009	3-1	228
2009	4-1, 4-2, 4-4, 4-5, 4-6, 4-7, 4-8, 4-9, 4-12, 4-13, 4-14	298, 225, 286, 269, 269, 269, 269, 286, 354, 186, 269

Survey Year	PFM Subareas	Average Split Weight (g)
2009	12-1, 12-2, 12-6,12-20, 12-22, 12-23, 12-24 , 12-26, 12-38, 12-39	297, 253, 237, 237, 307, 193, 297, 304, 358, 358
2009	6-9	307
2010	3-3, 3-4, 3-5,3-6, 3-7, 3-8, 3-9, 3-10	290, 281, 269, 176, 212, 245, 249
2010	4-5, 4-9	299, 343
2010	7-7, 7-9, 7-10, 7-11, 7-24, 7-29	206, 251, 177, 255, 277, 170
2010	12-3, 12-4, 12-5, 12-18, 12-19, 12-21	306, 205, 286, 351, 205, 205
2010	17-3, 17-4, 17-5, 17-18, 17-19, 17-20, 17-21	263, 218, 218, 234, 234, 218, 218
2011	3-11, 3-12, 3-13, 3-14, 3-15, 3-16, 3-17	254, 174, 313, 280, 180, 174, 174
2011	6-20, 6-21, 6-22, 6-23, 6-24	166, 184, 254, 208, 381,
2011	15-4, 15-5, 15-6	244, 188, 160
2011	14-3, 15-1, 16-1, 16-2, 16-3, 16-4, 16-16, 16-17, 16-18, 16-19, 16-20, 16-21, 16-22	182, 175, 223, 248, 175, 175, 269, 215, 182, 236, 244, 210, 202
2011	16-5, 16-6, 16-7, 16-8, 16-9, 16-10, 16-11, 16-12, 16-13, 16-14, 16-15	138, 176, 153, 212, 138, 172, 197, 200, 188, 152, 181
2011	17-9, 18-7	263, 212
2011	18-1, 18-2, 18-3, 18-4, 18-5, 18-6, 18-9, 18-10, 18-11	176, 176, 176, 191, 240, 233, 176, 298,
2012	2-3, 2-4, 2-5, 2-6	340, 481, 319, 319
2012	11-3, 11-4, 11-5, 11-6, 11-7, 11-8, 11-10	103, 109, 137, 130, 130, 155, 111
2012	28-1, 28-2, 28-3, 28-4, 28-5, 28-6, 29-3	276, 205, 243, 171, 159, 159, 159

Survey Year	PFM Subareas	Average Split Weight (g)
2012	5-14, 5-16, 5-17	259, 310, 270
2012	6-9, Portion of 6-13	344, 259
2012	7-12, 7-13, 7-22, 7-23	252, 320, 332, 314
2013	12-35, 12-36, 12-37, 12-42, 12-43, 12-45, 12-46, 12-47, 12-48	193, 380, 162, 193, 203, 162, 162, 162, 162
2013	27-7, 27-8, 27-9, 27-10	303, 263, 263, 263
2013	6-11, 6-12, 6-14, 6-15, 6-16	264, 274, 332, 316, 279
2013	7-18, 7-19, 7-25	325, 325, 327
2014	6.1	195
2014	19-3, 19-4, 19-5, 20.5	243, 279, 243, 243
2015	8-13, 8-14, 11-2, 12-27, 12-28, 12-29, 12-30	163, 158, 274, 346, 298, 298, 298
2016	23-2 to 23-6	258, 216, 294, 241, 215
2017	13-7, (13-8, 13-9), 13-12, 13-13, 13-14, 13-15, 13-16, 13-24, 13-25, 13-26, 13-27, 13-28	357, 298, 217, 237, 239, 232, 205, 379, 232, 283, 192, 234
2017	7-4, 7-6	308, 204
2019	23-8, 23-9, 23-10 25-1, 25-2, 25-3, 25-4, 25-5, 25-6, 25-8, 25-9, 25-10, 25-11, 25-12, 25-13, 25-15	188, 188, 196 192, 206, 281, 293, 151, 255, 231, 254, 144, 262, 254, 190, 161

Appendix 8: Example of Sea Cucumber Validation and Harvest Logbook

SEA CUCUMBER
VALIDATION & HARVEST LOGBOOK

VALIDATION ID # :

PLEASE PRINT - USE PEN — **SECTION 'A' - TO BE COMPLETED BY VESSEL MASTER** — *PLEASE PRINT - USE PEN*

SECTION 'A'

VESSEL MASTER NAME	VESSEL NAME	CFV #	ZD TAB #	SPLIT LOAD ?	# OF LOADS	VALIDATION ID #'s OF OTHER LOADS
				YES / NO		

QUOTA AREA	DAYS FISHED	No. of CONTAINERS BAGS	CAGES	TOTES	OTHER	PACKER NAME (if applicable)	GROSS PACKER WT. (lb.)	BUYER NAME

PLEASE PRINT - USE PEN — **SECTION 'B' - TO BE COMPLETED BY PORT OBSERVER** — *PLEASE PRINT - USE PEN*

SECTION 'B'

OBSERVER NAME	No. of CONTAINERS BAGS	CAGES	TOTES	OTHER	GROSS DOCK WT. (lb.)	CONTAINER WT. (lb.)	CONVERSION FACTOR
							2.73

PREVIOUS R.Q. (lb.)

NET DOCK WT. (lb.) *SPLIT FORM*

NEW R.Q. (lb.)

PRODUCT FORM: Split / Round

OVERAGE lb.

TRANSFER: TO / FROM — ZD # :

RELINQUISHMENT lb.

SITUATION REPORT #

HARVEST INFO. COMPLETE: Y / N

No. of TRANSPORT CONTAINERS

LANDING PORT

START TIME

OFFLOAD SEQUENCE

CHECK LIST :

FISH HOLD CHECK		MATH CHECK		BAG ID TAGS		TOTE ID LABELS		TOTE COUNT	
Y	N	Y	N	Y	N	Y	N	Y	N

LANDING DATE (mm / dd / yy)

FINISH TIME

SAMPLING : (*one cage per offload*)

NET SAMPLE WT. (nearest 10th of a lb.) — .

PIECE COUNT

Complete ONLY if other weights are available at time of offload

TOTAL NET DOCK WT. OF ALL LOADS (lb.)

COMMENTS :

PLEASE PRINT - USE PEN — **SECTION 'C' - TO BE COMPLETED BY VESSEL MASTER** — *PLEASE PRINT - USE PEN*

HARVEST INFORMATION - *COMPLETE A SEPARATE LINE FOR EACH DIVE* - USE NEXT PAGE IF MORE SPACE REQUIRED

SECTION 'C'

DIVE No.	DIVE SITE	HARVEST DATE (mm / dd / yy)	MGMT AREA	SUB AREA	HARVEST LOCATION (DESCRIPTION, TOP / LAT. & LONG., BOTTOM)	DIVER NAME (FIRST NAME, TOP / LAST NAME, BTM)	DIVE TIME (minutes)	DEPTH (ft) min.	DEPTH (ft) max.	No. of PIECES
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										

PLEASE ENSURE YOUR HARVEST CHART IS MARKED ~ PIECE COUNTS ARE : (check one) ACTUAL ☐ ESTIMATED ☐

WHITE COPY - Observer — YELLOW COPY - Buyer via trucking — PINK COPY - Vessel via packer — GOLD COPY - REMAINS IN LOGBOOK

PREPARED BY D&D PACIFIC FISHERIES LTD.

Appendix 9: 2020/2021 Sea Cucumber Quota Management Area Descriptions

An asterisk (*) indicates a change in Quota Management Area (QMA) boundaries for 2020/2021.

(NEW) indicates a new QMA created for 2020/2021

Descriptions of closures that fall within these QMAs are shown in Appendix 1, Section 5.

Harvesters are reminded that these area descriptions and the maps in Appendix 10 are to be used for reference only. The final authority of these descriptions of Areas, Subareas and portions thereof is as set out in the *Pacific Fishery Management Area Regulations.*

1. NORTH COAST (PRINCE RUPERT DISTRICT)

QMA	Name	Description
2A	Louise Island	Subarea 2-6. *Reopened in 2012.*
3A	Work Channel	Subarea 3-6. *Reopened in 2010.*
3B	Portland Inlet	Subarea 3-7. *Reopened in 2010. Boundary change in 2011.*
3C	Steamer Pass	Subareas 3-8 and 3-10. *Reopened in 2010.*
3D	Pearse Canal	Subarea 3-3 and Subarea 3-11 excluding that portion South of a line starting at the entrance to Winter Inlet at 54° 50.328’ N and 130° 27.857’ W across to a point at 54° 50.455’ N and 130° 27.461’ W. *Reopened in 2011.*
4A	West Dundas Island	Subareas 3-1 and 4-1. *Reopened in 2009.*
4B	East Dundas Island	That portion of Subarea 4-5 West of a line that runs from the subarea boundary at 54° 34.788’ N and 130° 45.352’ W [East Dundas Island] to a point at 54° 04.447’N and 130° 19.836’ W [Northeast McMicking Island]. *Reopened in 2009.*

QMA	Name	Description
4C	North Porcher Island	a) That portion of subarea 4-2 South of a line starting at the subarea boundary at View Point on Arthur Island [54° 03.249' N and 130° 37.544' W] then West to a point at 54° 04.000' N and 130° 42.500' W, then Southwest to the surfline at 53° 59.983' N and 130° 52.025' W, including a portion in Stephens Passage West of a line from 54° 07.388' N and 130° 38.755' W to 54° 07.197' N and 130° 38.449' W. b) Subareas 4-3 and 4-4 c) That portion of subarea 4-9 West of a line that runs from the subarea boundary at 54° 34.788' N and 130° 45.352' W [Dundas Island] to a point at 54° 04.447' N and 130° 19.836' W [Northeast McMicking Island]. d) That portion of subarea 4-12 West of a line that runs from the subarea boundary at 54° 34.788' N and 130° 45.352' W [East Dundas Island] to a point at 54° 04.447' N and 130° 19.836' W [Northeastern McMicking Island] then east to the northwestern point of Hammer Island [54° 03.889' N and 130° 14.979' W] then Southwest along the shoreline to the light on the southern point on Hammer Island then to the northeastern point of Lewis Island [54° 01.582' N and 130° 15.496' W], then to a point adjacent to the Spiller River on East Porcher Island [54° 01.070' N and 130° 17. 088' W]. *Reopened in 2009. Boundary change in 2010.*
5A	West Banks Island	Subareas 5-20 to 5-22. *Open during Phase 1 fishery. Split from QMA 5A Porcher Island/West Banks in 2009.*
5D	South Porcher Island	Subareas 5-2, 5-4, 5-5, 5-7, 5-11 and 5-12. *Open during Phase 1 fishery. Split from QMA 5A Porcher Island/Banks Island in 2009.*
5E	Anger Island	Subarea 5-16. *Open during Phase 1 fishery. Split from QMA 5B Principe Channel in 2013.*
5F	Principe North	Subareas 5-13, 5-14 and 5-15. *Open during Phase 1 fishery. Split from 5B Principe Channel in 2013.*

QMA	Name	Description
5G	Principe South	Subareas 5-17, 5-18, 5-19. *Open during Phase 1 fishery. Split from 5B Principe Channel in 2013.*
5H	Grenville North	a) Subarea 5-1. b) Subarea 5-23 excluding Kumealon Inlet East of a line across the mouth of the inlet; Baker Inlet East of a line across the mouth of the inlet, Kxngeal Inlet East of a line across the mouth of the inlet; and Klewnuggit Inlet East of a line across the mouth of the inlet. *Open during Phase 1 fishery. Split from QMA 5B Principe Channel/Grenville Channel in 2009. Split from QMA 5C Grenville Channel in 2018.*
5I	Grenville South	a) Subarea 5-24 excluding that portion of Lowe Inlet East of a line across the mouth of the inlet. b) That portion of subarea 6-28 outside the 20 fathom contour line from Cape Farewell on Promise Island, to Sainty Point on the mainland coast as shown on Charts No. 3711 and 3742 published by the Canadian Hydrographic Service. *Open during Phase 1 fishery. Split from QMA 5B Principe Channel/Grenville Channel in 2009. Split from QMA 5C Grenville Channel in 2018.*
6A	Gil Island	Subareas 6-5, 6-26 and 6-27. *Open during Phase 1 fishery.*
6C	Trutch Island	Subareas 6-9 and 6-10. *Open during Phase 1 fishery. Split from QMA 6C Caamano Sound/Laredo Channel in 2009.*
6D	Laredo Channel	Subareas 6-11, 6-12, 6-14 to 6-16. *Open during Phase 1 fishery. Split from QMA 6C Caamano Sound/Laredo Channel in 2009.*

QMA	Name	Description
6E	Princess Royal Channel	a) That portion of subarea 6-20 North of a line starting at Netherby Point west to a point at 52° 55.320' N and 128° 31.540'W and that excludes a portion of South of a line from a point at Nomel Creek (53° 07.106'N and 128° 36.006'W) then East to the Subarea boundary at (53° 07.123'N and 128° 34.164'W). North of a line from point at Big Creek (53° 02.029'N and 128° 31.508'W), West to a point at 53° 01.924'N and 128° 32.560'W. b) Subareas 6-21, 6-22, and 6-24. *Reopened in 2011.Boundary change in 2014.*
6F	West Aristazabal Island	That portion of subarea 6-13 north of a line starting at a point on the western shoreline of Aristazabal Island at 52° 30.970'N and 129° 04.249'W to a point on the Surfline at 52° 30.000'N and 129° 05.831'W [excludes Weeteeam Bay]. *Reopened in 2014*
6G	Kitimat Arm	Subarea 6-1 excluding: a) Giltoyees and Miskatla Inlets: North of a line from Point Ashton [53° 46.245'N/128° 56.920'W] west to a point at 53° 46.092'N and 128° 58.589'W. b) Sue and Loretta Channels: Easterly of the Subarea boundary between Maitland Island [53° 41.197'N/129° 04.789'W and Hawkesbury Island [53° 40.494'N/129° 04.797'W] and westerly of a line that begins at 53° 41.205'N/129° 04.898'W (Kersey Point) then to 53° 45.620'N/128° 50.849'W (Walbran Point) then following the easterly shoreline of Loretta Island to 53° 43.341'N/128° 49.939'W then to 53° 42.645'N/128° 50.071'W (Gaudin Point). c) The head of Kitimat Arm: North of a line running from a point at 53° 57.767'N and 128° 42.212'W to a point at 53° 56.967'N and 128° 39.741'W.

QMA	Name	Description
6H	Douglas Channel	a) Subarea 6-2 excluding Kitkiata Inlet West of a line from Gertrude Point to Helen Point; Kishkosh Inlet West of a line running across the entrance of the inlet and the vicinity of Hartley Bay, Promise Island and Coghlin Anchorage, inside the 20 fathom depth contour running from Halsey Point at the entrance to Hartley Bay, around Cape Farewell on Promise Island, then to Sainty Point on the mainland coast as shown on Charts No. 3711 and 3742 published by the Canadian Hydrographic Service. b) Subarea 6-6 excluding the portion in the vicinity of Hartley Bay, Promise Island and Coghlin Anchorage, inside the 20 fathom depth contour running from Halsey Point at the entrance to Hartley Bay, around Cape Farewell on Promise Island, then to Sainty Point on the mainland coast as shown on Charts No. 3711 and 3742 published by the Canadian Hydrographic Service. *Open during Phase 1 fishery. Split from QMA 6B Gribbell Island in 2015*
6I	Gribbell Island	a) Subarea 6-3 excluding the portion that is Bishop Bay East of a line from Riordan Point to Tomkinson Point. b) Subarea 6-7. *Open during Phase 1 fishery. Split from QMA 6B Gribbell Island in 2015*

2. CENTRAL COAST

QMA	Name	Description
7B	Milbanke Sound/ Seaforth Channel	Subareas 7-2, 7-3, 7-12, 7-20 to 7-22, 7-24 and 7-32. *Open during Phase 1 fishery. Changed from 7B Milbanke Sound in 2009. Boundary change in 2009.*
7C	Fisher Channel/ Dean Channel	Subareas 7-30, 8-5 to 8-7. *Open during Phase 1 fishery. Split from QMA 7C Denny Island in 2009.*
7E	Queens Sound	Subareas 7-18, 7-19, 7-23 and 7-25. *Open during Phase 1 fishery. Split from 7B Milbanke Sound in 2009.*

QMA	Name	Description
7F	Denny Island	Subarea 7-17. *Open during Phase 1 fishery. Split from QMA 7C Denny Island in 2009.*
7G	Sheep Pass	a) That portion of Subarea 7-9 North of the parallel passing through 52° 41.90' N Latitude [Northern Griffith Pass]. b) Subarea 7-29. *Reopened in 2008. Split from 7D Mathieson Channel in 2016.*
7H	Upper Mathieson	a) That portion of Subarea 7-9 South of the parallel passing through 52° 41.90' N Latitude and North of a line that runs from 52° 31.233'N and 128° 16.734'W to 52° 31.388'N and 128° 14.492'W [Includes Jackson Passage] b) Subarea 7-10. c) Subarea 7-11 – closed for 2016 (see below) *Reopened in 2008. Split from 7D Mathieson Channel in 2016. Boundary change in 2014 – Subarea 7-7 changed into a CNTR, Subarea 7-11 will be closed for 2016 at the request of the PSCHA.*
7I	Lower Mathieson	a) That portion of Subarea 7-9 South of a line that runs from 52° 31.233'N and 128° 16.734'W to 52° 31.388'N and 128° 14.492'W [south of Jackson Passage] and East of a line starting at Miall Point (52° 29.595'N and 128° 16.147'W) and a point along Buckley Head at 52° 28.494'N and 128° 16.480'W [excludes Oscar Passage]. *Reopened in 2008. Split from 7D Mathieson Channel in 2016. Boundary change in 2014 - CNTR moved from Jackson Passage to Oscar Passage.*
7J	Spiller	a) Subarea 7-13 b) Subarea 7-14 excluding those waters north of a line from Coldwell Point (52° 19.177'N and 128° 01.551'W) to Florence Peninsula (52° 19.085'N and 128° 00.469'W) [Briggs Inlet]. *Open during Phase 1 fishery. Split from 7A Seaforth Channel/Spiller Channel in 2009. Split from 7A Spiller Channel in 2016.*
7L	Roscoe Inlet	a) That portion of Subarea 7-15 east of a line from Jagers Point (52° 18.288N and 127° 58.041W) to a point on Florence Peninsula (52° 18.844 N and 127° 58.039W). b) Subarea 7-16. *Open during Phase 1 fishery. Split from 7A Seaforth Channel/Spiller Channel in 2009. Split from 7A Spiller Channel in 2016. Split from 7K Florence Peninsula in 2018.*

QMA	Name	Description
7M	Chatfield/ Briggs	a) That portion of Subarea 7-14 north of a line from Coldwell Point (52° 19.177'N and 128° 01.551'W) to Florence Peninsula (52° 19.085'N and 128° 00.469'W) [Briggs Inlet]. b) That portion of Subarea 7-15 west of a line from Jagers Point (52° 18.288N and 127° 58.041W) to a point on Florence Peninsula (52° 18.844 N and 127° 58.039W). *Open during Phase 1 fishery. Split from 7A Seaforth Channel/Spiller Channel in 2009. Split from 7A Spiller Channel in 2016. Split from 7K Florence Peninsula in 2018.*
7N **(NEW)**	Finlayson North	That portion of Subarea 7-6 south of a line from a point on the mainland at 52° 50.687' N and 128° 27.213' W to a point on Sarah Island at 52° 50.576' N and 128° 27.963' W. *Reopened in 2020.*
7O **(NEW)**	Finlayson South	Subarea 7-4. *Reopened in 2020.*
8B	Calvert Island	Subareas 8-2, 8-3, 8-16, 9-1 and 9-12. *Open during Phase 1 fishery. Split from 8A Queens Sound/Fitz Hugh Sound in 2009.*
8C	Spider / Kildidt	Subareas 7-26 to 7-28. *Open during Phase 1 fishery. Split from 8A Queens Sound/Fitz Hugh Sound in 2009. Split again from 8A Fitz Hugh Sound in 2014.*
8E **(NEW)**	Fitz Hugh / Burke South	a) Subarea 8-4. b) That portion of Subarea 8-13 south of a line running between a point on King Island at 52° 08.43'N and 127° 36.90'W and Kelkpa Point [52° 07.28'N and 127° 36.41'W]. *Open during Phase 1 fishery. Split from 8A Queens Sound/Fitz Hugh Sound in 2009. Split again from 8A Fitz Hugh Sound in 2014. Split from 8D FitzHugh/Burke in 2020.*

QMA	Name	Description
8F (NEW)	Burke North	a) That portion of Subarea 8-13 north of a line running between a point on King Island at 52° 08.43'N and 127° 36.90'W and Kelkpa Point [52° 07.28'N and 127° 36.41'W]. b) Subarea 8-14. *Open during Phase 1 fishery. Split from 8A Queens Sound/Fitz Hugh Sound in 2009. Split again from 8A Fitz Hugh Sound in 2014.Split from 8D Fitz Hugh/Burke in 2020.*
9B	South Rivers Inlet	a) Subareas 9-2, 9-3, 9-10 and 9-11. *Reopened in 2008. Split from 9A Rivers Inlet in 2018.*
9C	North Rivers Inlet	a) Subarea 9-4 except that portion north of a line from 51° 38.340' N and 127° 32.880' W to 51° 38.460' N and 127° 32.040' W [excludes Sandell Bay]. b) Subareas 9-5 and 9-9. c) That portion of Subarea 9-6 West of a line at 127° 21.90' W latitude [excludes Kilbella Bay]. *Reopened in 2008. Split from 9A Rivers Inlet in 2018.*
10A	Smith Inlet	a) Subareas 10-3, 10-4 and 10-6 to 10-11. b) That portion of Subarea 10-5 East of a line from Ripon Pt. (51° 19.32' N and 127° 32.40' W) to Olive Pt. (51° 20.22' N and 127° 32.16' W) [excludes Margaret Bay]. c) That portion of Subarea 10-12 East of a line at 127° 35.32'W latitude and North of the Subarea boundary line at Wakas Point [51° 17.46'N\127° 38.16'W] to Gikumi Point [51° 17.70'N\127° 36.78'W] (excludes Takush Harbour). *Reopened in 2008.*

3. EAST COAST OF VANCOUVER ISLAND

QMA	Name	Description
11A	Belize Inlet	Subareas 11-4 to 11-6. *Reopened in 2012.*
11B	Seymour Inlet	Subareas 11-3 and 11-10. *Reopened in 2012.*

QMA	Name	Description
11D	Slingsby Channel	That portion of Subarea 11-2 east of a line from Laschelles Point [51° 05.217'N/127° 39.449'W] to Dalkeith Point on the westernmost Island in the Fox Islands Group [51° 04.793'N/127° 38.790'W], east of a line from Dalkeith Point [51 04.766'N/127 38.767'W] to McKewan Point on Bramham Island [127 36.919'N/127 36.680'W] , and north of a line from Goose Point on Bramham Island [51° 05.089'N/127° 30.836'W] to a point on the Mainland at [51° 05.079'N/127° 30.637'W]. *Reopened in 2015. Split from 11C in 2017. Boundary change in 2019.*
11E	Allison Harbour	That portion of Subarea 11-2 west of a line from Laschelles Point [51° 05.217'N/127° 39.449'W] to Delkeith Point on the westernmost Island in the Fox Islands Group [51° 04.813'N/127° 38.758'W], west of a line from Dalkeith Point [51 04.766'N/127 38.767'W] to McKewan Point on Bramham Island [127 36.919'N/127 36.680'W] and south of a line from Goose Point on Bramham Island [51° 05.089'N/127° 30.836'W] to a point on the Mainland at [51° 05.079'N/127° 30.637'W]. *Reopened in 2015. Split from 11C in 2017. Boundary change in 2019.*
12A	North Queen Charlotte Strait	Subareas 12-9 to 12-11, 12-13 and 12-16. *Open during Phase 1 fishery.*
12C	Johnstone Strait	Subareas 12-1 to 12-4, 12-21 to 12-24, 13-35 to 13-43. *Reopened in 2008. Additional portions reopened in 2011.*
12E	Broughton	Subarea 12-40. *Open during Phase 1 fishery. Split from 12B in 2013.*
12F	Wells Passage	Subarea 12-41. *Open during Phase 1 fishery. Split from 12B in 2013.*
12G	SW Queen Charlotte Strait	Subareas 12-7, 12-8 and 12-17. *Open during Phase 1 fishery. Split from 12B in 2013.*
12H	Turnour Island	a) Subarea 12-20. b) That portion of Subarea 12-26 north of a line from 50° 35.717'N/126° 16.269'W and the Mainland [50° 35.874'N/126° 15.955'W] *Reopened in 2009. Split from 12D in 2013.*

QMA	Name	Description
12I	Gilford Island North	Subareas 12-38 and 12-39. *Reopened in 2009. Split from 12D in 2013.*
12J	Johnstone Strait	a) Subareas 12-1, 12-3, 12-4, 12-21, 12-24. b) That portion of Subarea 12-2 south of a line from Domville Point [50° 31.623'N/126° 17.058'W] west to a point on West Cracroft Island [50° 31.623'N/126° 18.806'W]. c) That portion of Subarea 13-35 west of a line from Hardwicke Point on Hardwicke Island [50° 26.435'N/125° 58.234'W] north to a point on the Mainland at [50° 28.197'N/125° 58.234'W]
12K	Port Harvey	a) Subareas 12-22 and 12-23 b) That portion of Subarea 12-2 north of a line from Domville Point [50° 31.623'N/126° 17.058'W] west to a point on West Cracroft Island [50° 31.623'N/126° 18.806'W]. c) That portion of Subarea 12-26 south of a line from 50° 35.717'N/126° 16.269'W and the Mainland [50° 35.874'N/126° 15.955'W]
12L	Tribune Channel	Subareas 12-35 and 12-37. *Reopened in 2017.*
13A	Quadra/ Cortes	Subareas 13-12 to 13-16. *Open during Phase 1 fishery.*
13B	North Area 13	Subareas 13-17 to 13-20 and 13-23. *Open during Phase 1 fishery.*
13C	East Thurlow Island	Subareas 13-7 to 13-9, 13-24 to 13-28. *Reopened in 2008.*
13D	Loughborough	a) That portion of Subarea 13-35 east of a line from Hardwicke Point on Hardwicke Island [50° 26.435'N/125° 58.234'W] north to a point on the Mainland at [50° 28.197'N/125° 58.234'W] b) Subareas 13-36 to 13-43.

QMA	Name	Description
15A	West Redonda Island	That portion of Subarea 15-5: a) North of a line running from the light at Junction Point [50° 08.374'N/124° 53.696'W] to the light at Refuge Cove [50° 06.970'N/124° 50.974'W]. b) West of a line running from a light in Pryce Channel located at 50° 18.411'N/124° 49.825'W to the light at Dean Point [50° 17.145'N/124° 47.178'W]. *Reopened in 2012.*
15B	East Redonda Island	That portion of Subarea 15-5: a) East of a line running from a light in Pryce Channel located at 50 18.411'N/124 49.825'W to the light at Dean Point [50° 17.145'N/124° 47.178'W]. b) North of a line running from Marytebone Point [50° 09.684'N/124° 45.084'W] to Price Point [50° 09.362'N/124° 39.329'W]. *Reopened in 2012.*
15C	South Desolation	Subarea 15-4 and that portion of Subarea 15-5: a) South of a line running from Marytebone Point [50° 09.684'N/124° 45.084'W] to Price Point [50° 09.362'N/124° 39.329'W]. b) South of a line running from the light at Junction Point [50° 08.397'N/124° 50.974'W] to the light at Refuge Cove [50° 06.970'N/124° 50.974'W]. *Reopened in 2012.*
16A	Sechelt Inlet	a) Subareas 16-6 to 16-8. b) Subarea 16-9 excluding those waters of Skookumchuck Narrows and Sechelt Rapids 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 degrees true to a point on the foreshore on the mainland; and the east by a line from Raland Point on Sechelt Peninsula, thence 50 degrees true to a point on the foreshore on the mainland [Skookumchuck Provincial Park]. *Reopened in 2011.*

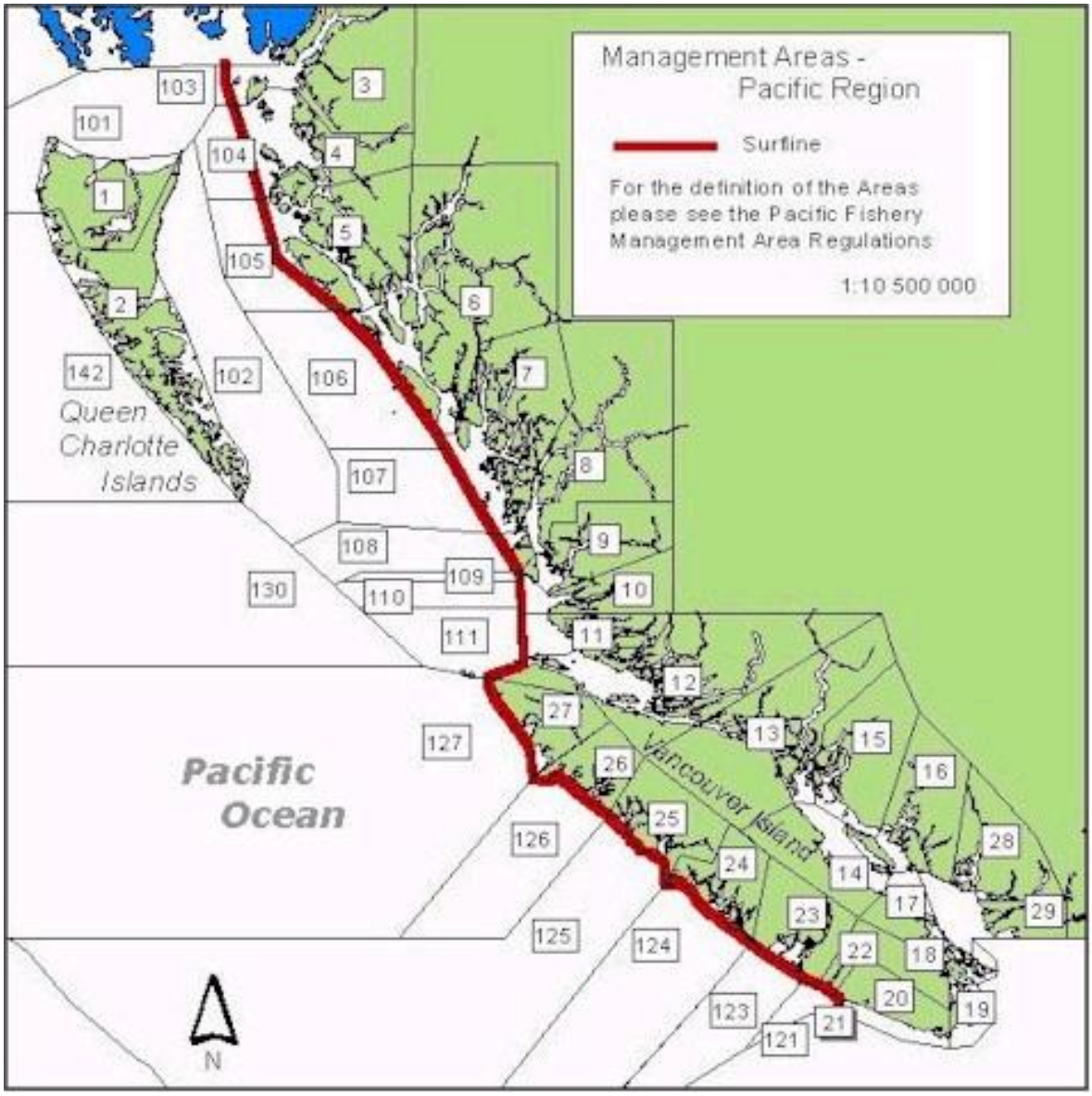
QMA	Name	Description
16B	Jervis Inlet	a) Subareas 16-10, 16-12 and 16-13. b) Subarea 16-11 excluding the portion shoreward of the 30 metre depth contour line from Scotch Fir Point to Culloden Point [the entire mainland portion of Subarea 16-11], as shown on Chart 3514 published by the Canadian Hydrographic Service. [Jervis Inlet Experimental Fishing Area]. *Reopened in 2011.*
16C	Texada Island	Subareas 15-1, 16-18, 16-21 and 16-22. *Reopened in 2012.*
16D	Lasqueti Island	Subareas 14-3, 16-19 and 16-20. *Reopened in 2012.*
18A	Gulf Islands South	Subareas 18-1, 18-2, 18-4, 18-5, 18-9 and 18-11. *Reopened in 2011.*

4. WEST COAST VANCOUVER ISLAND

QMA	Name	Description
23A	SE Barkley Sound	a) Subarea 23-3. b) Subareas 23-5 and 23-6 except: (1) Those portions inside a line that starts at the light at Whittlestone Point then to the southern tip of Haines Island then following the shore of Haines Island to the northwestern tip of Haines Island; from the northwest 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; 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; [Bamfield Marine Station Research Area closure] and (2) those waters of the Broken Group Islands in Barkley Sound within park boundaries as shown, since 1989, on Canadian Hydrographic Service Chart 3671. [Broken Islands Group Closure] *Reopened in 2016.*

QMA	Name	Description
24A	North Clayoquot	Subareas 24-4 to 24-6 and 24-14. *Open during Phase 1 fishery.*
24B	South Clayoquot	Subareas 24-7 and 24-10. *Open during Phase 1 fishery.*
25A **(NEW)**	Nootka/ Tahsis	Subareas 25-6, 25-8, 25-9, 25-12, 25-15. *Reopened in 2020.*
25B **(NEW)**	Muchalat/ Tlupana	Subareas 25-1 to 25-5. *Reopened in 2020.*

Appendix 10: Pacific Fishery Management Areas and 2020/2021 Sea Cucumber Quota Management Area Maps



Harvesters are reminded that these maps and the area descriptions in Appendices 1 and 9 are to be used for reference only. The final authority of these descriptions of Areas, Subareas and portions thereof is as set out in the *Pacific Fishery Management Area Regulations*. More detailed maps and descriptions of Areas and Subareas are available on the Internet at:

www.pac.dfo-mpo.gc.ca/fm-gp/maps-cartes/areas-secteurs/index-eng.html

Please note permanent area closures listed in Appendix 1, Section 5. **Permanent area closures are not illustrated on these maps.**

Cross-hatched/Stippled polygons represent Quota Management Areas (QMA). Full QMA descriptions are listed in Appendix 9.

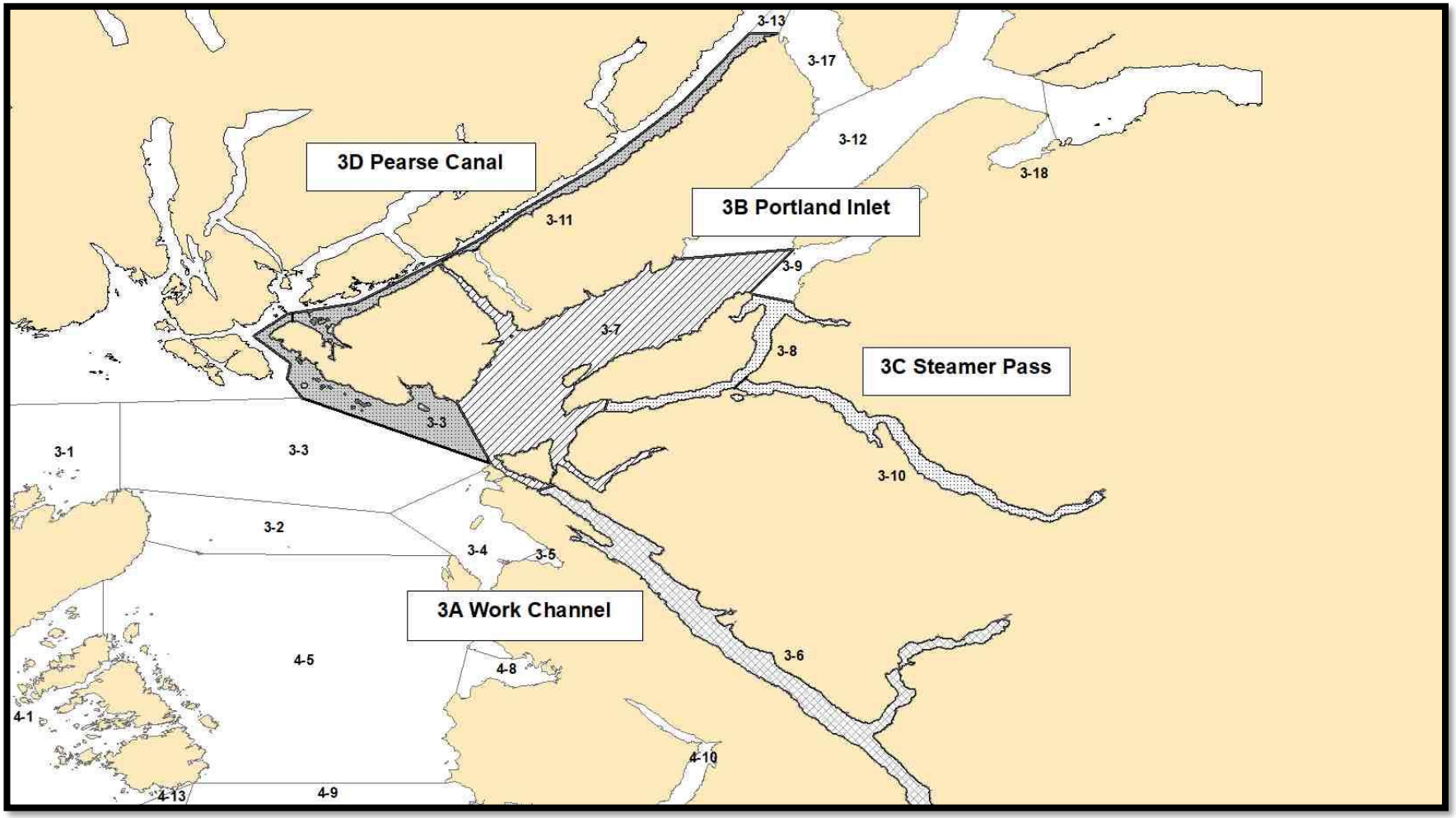


Figure 1. QMA 3A Work Channel: Subarea 3-6. QMA 3B Portland Inlet: Subarea 3-7. QMA 3C Steamer Pass: Subareas 3-8 and 3-10. QMA 3D Pearse Canal: Subarea 3-3 and portion of Subarea 3-11. See section 5 in Appendix 1 for a full description of all closures.

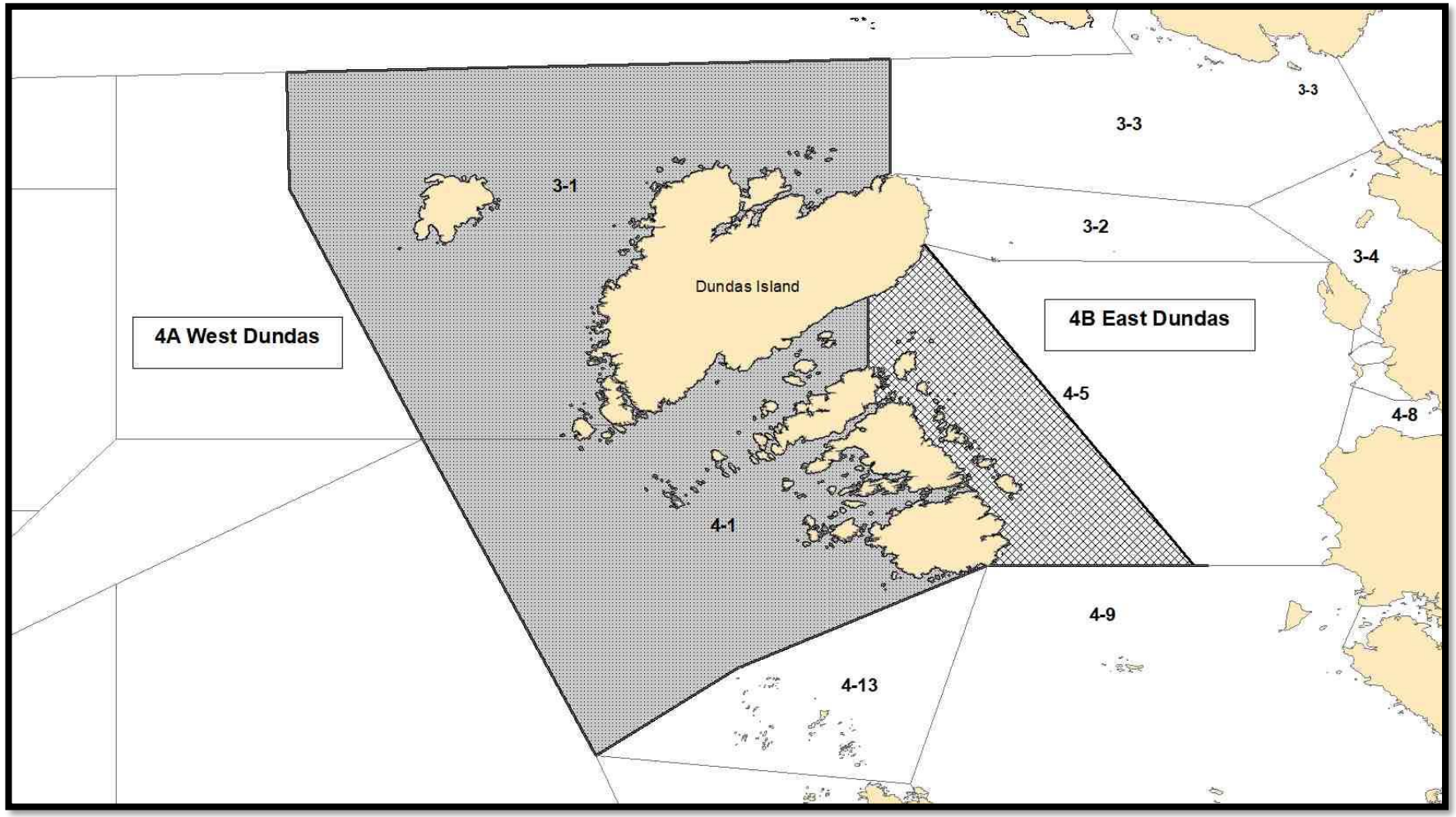


Figure 2. QMA 4A West Dundas: Subareas 3-1 and 4-1. QMA 4B East Dundas Island: Portion of Subarea 4-5. See section 5 in Appendix 1 for a full description of all closures.

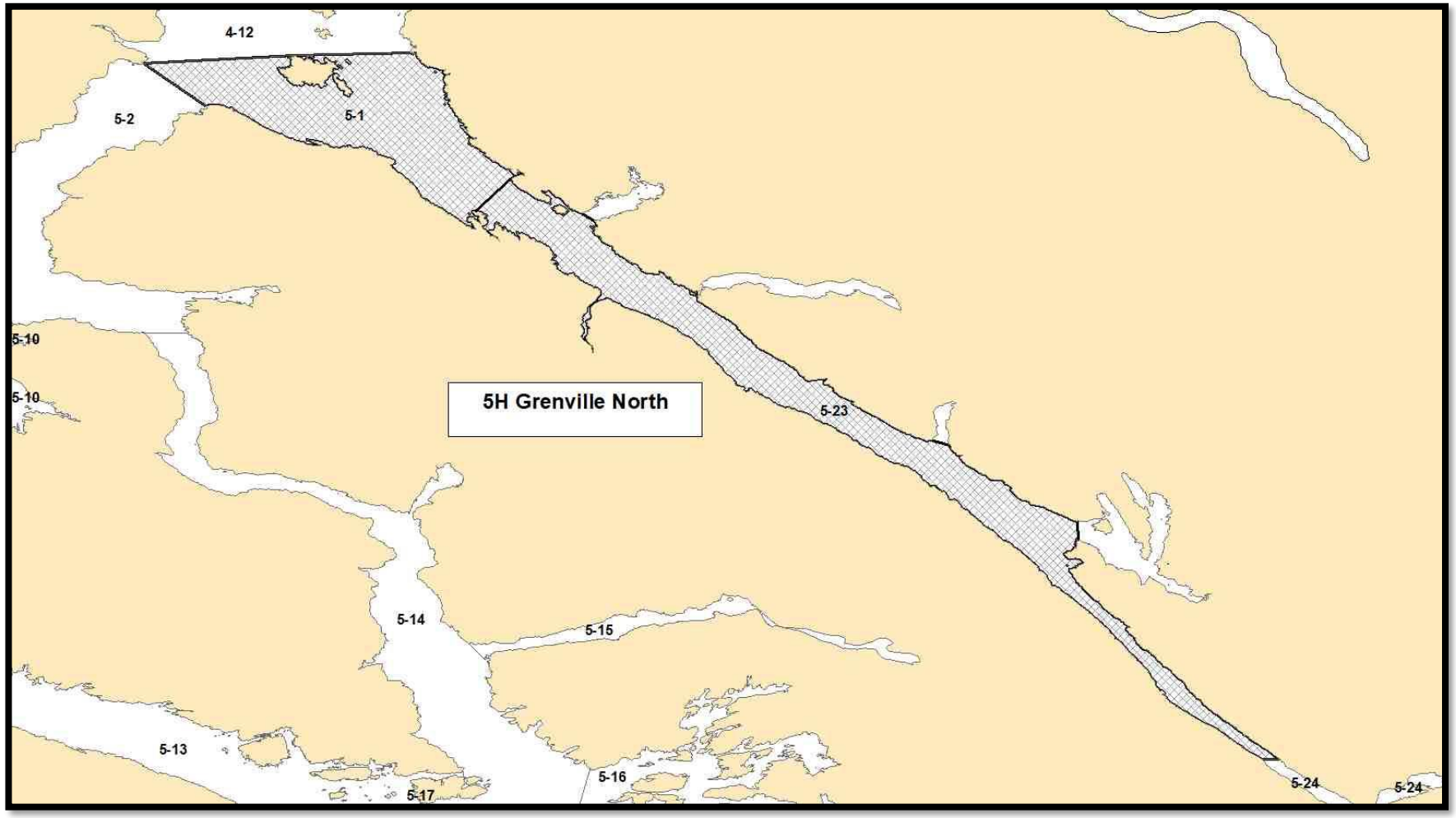


Figure 3. QMA 5H Grenville North: Subarea 5-1, portion of Subarea 5-23. For descriptions of all closures see Appendix 1, Section 5.

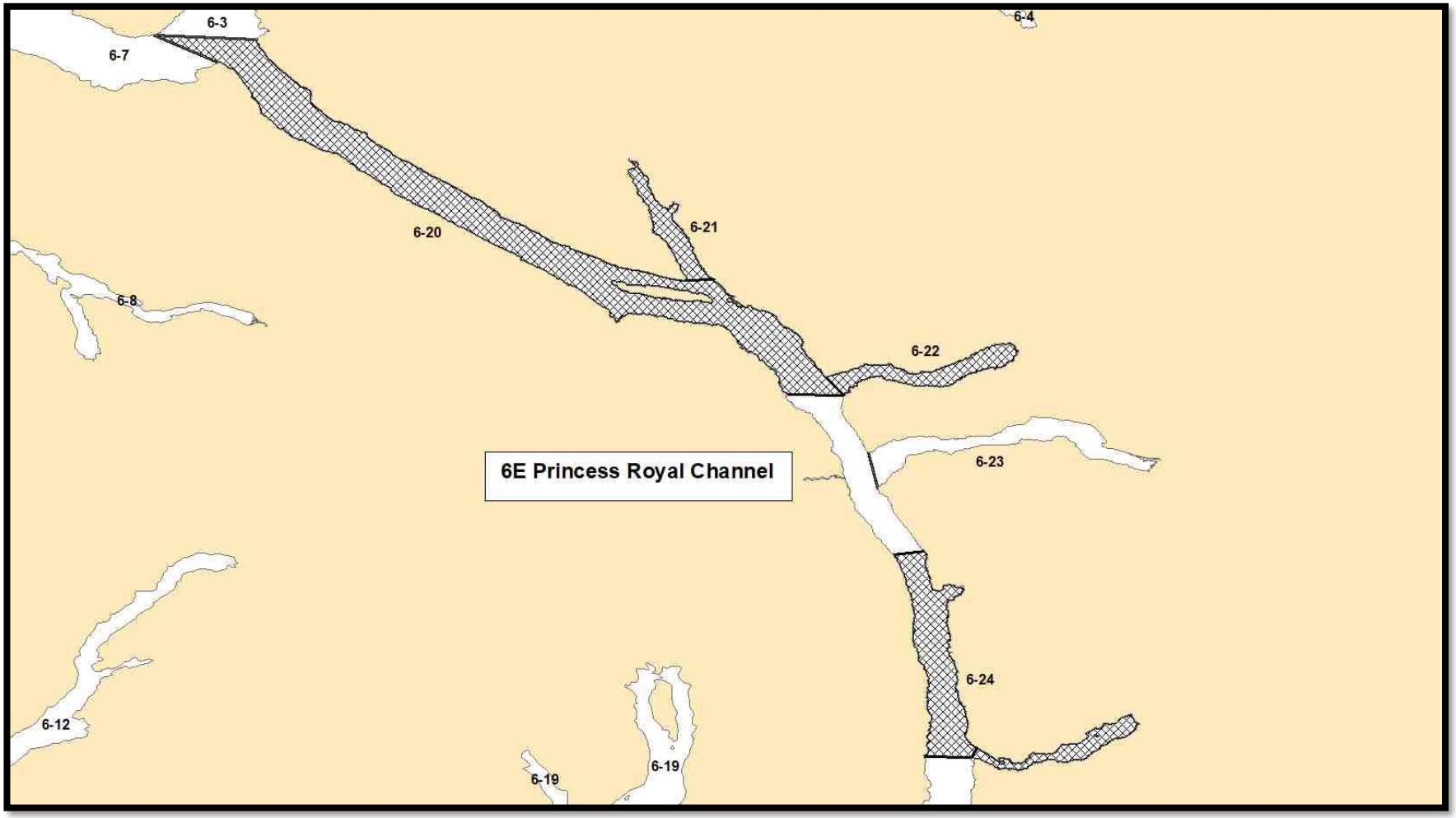


Figure 4. QMA 6E Princess Royal Channel: Portion of Subarea 6-20; Subareas 6-21, 6-22 and 6-24. For descriptions of all closures see Appendix 1, Section 5.

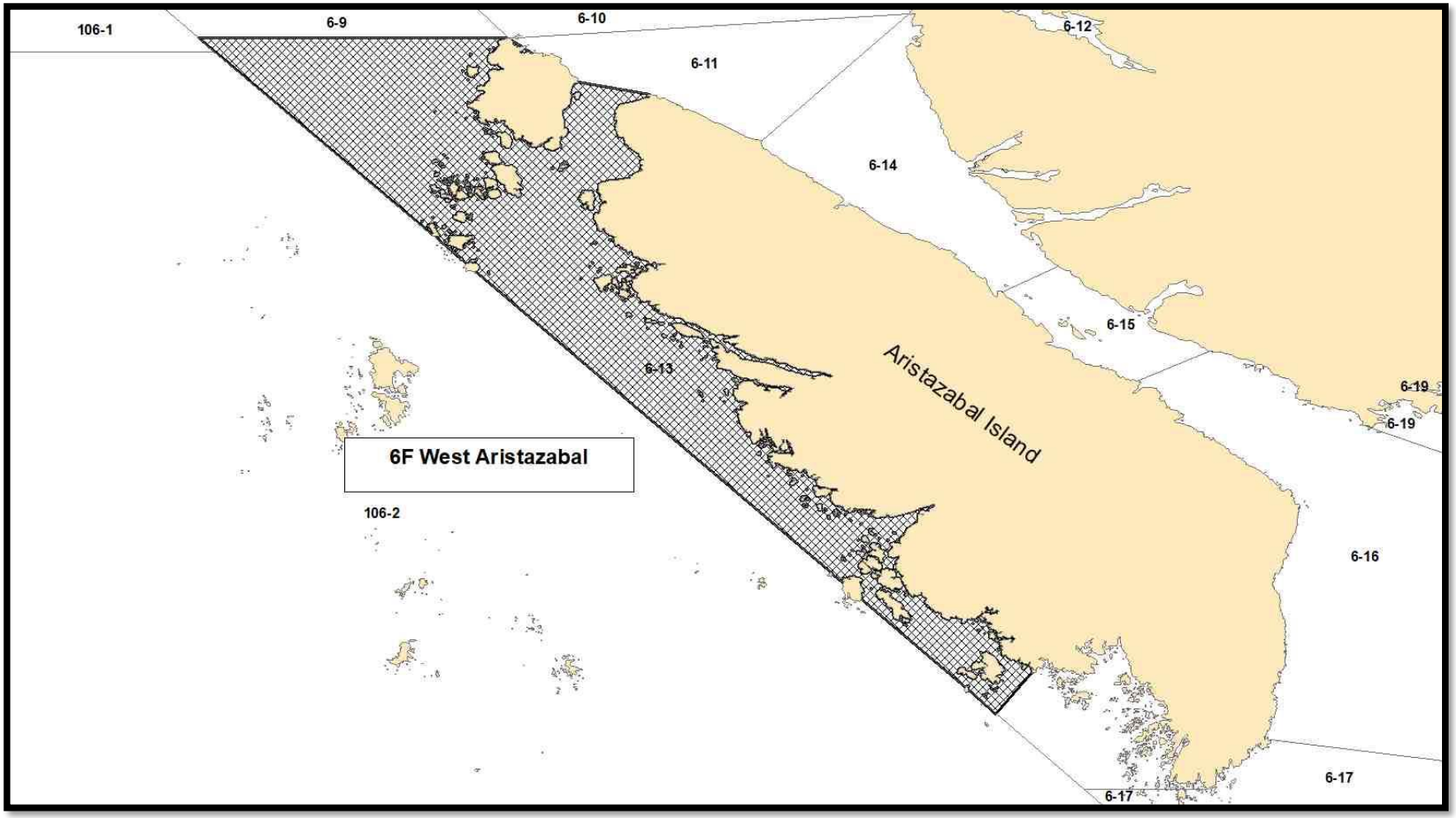


Figure 5. QMA 6F West Aristazabal: Portion of Subarea 6-13. For description of closures see Appendix 1 section 5.

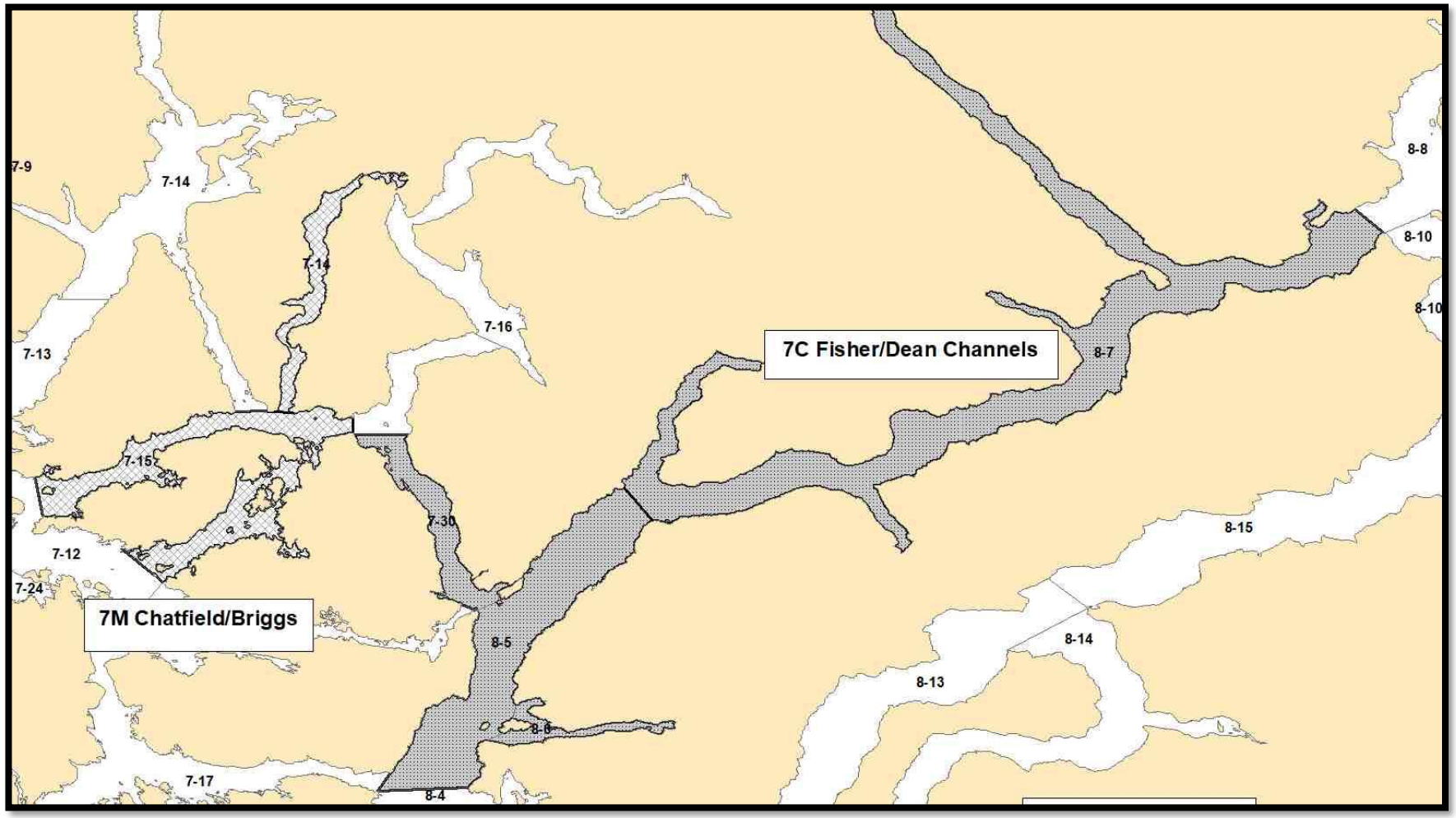


Figure 6. QMA 7C Fisher/Dean Channels: Subareas 7-30, 8-5 to 8-7. For description of closures please see Appendix 1 section 5.

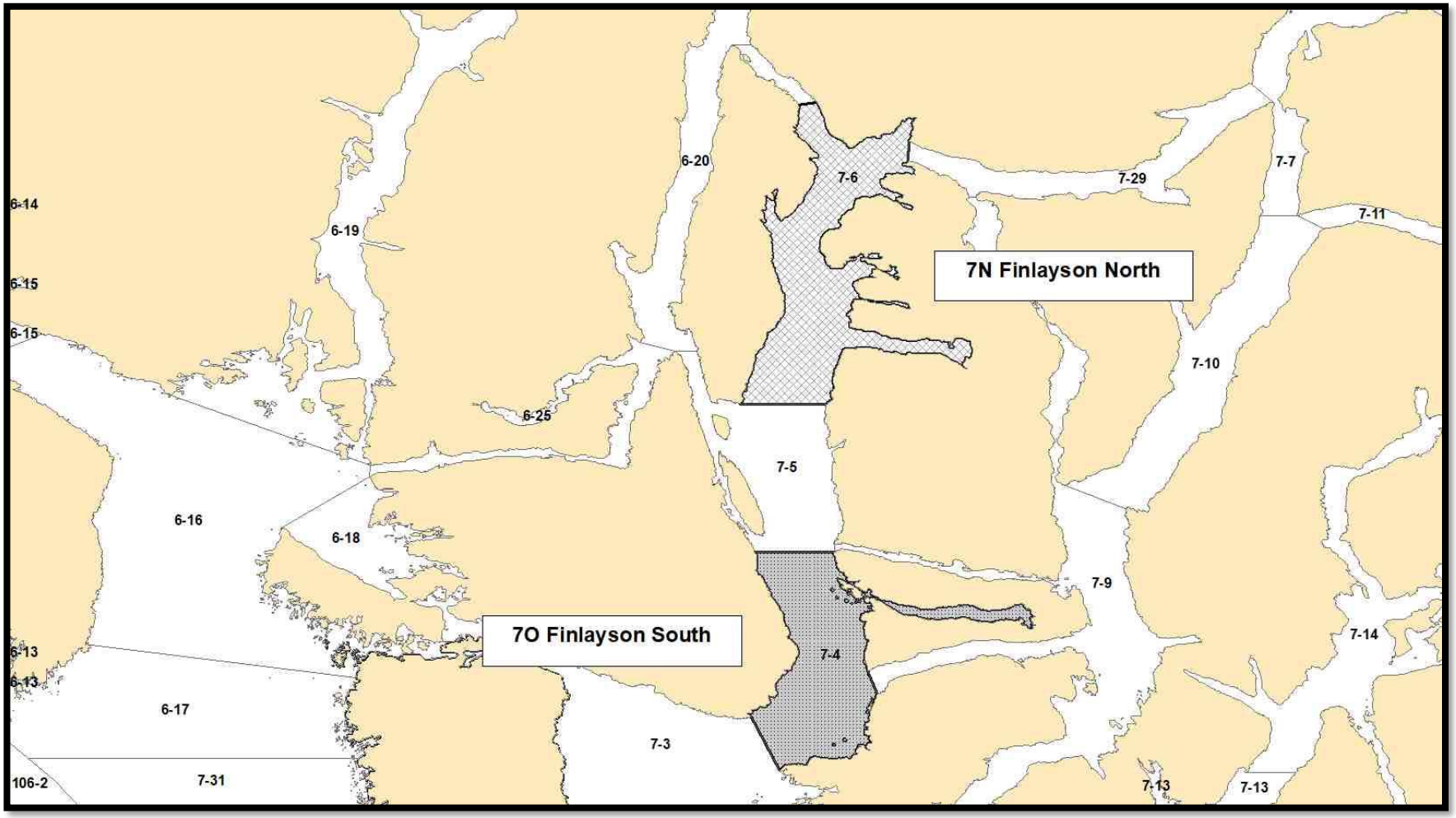


Figure 7. QMA 7N Finlayson North (NEW): Portion of Subarea 7-6. QMA 7O Finlayson South (NEW): Subarea 7-4. For description of closures please see Appendix 1 section 5.

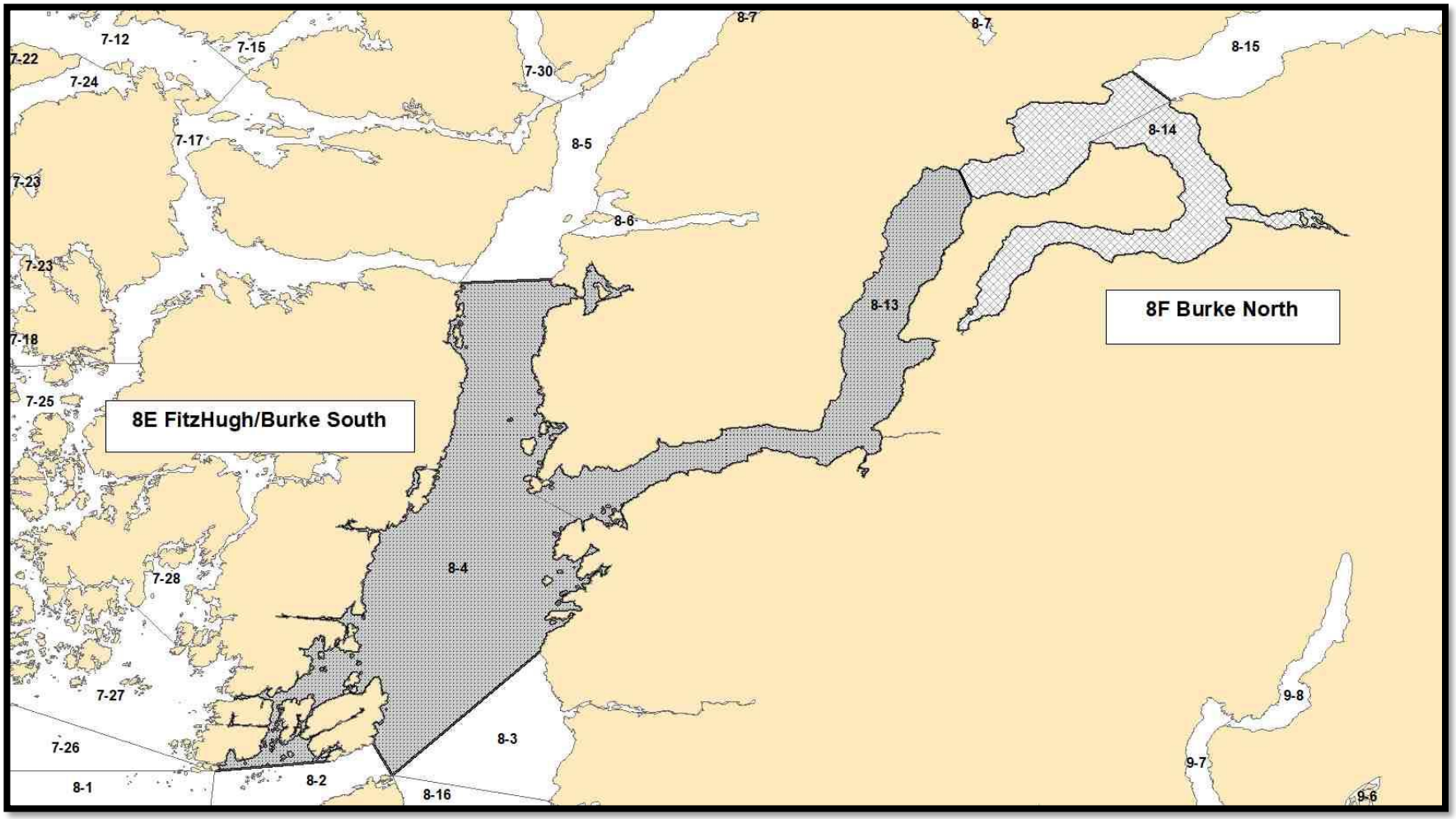


Figure 8. QMA 8E FitzHugh/Burke South (NEW): Subarea 8-4 and portion of Subarea 8-13. QMA 8F Burke North (NEW): Portion of Subarea 8-13 and Subarea 8-14. For description of closures please see Appendix 1, Section 5.

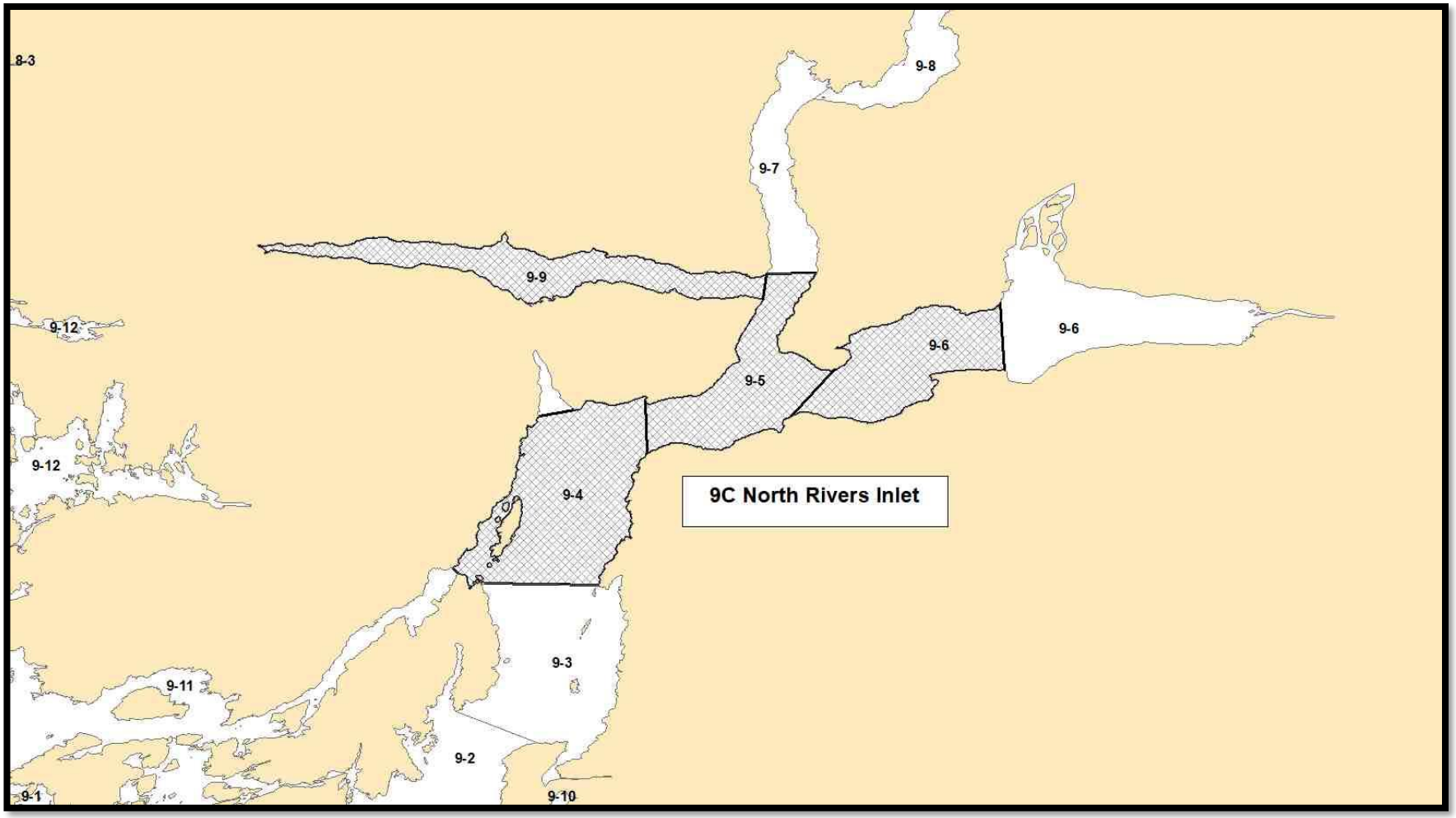


Figure 9. QMA North Rivers Inlet: Portion of Subareas 9-4 and 9-6; Subareas 9-5 and 9-9. For description of closures please see Appendix 1, Section 5.

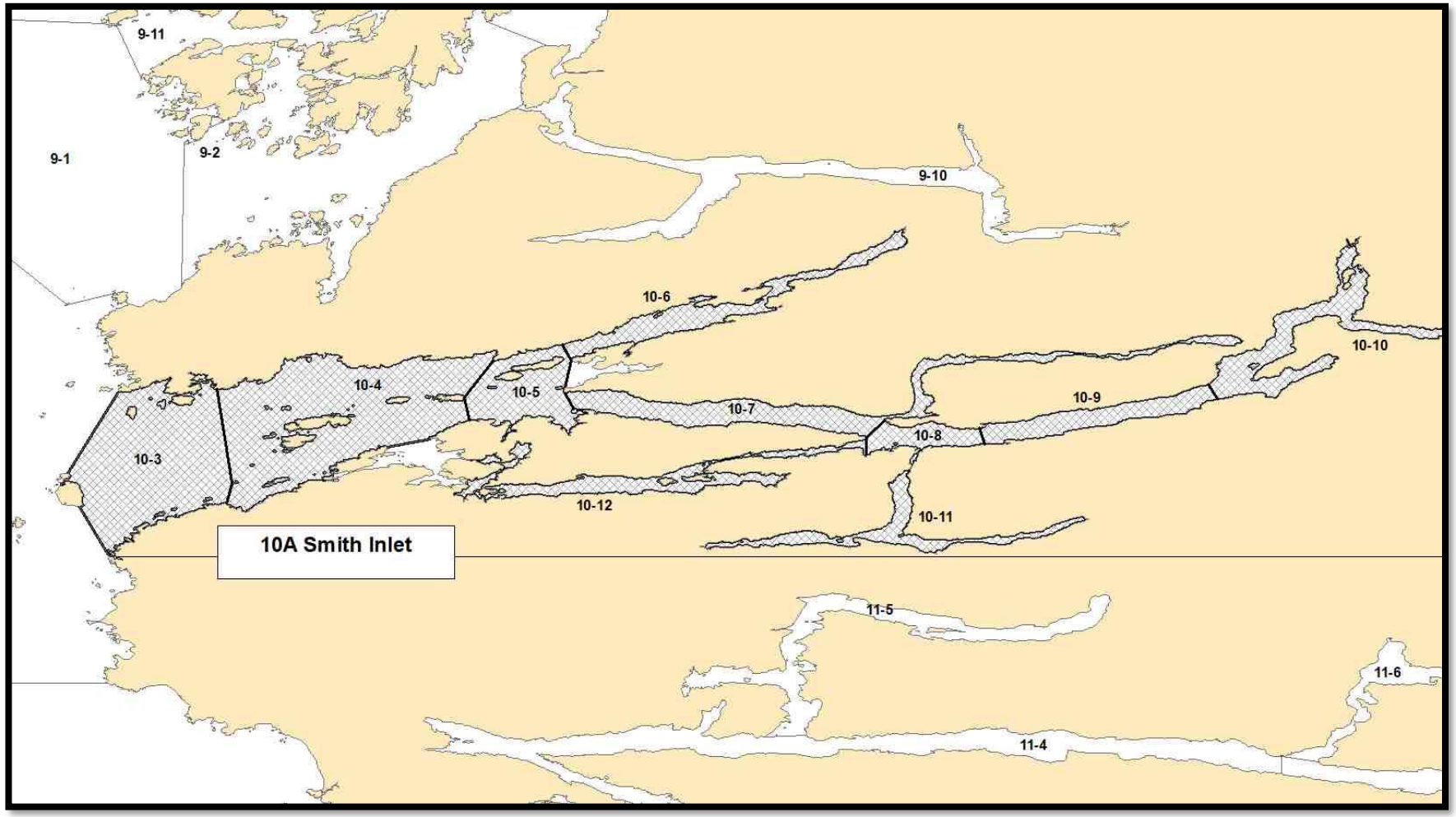


Figure 10. QMA 10A Smith Inlet: Subareas 10-3, 10-4, 10-6 to 10-11; portion of Subareas 10-5 and 10-12. For description of closures please see Appendix 1, Section 5.

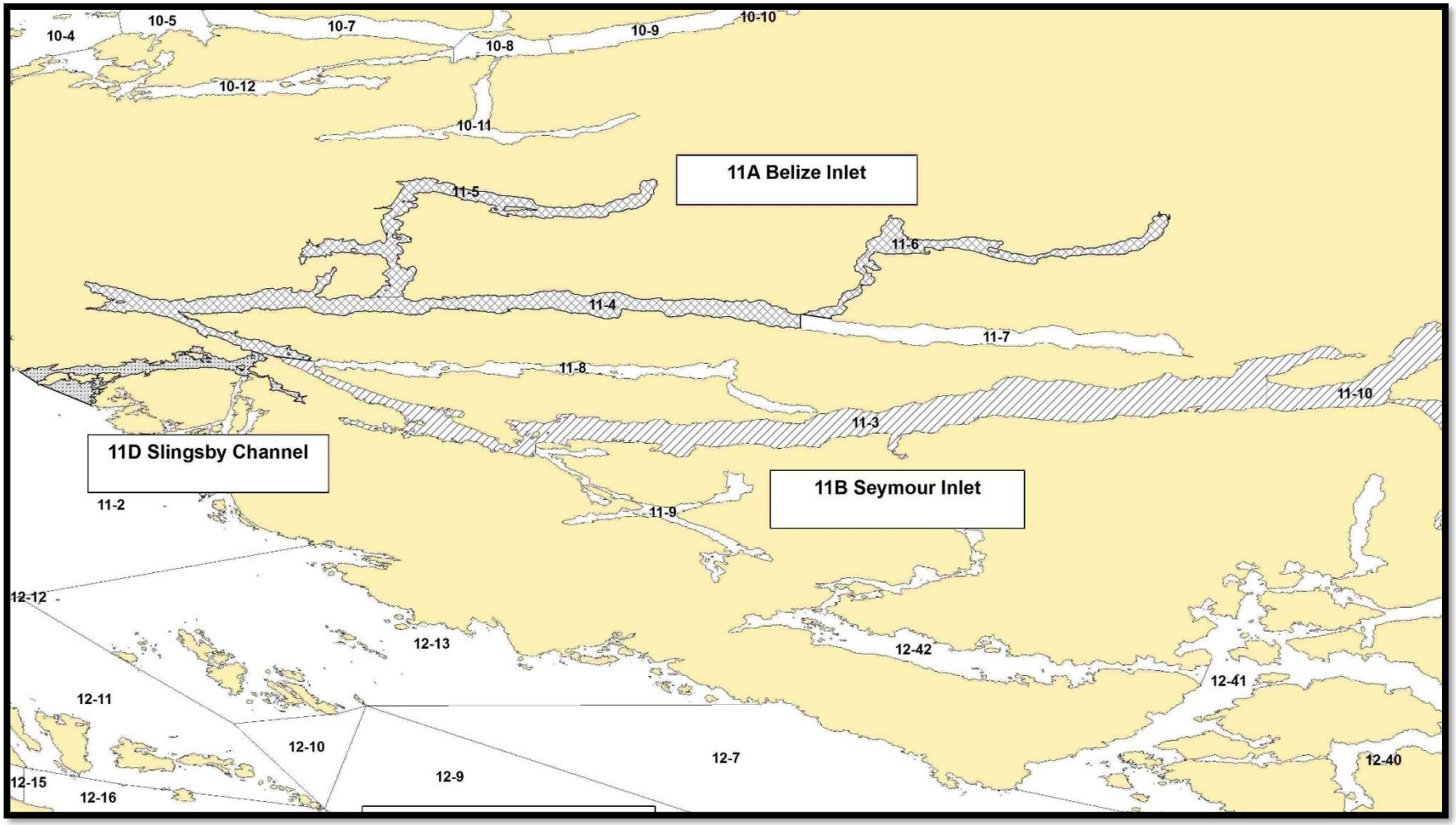


Figure 11. QMA 11A Belize Inlet: Subareas 11-4, 11-5, 11-6. QMA 11B Seymour Inlet: Subareas 11-3 and 11-10. QMA 11D Slingsby Channel: Portion of Subarea 11-2. For description of closures please see Appendix 1 section 5.

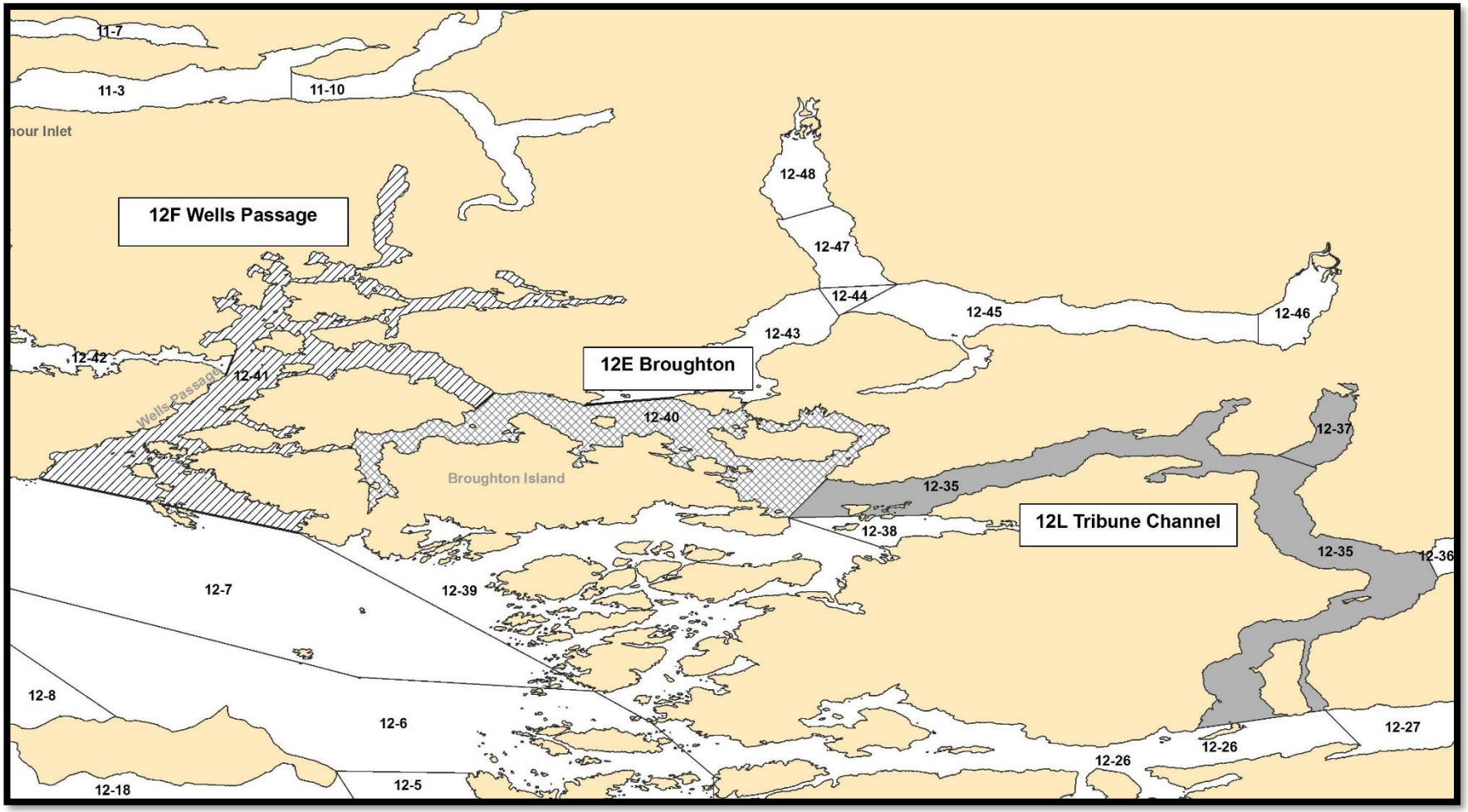


Figure 12. QMA 12E Broughton: Subarea 12-40. QMA 12F Wells Passage: Subarea 12-41. QMA 12L Tribune Channel: Subareas 12-35 and 12-37. For description of closures please see Appendix 1 section 5.

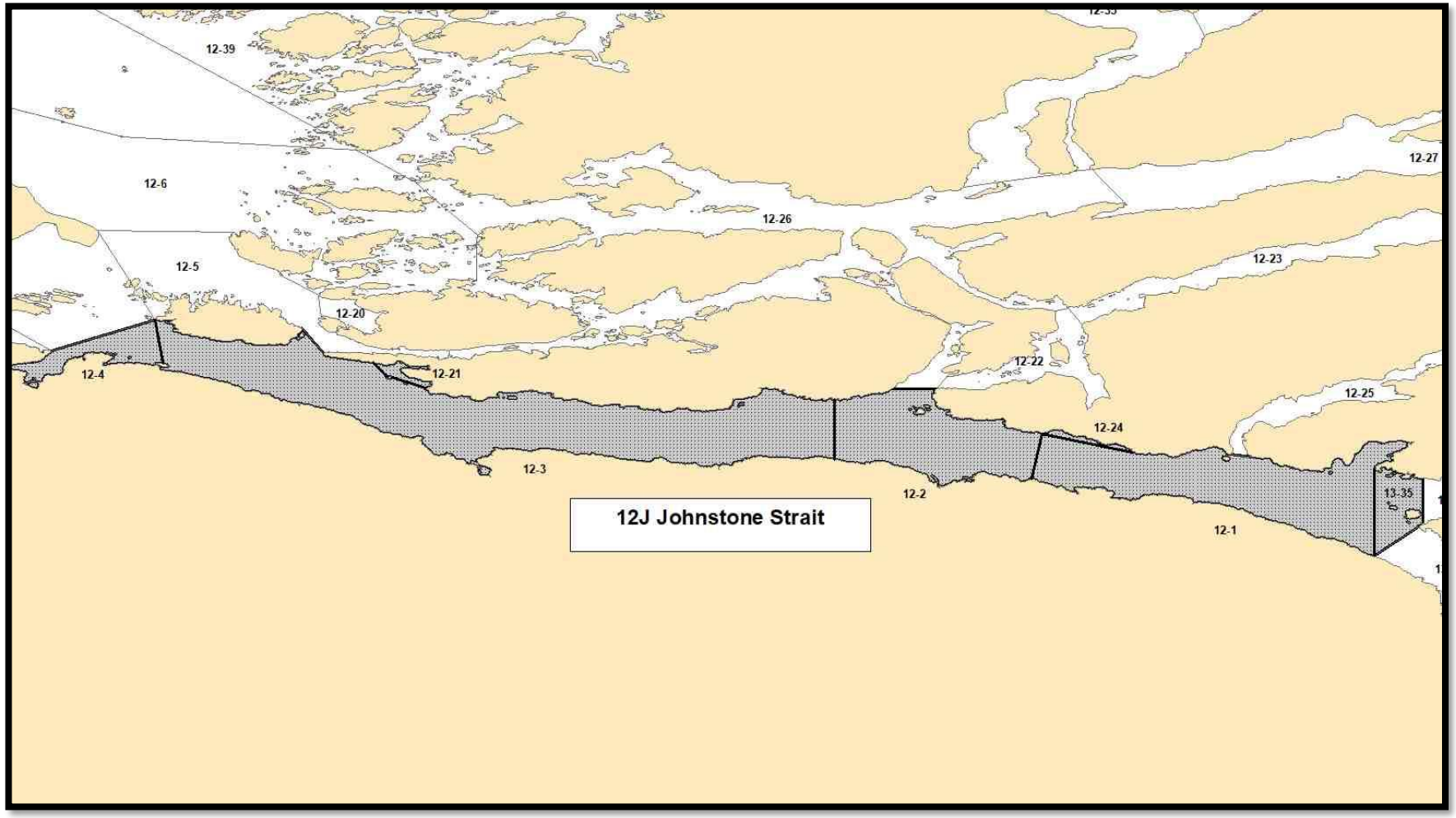


Figure 13. QMA 12J Johnstone Strait: Subareas 12-1; portion of Subarea 12-2; Subareas 12-3, 12-4, 12-21, 12-24; portion of 13-35. For description of closures please see Appendix 1 section 5.

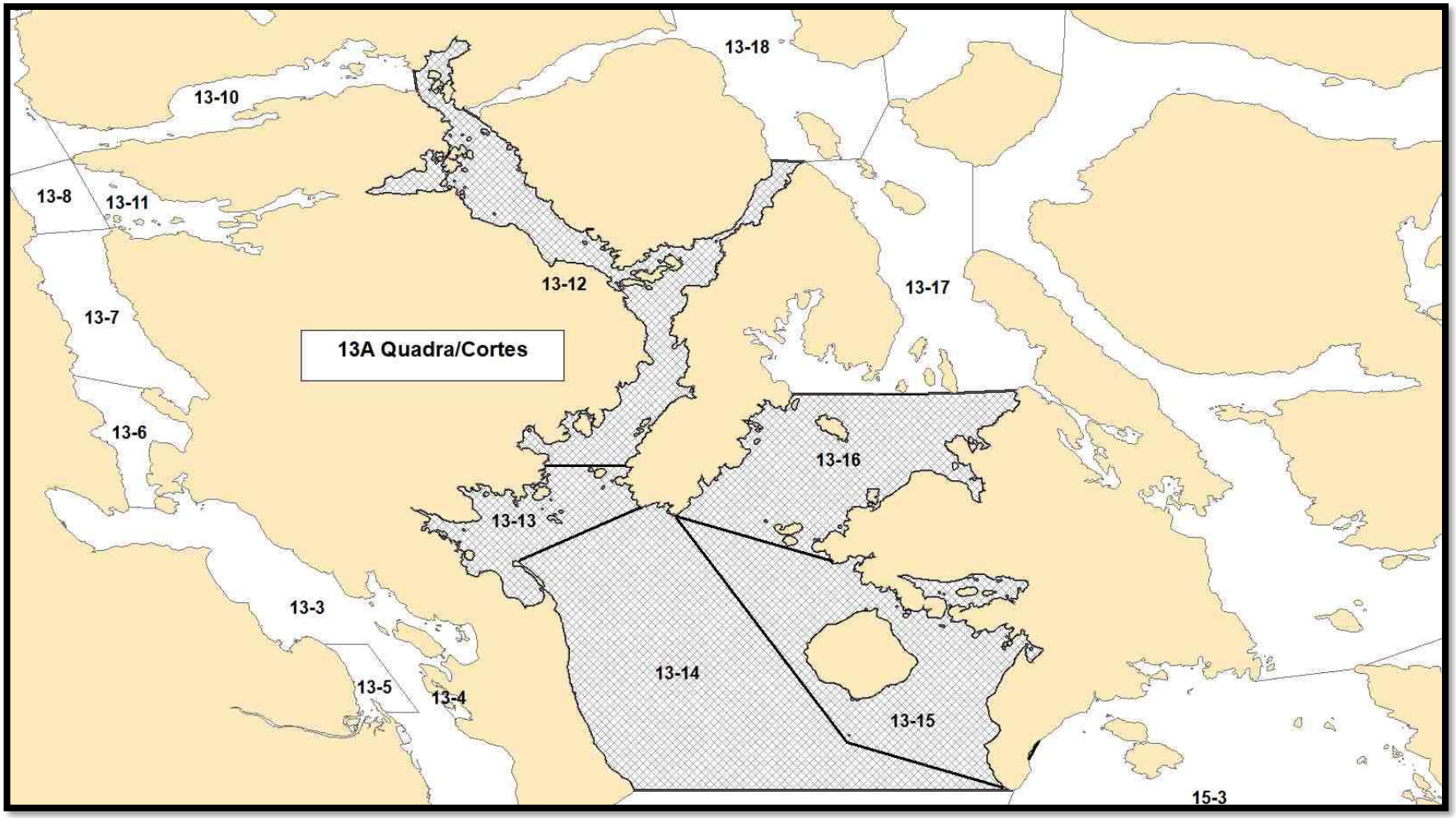


Figure 14. QMA 13A Quadra/Cortes: Subareas 13-12 to 13-16. For description of closures please see Appendix 1, Section 5.

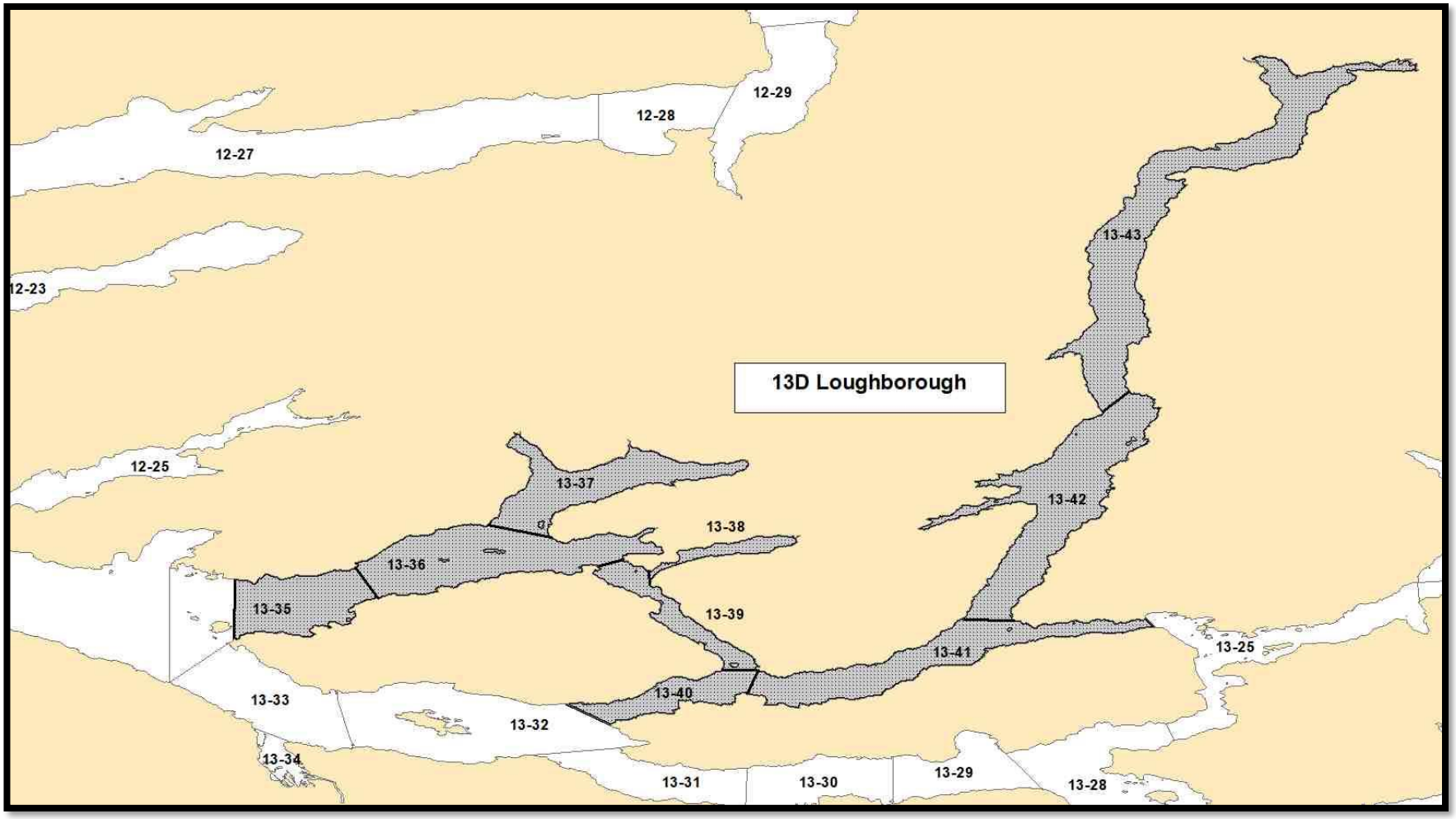


Figure 15. QMA 13D Loughborough: Portion of Subarea 13-35; Subareas 13-36 to 13-43. For description of closures please see Appendix 1, Section 5.

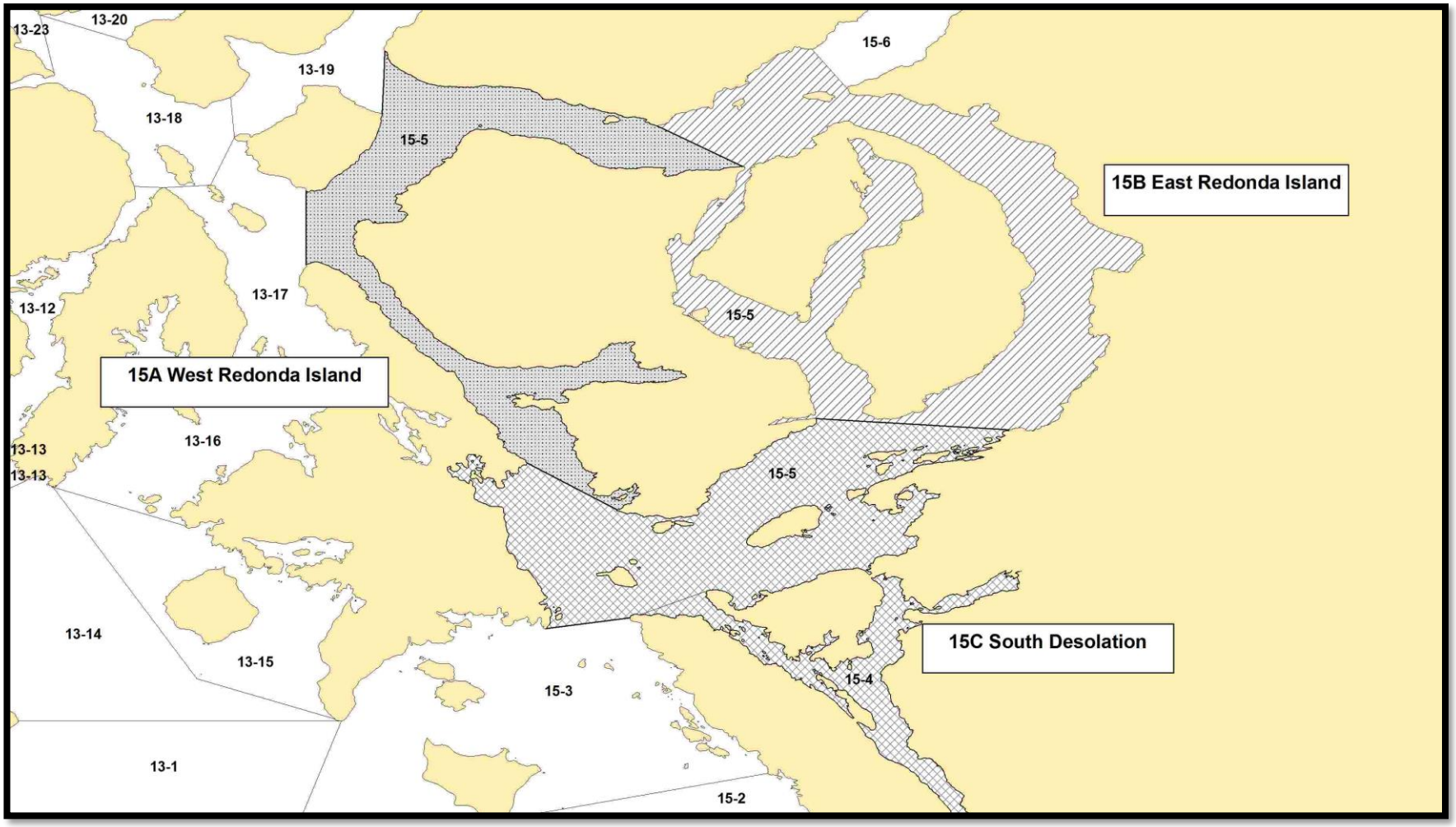


Figure 16. QMA 15A West Redonda Island: Portion of Subarea 15-5. QMA 15B East Redonda Island: Portion of Subarea 15-5. QMA 15C South Desolation: Subarea 15-4; Portion of Subarea 15-5. For description of closures please see Appendix 1, Section 5

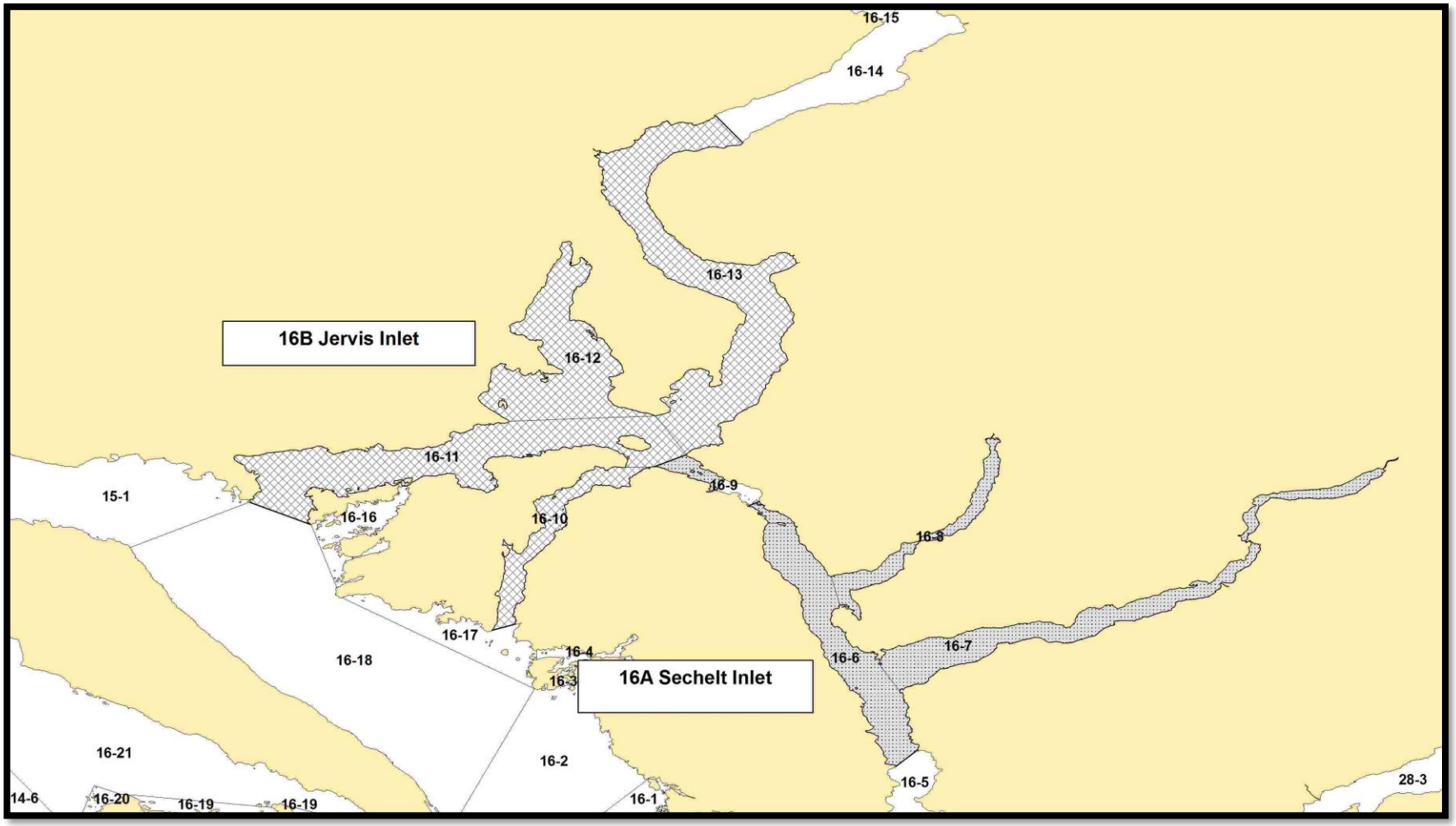


Figure 17. QMA 16A Sechelt Inlet: Subareas 16-6 to 16-8; Portion of Subarea 16-9 (closed within Skookumchuck Provincial Park). QMA 16B Jervis Inlet: Subareas 16-10 to 16-13. For description of closures see Appendix 1, Section 5.

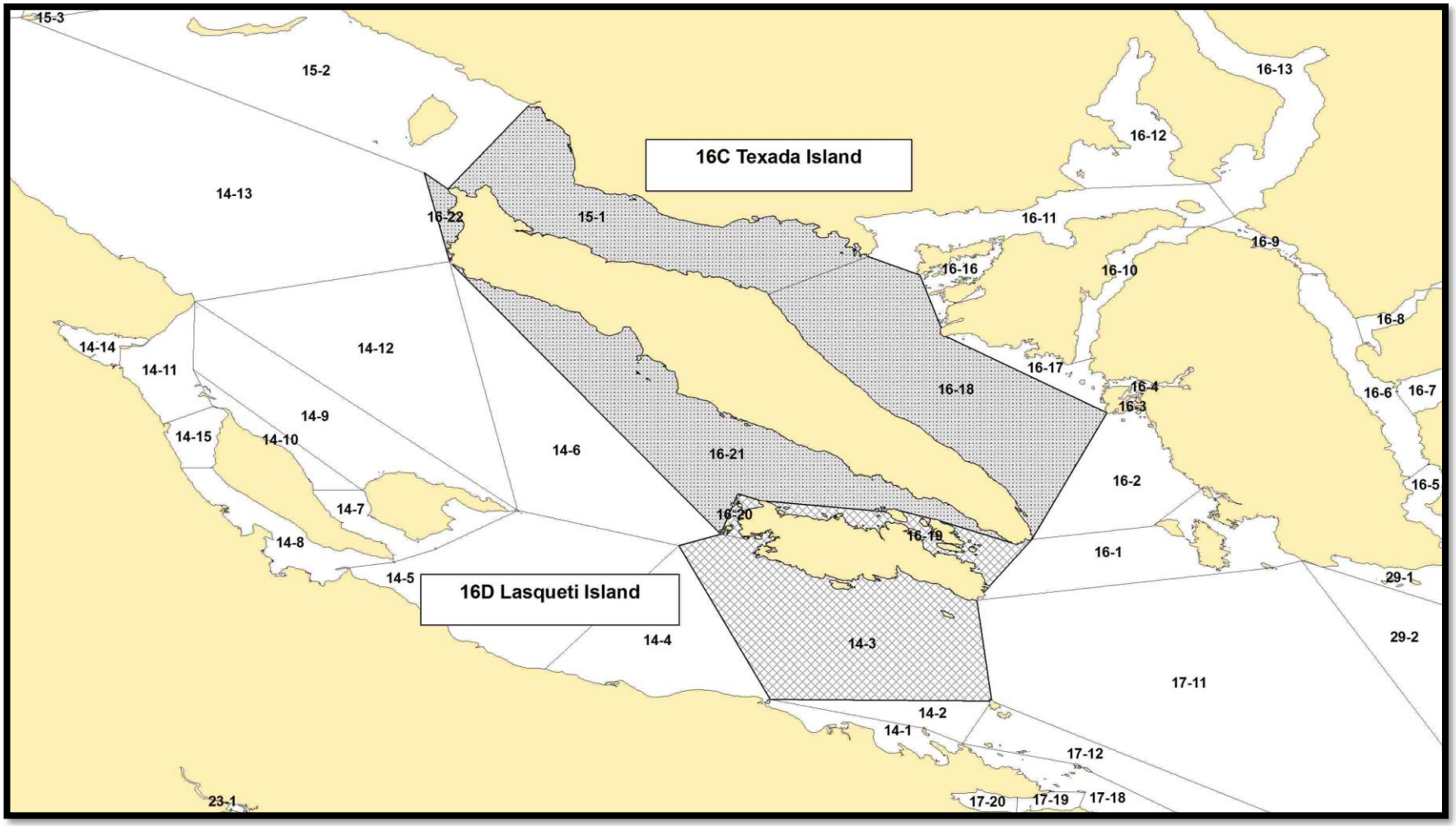


Figure 18. QMA 16C Texada Island: Subareas 15-1. 16-18, 16-21, 16-22. QMA 16D Lasqueti Island: Subareas 14-3, 16-19 and 16-20. For description of closures please see Appendix 1, Section 5.

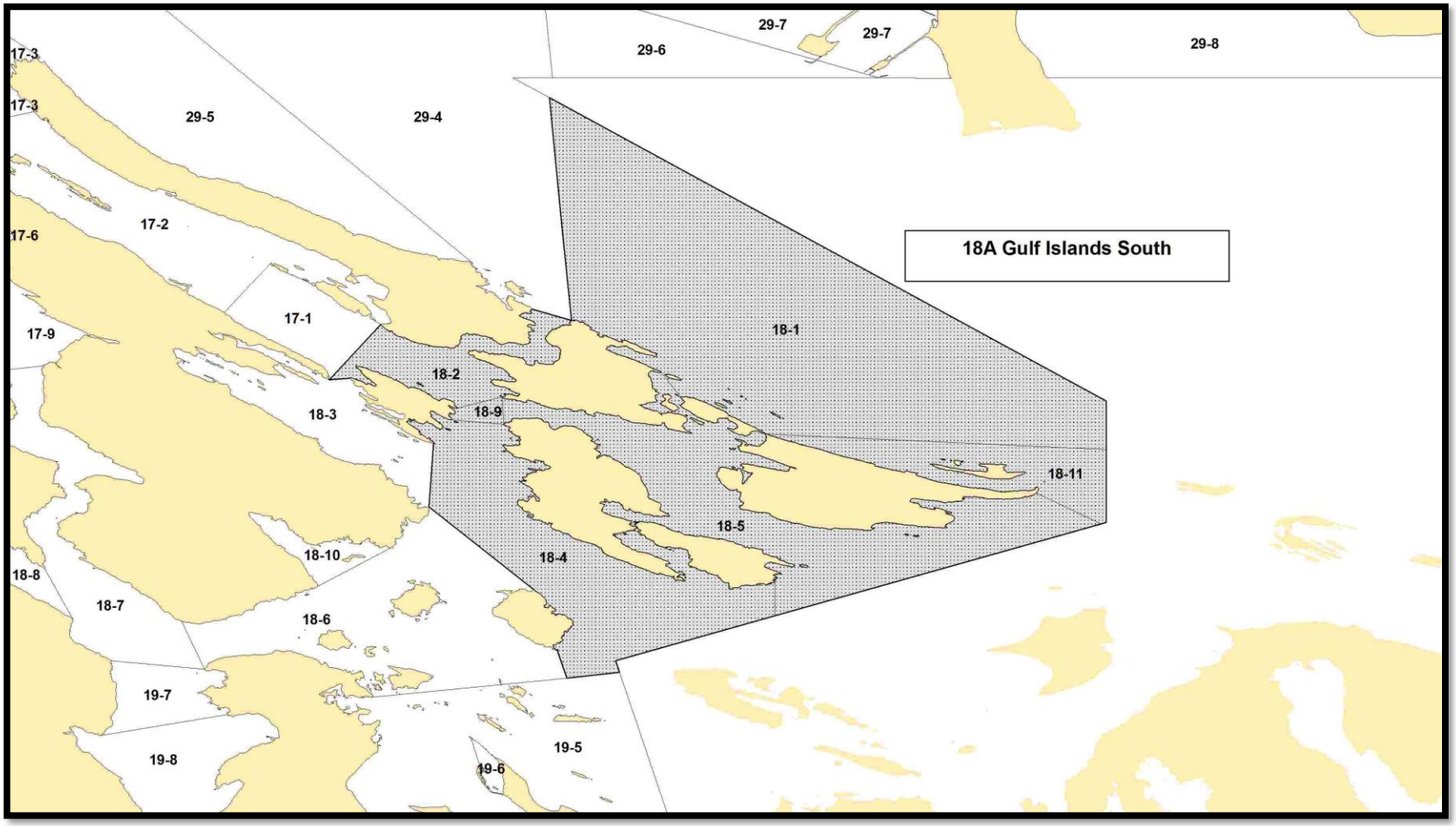


Figure 19. <u>QMA 18A Gulf Islands South:</u> Subareas 18-1, 18-2, 18-4, 18-5, 18-9, 18-11. For description of closures please see Appendix 1, Section 5.

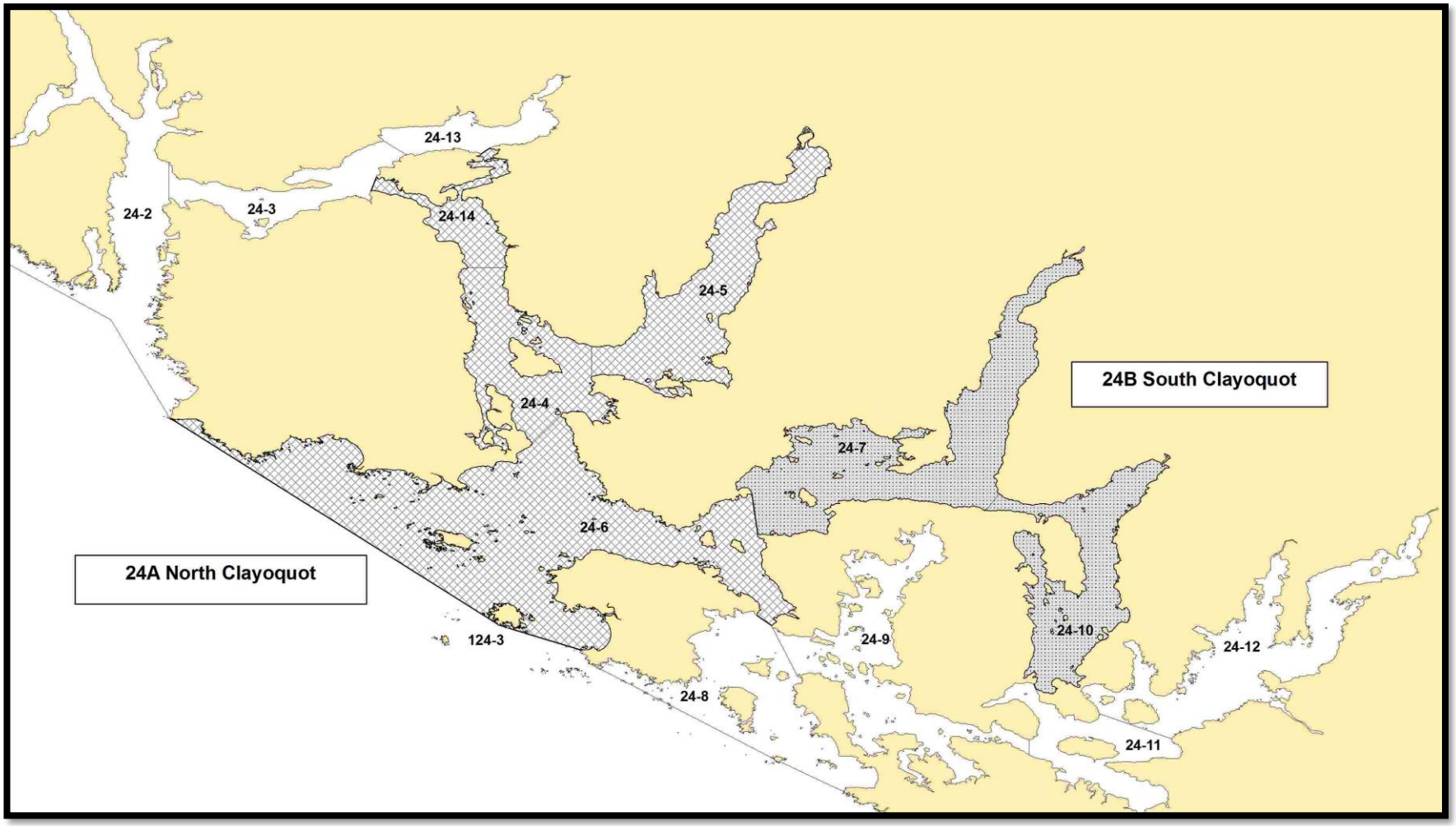


Figure 20. QMA 24A North Clayoquot: Subareas 24-4 to 24-6 and 24-14. QMA 24B South Clayoquot: Subareas 24-7 and 24-10. For description of closures please see Appendix 1, Section 5.

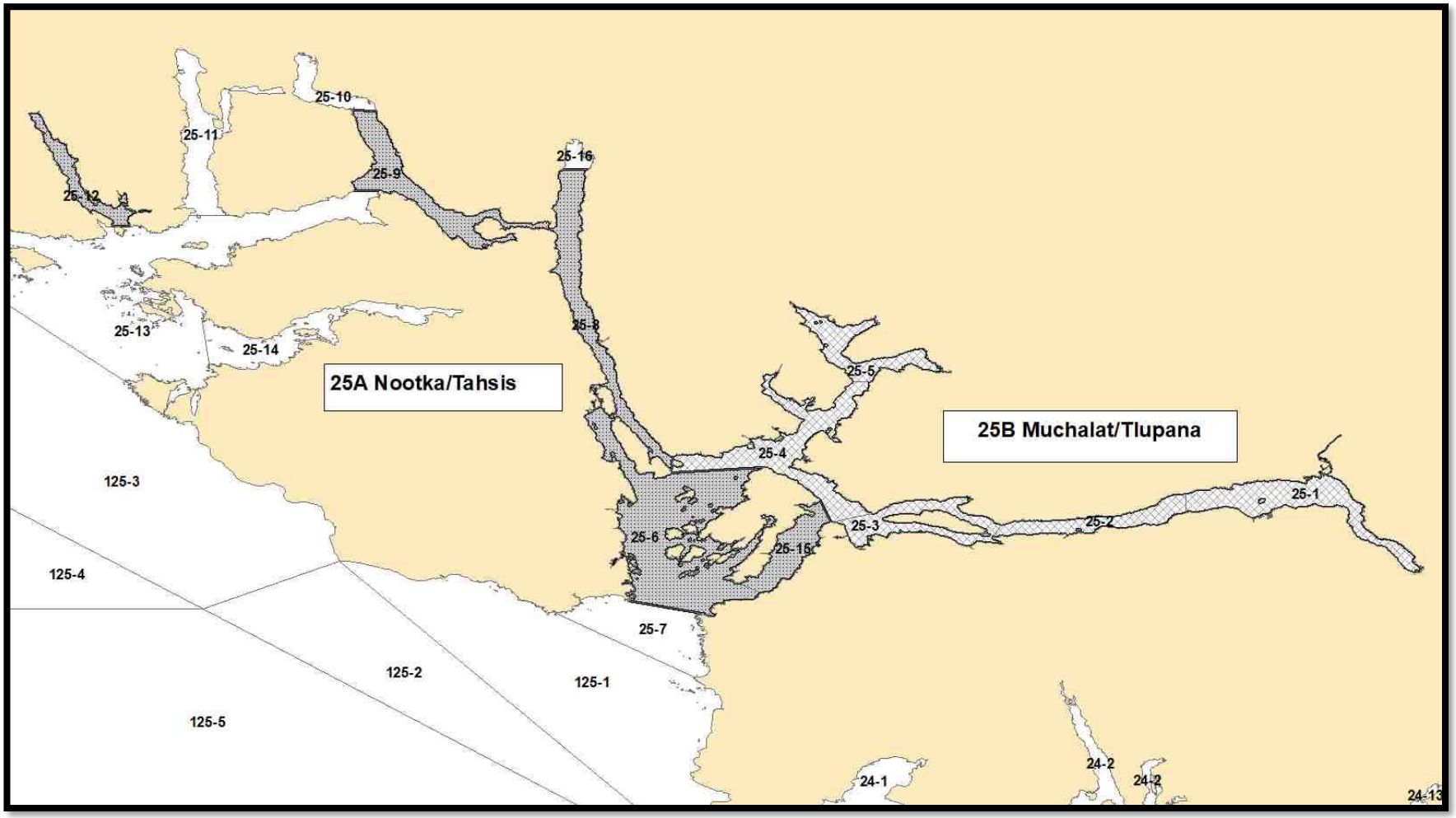


Figure 21. QMA 25A Nootka/Tahsis (NEW): Subareas 25-6, 25-8, 25-9, 25-12, 25-15. QMA 25B Muchalat/Tlupana (NEW): Subareas 25-1 to 25-5. For description of closures please see Appendix 1, Section 5.

Appendix 11: Example of Sea Cucumber Conditions of Licence

This example of conditions of licence is provided for information only. These conditions of licence are generic and may not be the same as those provided when a licence is issued. The actual conditions of licence will be attached to the licence issued by the National Online Licensing System (NOLS).

CONDITIONS OF [YEAR] SEA CUCUMBER LICENCE

Licence Period: October 1, [YEAR] to September 30, [YEAR]

Authority

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

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

Also, it is the responsibility of individual fishers to be informed of, and comply with, the *Fisheries Act* and the Regulations made thereunder, in addition to these Conditions.

For information on management of the Sea Cucumber fishery obtain a copy of the [Year] Sea Cucumber - Integrated Fisheries Management Plan (IFMP) from a Pacific Fishery Licensing Unit Office. The IFMP is intended for general information purposes only. Where there is a discrepancy between the IFMP and the *Fisheries Act* and Regulations or these Conditions, the *Fisheries Act* and Regulations and these Conditions prevail.

Definitions:

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

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

"Department" means the Department of Fisheries and Oceans.

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

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

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

"Quota Management Area" means those areas enumerated and described in Appendix 1 of the [Year] Sea Cucumber – Integrated Fisheries Management Plan.

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

"validated" means Sea Cucumber have been weighed by an observer and the weight entered into the Sea Cucumber Validation & Harvest Logbook (see sections 10 and 12) or an alternative log approved by the Department of Fisheries and Oceans.

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

1. Species of fish permitted to be taken:

Sea Cucumber (*Apostichopus californicus*, formerly *Parastichopus californicus*)

2. Licence Expiry Date:

This licence expires on September 30, [Year].

3. Quantities permitted to be taken:

The maximum quantity of Sea Cucumber authorized to be taken under this licence shall not exceed XX tonnes (XX lb.) of split and eviscerated sea cucumber harvested from within the area set out in this licence subject to all applicable regulations.

4. Waters in which fishing is permitted:

Area of fishing is as set out in this licence.

5. Fishing gear permitted to be used:

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

6. Fishing multiple Quota Management Areas

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

7. The type and size of containers to hold or transport Sea Cucumber and the marking of such containers:

(1) All Sea Cucumber delivered to designated landing ports or transhipped to another vessel shall be placed in containers which are labelled. The label must be waterproof and shall provide the following information written in water resistant ink:

(a) vessel name and vessel registration number;
(b) licence tab number;
(c) harvest date;

(d) harvest Subarea;
(e) location of catch; and
(f) common product name, i.e. Sea Cucumber.

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

8. Transhipment:

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

(1) all Sea Cucumber are in containers and tagged as per section 7;

(2) the number of containers are recorded in the log;

(3) the "packer weight", (determined by adding the weight of the Sea Cucumber to the weight of the container), is recorded in the log; and

(4) a copy of the log accompanies the Sea Cucumber to port; and

(5) the Sea Cucumber is landed at one of the locations listed in section 9 and validated by an observer.

9. Locations permitted for the landing of Sea Cucumber:

Sea Cucumber must be landed at one of the following ports:

(1) For fisheries in waters off the east coast of Vancouver Island: Port Hardy, Port McNeill, Herriot Bay, French Creek, Powell River, Lund, Campbell River, Kelsey Bay, Sechelt, Egmont, Pender Harbour and Sidney.

(2) For fisheries in waters off the west coast of Vancouver Island: Tofino, Ucluelet, Port Alberni and Gold River.

(3) For fisheries in waters north of Cape Caution: Prince Rupert, Port Edward, Queen Charlotte City, Moresby Camp, Klemtu, Bella Bella, and Port Hardy.

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

10. Validation:

(See Explanatory Note after section 14)

(1) All Sea Cucumber harvested or removed from the sea bed floor must be validated at the point and time the fish are landed.

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

(3) Weights will be recorded as split and eviscerated weights. If the whole product is landed then a conversion factor of 2.73 will be used to convert to split weight.

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

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

11. Oral Reports:

(1) Hail-out Report

Not less than 24 hours before a fishing trip, the vessel master shall make a Hail-out Report by contracting the designated Sea Cucumber service provider at (800) 775-5505 and report the following information:

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

(2) Upon failure to arrive at fishing location within 24 hours of time stated in subsection 11(2), the vessel master shall report the following information to the designated Sea Cucumber service provider:

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

(3) At least 24 hours prior to moving to a new Quota Management Area, the vessel master shall report the following information to the designated Sea Cucumber service provider:

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

(4) Cancellation of fishing trip:

Should the vessel master decide not to fish after having made a Hail-out Report, the vessel master shall make a Hail-in Report by contacting the Sea Cucumber service provider to indicate that no fishing occurred within 24 hours of the time stated in subsection 11(1).

(5) Hail-in Report:

(a) Where the vessel is not landing Sea Cucumber (i.e. Sea Cucumber has been transhipped at sea):

Not more than 24 hours after a fishing trip, the vessel master shall make a Hail-in Report by contacting the designated Sea Cucumber service provider at (800) 775-5505 to report the following information:

(i) vessel name, vessel master's name, and vessel registration number;
(ii) species fished (i.e. Sea Cucumber);
(iii) Subarea(s) that were fished; and
(iv) time that fishing stopped.

(b) Where the vessel is landing Sea Cucumber ashore *:

At least 24 hours prior to landing Sea Cucumber, the vessel master shall make a Hail-in Report by contacting the designated Sea Cucumber service provider at (800) 775-5505 to report the following information:

(i) vessel name, vessel master's name, and vessel registration number;
(ii) species to be landed (i.e. Sea Cucumber);
(iii) name of the designated landing port and location therein where the catch shall be landed;
(iv) anticipated time of landing;
(v) name of fish processor or buyer that is buying or transporting the catch; and
(vi) if applicable, the method of transporting the catch to a fish processor.

* If weather results in a delay in arrival time or an earlier arrival time the observer must be contacted as soon as possible. Contact numbers for observers are available by calling (800) 775-5505.

12. Harvest Logs and Chart Data:

(See Explanatory Note after section 14)

It is a condition of this licence that the licence holder ensures that harvest log and chart information is received by Fisheries and Oceans Canada Shellfish Data Unit.

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

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

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

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

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

(6) The vessel master shall provide a chart record for each day's harvest operations, indicating the locations, to the service provider contracted by the Pacific Sea Cucumber Harvesters Association (PSCHA), within one month of the harvesting having occurred.

(a) The chart must be marked with:
(i) the vessel registration number;
(ii) the licence tab number; and
(iii) the validation I.D. numbers.

The validation I.D. number is the unique page number assigned to each validation page of the Sea Cucumber Validation and Harvest Logbook.

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

(c) The information for each day's harvest operations shall be recorded on the chart record no later than midnight of that day and provided to the service provider within one month of that day's harvest operations.

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

(8) The completed log pages (business copy), and electronic copy of the log, shall be available within 28 days following the end of each month in which fishing occurred, to:

Fisheries and Oceans Canada
Shellfish Data Unit
Pacific Biological Station
Hammond Bay Road
Nanaimo, BC V9R 5K6
Tel: (250) 756-7022 or (250) 756-7306

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

13. Reporting catch on fish slips:

(1) A complete and accurate written report of all fish and shellfish caught and retained under the authority of this licence shall be submitted by the vessel master on a fish slip.

(2) The record shall contain the following information:

(a) buyer's name, address and telephone number;

(b) harvester's name and address;

(c) processing plant name;

(d) landing date;

(e) vessel name and VRN;

(f) gear used to harvest the fish;

(g) Area(s) where fishing occurred and days spent fishing in each Area;

(h) the individual species of each fish sold or offloaded;

(i) the description of the product or landed form of each species sold or offloaded;

(j) the weight of each species sold or offloaded;

(k) the price paid for each species sold; and

(l) the total value of each species sold or offloaded.

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

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

Fisheries and Aquaculture Management Branch

FM Data Unit

Suite 200 – 401 Burrard Street

Vancouver, BC

V6C 3S4

Fish slips may be downloaded and printed at

http://www.dfo-mpo.gc.ca/fisheries-peches/sdc-cps/fishslips-carnets/index-eng.html

Fish slip books may also be ordered from the printer at user cost at http://www.dfo-mpo.gc.ca/fisheries-peches/sdc-cps/fishslips-carnets/index-eng.html

Phone (604) 666-2716 for more information.

14. Workers' Compensation Board Requirements:

All Sea Cucumber divers shall be in possession of a valid commercial dive certification or a Workers' Compensation Board Seafood Harvesting Diving Certificate.

Explanatory Note - Harvest Log, Chart Data, and Validation: The Sea Cucumber Validation & Harvest Logbook issued by the service provider contracted by the Pacific Sea Cucumber Harvesters' Association is approved for both form and content by the Shellfish Data Unit. This service provider will provide, for a fee, the logbook and coding, data entry, electronic chart data capture and validation services.

APPENDIX 12: FISHING VESSEL SAFETY

TABLE OF CONTENTS

1. OVERVIEW – FISHING SAFETY

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

In the federal government, responsibility for shipping, navigation, and vessel safety regulations and inspections lies with TC; emergency response with the Canadian Coast Guard (CCG) and DFO has responsibility for management of the fisheries resources. In BC, WorkSafeBC also regulates health and safety issues in commercial fishing. This includes requirements to ensure the health and safety of the crew and safe operation of the vessel. DFO (Fisheries and Aquaculture Management [FAM] and CCG) and TC through a Memorandum of Understanding (MOU, 1996) have formalized cooperation to establish, maintain and promote a safety culture within the fishing industry.

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

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

Education and training programs

Marine emergency duties training

Fish Safe – Stability Education Program & 1 Day Stability Workshop

Fish Safe – SVOP/Safe on the Wheel Course

Fish Safe – Safest Catch Program – **FREE** for BC commercial fishers

First Aid training

Radio Operators Course

Fishing Masters Certificate training

Small Vessel Operators Certificate training

Publications:

- Transport Canada Publication TP 10038 *Small Fishing Vessel Safety Manual* (can be obtained at Transport Canada Offices from their website at: http://www.tc.gc.ca/eng/marinesafety/tp-tp10038-menu-548.htm

- Amendments to the *Small Fishing Vessel Inspection Regulations* (can be obtained from: http://www.gazette.gc.ca/rp-pr/p2/2016/2016-07-13/html/sor-dors163-eng.php)
- Gearing Up for Safety – WorkSafeBC
- Safe At Sea DVD Series – Fish Safe
- Stability Handbook – Safe at Sea and Safest Catch – DVD Series
- Safest Catch Log Book
- Safety Quick

For further information see: www.tc.gc.ca/eng/marinesafety/menu.html

www.fishsafebc.com

www.worksafebc.com

2. IMPORTANT PRIORITIES FOR VESSEL SAFETY

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

2.1 Fishing Vessel Stability

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

Fishing vessel owners are required to develop detailed instructions addressing the limits of stability for each of their vessels. These instructions must include detailed safe operation documentation kept on board the vessel. Examples of detailed documentation include: engine room procedures; maintenance schedules to ensure watertight integrity; and instructions for regular practice of emergency drills.

The *Fishing Vessel Safety Regulations* currently require, with certain exceptions, a full stability assessment for vessels between 15 and 150 gross tons that do not exceed 24.4 meters in length and include fishing vessels involved in the catch of herring or capelin. In 2017, Transport Canada Marine Safety (TC) issued Ship Safety Bulletin (SSB) No. 03/2017 announcing the coming into force of the *New Fishing Vessel Safety Regulations*. The initial regulations were published in the Canada Gazette Part II on July 13, 2016 and came into force on July 13, 2017. The bulletin includes important information on changes to requirements for Written Safety Procedures, Safety Equipment, and Vessel Stability.

As of July 13, 2017, the following fishing vessels must successfully undergo a stability assessment by a competent person:

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

A fishing vessel that is not required to undergo a stability assessment shall have adequate stability to safely carry out the vessel's intended operations. Guidelines are still being developed 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 issued 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 2002 and found a variety of factors that effected the vessel's stability were identified as contributing factors in vessels capsizing, such as with: M02W0102 - *Fritzi-Ann*, 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* and M15P0286 - *Caledonian* .

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.

In 2013, Fish Safe developed a code of best practices for the food and bait herring fishery and the prawn fishery: 'Food and Bait – Best Practice Reminders'; 'Prawn Industry - Best Industry Recommended Practices.' 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.

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.

Between 2011 and 2015 the TSB investigated 17 fishing vessel accidents which resulted in 17 fatalities. The reports findings highlighted the lack of safety drills and safety procedures and practices.

The Safest Catch program, delivered by Fish Safe and **free** to BC commercial fishers, includes comprehensive practice of drills such as abandon ship, man overboard, and firefighting drills.

2.3 Cold Water Immersion

Drowning is the number one cause of death in BC's fishing industry. Cold water is defined as water below 25 degrees Celsius, but the greatest effects occur below 15 degrees C. BC waters are usually below 15 degrees C. Normal body temperature is around 37 degrees Celsius; cold water rapidly draws heat away from the body. The effects of cold water on the body occur in four stages: cold shock, swimming failure, hypothermia, and post-rescue collapse. Know what to do to prevent you or your crew from falling into the water and what to do if that occurs. More information is available in the WorkSafe Bulletin *Cold Water Immersion* (available from the WorkSafeBC website at www.worksafebc.com/en) where the need to don PFD's while working in or near the water during fishing operations is clearly emphasized.

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 treads 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 meters 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 center (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 meters 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 meters or more in length; or

d) where the length of the vessel or object being towed or pushed by the ship is twenty meters or more in length.

Exceptions include:

a) a ship towing or pushing inside a log booming ground,

b) a pleasure yacht *less than* 30 meters in length, and

c) a fishing vessel that is *less than* 24 meters in length and not *more than* 150 tons gross.

More detailed information on VTS can be obtained by calling (250) 363-8904 or from the Coast Guard website: http://www.ccg-gcc.gc.ca/eng/CCG/Home.

2.4.4 Buddy System

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

3. WORKSAFEBC

WorkSafeBC exercises jurisdiction over workplace health and safety, including the activities of crews of fishing vessels. Commercial fishing, diving, and other marine operations are subject to the provisions of the *Workers Compensation Act (WCA)* and requirements in Part 24 of the Occupational Health and Safety Regulation (OHSR). Many general hazard sections of the OHSR also apply to commercial fishing and other marine operations. For example, Part 8: Personal Protective Clothing and Equipment addresses issues related to safety headgear, safety foot wear, and personal floatation devices (PFDs). Part 15 addresses issues related to rigging; Part 5 addresses issues of exposure to chemical and biological substances; and Part 3 addresses training of young and new workers, first aid, and accident investigations. Part 3 of the *WCA* also defines the roles and responsibilities of owners, employers, supervisors, and workers.

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

For further information, contact an Occupational Safety Officer:

Mark Lunny	Courtenay	(250) 334-8732
Cody King	Courtenay	(250) 334-8733
Gregory Matthews	Courtenay	(250) 334-8734
Jessie Kunce	Victoria	(250) 881-3461

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

For information on projects and initiatives related to commercial fishing health and safety please contact Tom Pawlowski (604) 233-4062 or by email: tom.pawlowski@worksafebc.com

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/Safe on the Wheel Course is designed to equip crew with the skills they need to safely navigate during their wheel watch. The Safest Catch Program, along with fisher-trained Safety Advisors, is designed to give fishers the tools they need to create a vessel specific safety management system.

Fish Safe is managed by Ryan Ford, Program Coordinator John Krgovich, interim Program Assistant Yana Ingelsman, bookkeeper Rhoda Huey 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). The advisory committee meets quarterly to discuss safety issues and give direction to Fish Safe in the development of education and tools for fish harvesters.

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

Ryan Ford

Program Manager — Cell: (604) 739-0540

Fish Safe — Office: (604) 261-9700

#100, 12051 Horseshoe Way — 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.

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

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

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

The other two recommendations address the most basic step that fishers can take: wearing a personal flotation device. Here in British Columbia, roughly 70 percent of all fishing-related fatalities in the past decade came while not wearing a PFD. Yet many fishers still don't wear them. Regulations currently require that PFDs be worn only if fishers identify a risk, however; you never know when you could end up in the water. So the TSB is recommending to TC and WorksafeBC to require persons to wear suitable personal flotation devices at all times when on the deck of a commercial fishing vessel or when on board a commercial fishing vessel without a deck or deck structure and that programs are developed to confirm compliance.

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

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 a brief video about some of the issues on the TSB's recent safety Watchlist, visit:

http://www.tsb.gc.ca/eng/medias-media/communiques/autres-other/2018/20181029.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.

Glenn Budden, Investigator, Marine - Fishing Vessels
Transportation Safety Board of Canada
4 - 3071 No. 5 Road
Richmond, BC, V6X 2T4
Telephone: 604-666-2712
Cell: (604) 619-6090
Email: glenn.budden@tsb.gc.ca

APPENDIX 13: SEA CUCUMBER FISHERY CONSULTATION

SEA CUCUMBER SECTORAL COMMITTEE AND RESEARCH SUBCOMMITTEE

A consultative process exists for the Sea Cucumber fishery and is a major part of the planning for the fishery. The primary consultative body for Sea Cucumbers is the Sea Cucumber Sectoral Committee. This committee includes representatives from Fisheries and Oceans Canada, commercial vessel owners, processors, First Nations, BC Ministry of Agriculture and Lands, and recreational fish harvesters. Members of the Pacific Sea Cucumber Harvesters Association (PSCHA) represent commercial fish harvesters on this committee.

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

www.pac.dfo-mpo.gc.ca/consultation/shell-crust/scsc-csh/index-eng.html

Members of the PSCHA provide valuable information and observations with regards to the harvest plan. All advice, where practical and useful, is considered.

The draft IFMP incorporates new science advice and all practical advice on quota options, and is made available to all interested parties: PSCHA, First Nations, recreational organizations, DFO (Science Branch, Conservation and Protection, Commercial Licensing, the Oceans Directorate, the Aquaculture Division, Treaty and Aboriginal Policy Directorate, Policy Branch), other Federal agencies such as CFIA, ECCC and the Province (Ministry of Agriculture, Food and Fisheries or MAFF) for review and comment.

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

APPENDIX 14: ADAPTIVE ROTATIONAL FISHING STRATEGY. 2020 TO 2022 – YEAR 1.

The commercial Sea Cucumber fishery has utilized a rotational fishing strategy, referred to as an Adaptive Rotational Fishing Strategy (ARFS), since the 2011 fishing season. The ARFS will continue for a fourth cycle beginning with the 2020 fishing season. This strategy needs to be adaptive since the process of reopening sections of coastline that were closed for the Adaptive Management Plan has not yet been completed. An adaptive strategy will also allow for change when new information becomes available. Biomass surveys will continue to be conducted in 2020 and beyond and may lead to the reopening of more sections of coastline and the creation of additional Quota Management Areas (QMAs). As available quota changes in future years, many aspects of the commercial harvest plan will be re-examined.

After reviewing the first two cycles of the ARFS, a number of changes were implemented. Some QMAs in the ECVI licence area have returned to an annual harvest strategy based upon a recommendation from the PSCHA. These areas have naturally small Sea Cucumbers which are not desired by Sea Cucumber processors and buyers. The PSCHA hopes to harvest small amounts of Sea Cucumbers out of these areas every year to avoid having certain years in the ARFS where there are more small Sea Cucumbers harvested than others. The WCVI has remained as an annual fishery since the start of the ARFS not due to concerns about Sea Cucumber size or abundance, but because there is currently not enough quota available there to facilitate a rotational-style fishery. If additional biomass surveys in the future lead to more coastline reopening for harvest in the WCVI, this may change.

In 2018 the harvest schedule of several QMAs was changed in order to balance the TAC in the North Coast, Central Coast and ECVI licence areas over the three years of the ARFS. This allows a static number of licences in each licence area and will reduce the amount of licence movement between licence areas each season. In 2020 several low productivity QMAs are being rested which is why the Central Coast TAC has dropped. The PSCHA supports a temporary drop to the coastwide TAC in 2020 to give these QMAs a longer rest.

For the 2020 to 2022 ARFS, each QMA in the north and central coast licence areas will be harvested once every three years. In the ECVI and WCVI licence areas some QMAs will be harvested once every three years and some will be harvested on an annual basis. See Table 1 for the planned harvest schedule for each QMA.

Table 1. Quota Management Areas as of 2020.

Last time harvested	Next possible harvest	Quota Management Area	Name	Description (by Subarea)
North Coast Licence Area (NC)				
2012	TBA	2A	Louise Island	2-6
2017	**2020**	3A	Work Channel	3-6

Last time harvested	Next possible harvest	Quota Management Area	Name	Description (by Subarea)
2017	**2020**	3B	Portland Inlet	3-7
2017	**2020**	3C	Steamer Pass	3-8, 3-10
2017	**2020**	3D	Pearse Canal	3-3, ptn 3-11
2017	**2020**	4A	West Dundas Island	3-1, 4-1
2017	**2020**	4B	East Dundas Island	Ptn 4-5
2015	2021	4C	North Porcher Island	Ptn 4-2, 4-3, 4-4, ptn 4-9 and ptn 4-12
2015	2021	5A	West Banks Island	5-20 to 5-22
2015	2021	5D	South Porcher Island	5-2, 5-4, 5-5, 5-7, 5-11 and 5-12
2019	2022	5E	Anger Island	5-16
2019	2022	5F	Principe North	5-13 to 5-15
2019	2022	5G	Principe South	5-17 to 5-19
2015	**2020**	5H	Grenville North	5-1, ptn 5-23
2018	2021	5I	Grenville South	Ptn 5-24, ptn 6-28
2019	2022	6A	Gil Island	6-5, 6-26, 6-27
2019	2022	6C	Trutch Island	6-9, 6-10
2017	2021	6D	Laredo Channel	6-11, 6-12, 6-14 to 6-16
2017	**2020**	6E	Princess Royal Channel	Ptn of 6-20; 6-21, 6-22, 6-24
2017	**2020**	6F	West Aristazabal Island	Ptn of 6-13
2018	2021	6G	Kitimat Arm	Ptn of 6-1
2018	2021	6H	Douglas Channel	6-2, 6-6
2018	2021	6I	Gribbell Island	6-3, 6-7
Central Coast Licence Area (CC)				
2019	2022	7B	Milbanke Sound / Seaforth Channel	7-2, 7-3, 7-12, 7-20 to 7-22, 7-24, 7-32
2017	**2020**	7C	Fisher Channel / Dean Channel	7-30, 8-5 to 8-7
2017	TBA	7E	Queens Sound	7-18, 7-19, 7-23, 7-25
2018	2021	7F	Denny Island	7-17
2019	2022	7G	Sheep Pass	Ptn. 7-9; 7-29
2019	2022	7H	Upper Mathieson	Ptn. 7-9, 7-10
2019	TBA	7I	Lower Mathieson	Ptn. 7-9
2019	2022	7J	Spiller	7-13, Ptn. 7-14
2018	2021	7L	Roscoe Inlet	Ptn 7-15; 7-16

Last time harvested	Next possible harvest	Quota Management Area	Name	Description (by Subarea)
2018	2021	7M	Chatfield/Briggs	Ptn 7-14, ptn 7-15
n/a	Annual Harvest	7N	Finlayson North	Ptn. 7-6
n/a	Annual Harvest	7O	Finlayson South	7-4
2018	2021	8B	Calvert Island	8-2, 8-3, 8-16, 9-1, 9-12
2017	TBA	8C	Spider/Kildidt	7-26, 7-27, 7-28
2017	**2020**	8E	Fitz Hugh/Burke South	8-4, ptn. 8-13
2017	**2020**	8F	Burke North	Ptn. 8-13; 8-14
2019	2022	9B	South Rivers Inlet	9-2, 9-3, 9-10, 9-11
2015	**2020**	9C	North Rivers Inlet	Ptn of 9-4; 9-5, ptn 9-6; 9-9
2018	Annual Harvest Possible	10A	Smith Inlet	10-3, 10-4, ptn of 10-5; 10-6 to 10-11, ptn of 10-12
East Coast Vancouver Island Licence Area (ECVI)				
2019	Annual Harvest	11A	Belize Inlet	11-4, 11-5, 11-6
2019	Annual Harvest	11B	Seymour Inlet	11-3, 11-10
2019	Annual Harvest	11D	Slingsby Channel	Ptn of 11-2
2018	2021	11E	Allison Harbour	Ptn of 11-2
2018	2021	12A	N. Queen Charlotte Strait	12-9 to 12-11, 12-13, 12-16
2019	2022	12E	Broughton	12-40
2019	2022	12F	Wells Passage	12-41
2019	2022	12G	SW QC Strait	12-7, 12-8, 12-17
2019	2022	12H	Turnour Island	12-20, ptn 12-26
2019	2022	12I	Gilford Island North	12-38, 12-39
2017	**2020**	12J	Johnstone Strait	12-1, ptn 12-2; 12-3, 12-4, 12-21, 12-24, ptn 13-35
2017	**2020**	12K	Port Harvey	Ptn 12-2; 12-22, 12-23, ptn 12-26
2017	**2020**	12L	Tribune Channel	12-35, 12-37
2017	**2020**	13A	Quadra/Cortes	13-12 to 13-16
2018	2021	13B	N. Area 13	13-17 to 13-20, 13-23
2018	2021	13C	East Thurlow Island	13-7 to 13-9, 13-24 to 13-28
2017	**2020**	13D	Loughborough	Ptn 13-35; 13-36 to 13-43

Last time harvested	Next possible harvest	Quota Management Area	Name	Description (by Subarea)
2018	Annual Harvest	15A	West Redonda Island	Ptn. Of 15-5
2018	Annual Harvest	15B	East Redonda Island	Ptn. Of 15-5
2018	Annual Harvest	15C	South Desolation	15-4, ptn. Of 15-5
2019	Annual Harvest	16A	Sechelt Inlet	16-6 to 16-8, ptn. Of 16-9
2019	Annual Harvest	16B	Jervis Inlet	16-10, ptn. Of 16-11; 16-12, 16-13
2019	Annual Harvest	16C	Texada Island	15-1, 16-18, 16-21, 16-22
2019	Annual Harvest	16D	Lasqueti Island	14-3, 16-19, 16-20
2018	Annual Harvest	18A	Gulf Islands South	18-1, 18-2, 18-4, 18-5, 18-9, 18-11
West Coast Vancouver Island Licence Area (WCVI)				
2019	2022	23A	Southeast Barkley	23-3, ptn. 23-5, ptn. 23-6
2019	Annual Harvest	24A	N. Clayoquot	24-4 to 24-6, 24-14
2019	Annual Harvest	24B	S. Clayoquot	24-7, 24-10
n/a	Annual Harvest	25A	Nootka/Tahsis	25-6, 25-8, 25-9, 25-12, 25-15
n/a	Annual Harvest	25B	Muchalat/Tlupana	25-1 to 25-5

Table 2. Licence Distribution for 2020 to 2022 (at an Individual Quota of 15,000 pounds for 2020 and 16,000 pounds for 2021 and 2022).

	Year 1 (2020)		**Year 2 (2021)**		**Year 3 (2022)**	
Licence Area	**#Licences**	**TAC**	**#Licences**	**TAC**	#Licences	TAC
North Coast	31	465,000	31	496,000	31	496,000
Central Coast	25	375,000	25	400,000	25	400,000
ECVI	24	360,000	24	384,000	23	368,000
WCVI	5	75,000	5	80,000	6	96,000
Total	**85**	**1,275,000**	**85**	**1,360,000**	**85**	**1,360,000**

Note: Years 2 and 3 are subject to change

Fallback Quota

Fallback quota does not increase the TAC of a licence area. The use of fallback quota in 2020 will be considered by DFO only if recommended in writing by the Pacific Sea Cucumber Harvesters Association.

For the 2020 season fallback quota will be available in the East Coast of Vancouver Island and Central Coast licence areas. Fallback quota will be quota available within certain QMAs in which the available commercial quota is higher than the TAC (allocated commercial quota). In some cases additional QMAs may be added for fallback purposes. This is mainly possible in the ECVI licence area where there is more quota available than is needed to facilitate the 2020 to 2022 ARFS. See Appendix 1, section 4 for possible fallback quota options for the 2020 season.

Example of how fallback quota is calculated:

ECVI Licence Area: 24 licences (Total Allowable Catch required: 360,000 lb.)			
Quota Management Area	Available Commercial Quota (lb.)*	Allocated Commercial Quota in 2020 (lb.)*	Quota available for Fallback (lb.)*
11A	25,000	25,000	0
11B	20,000	20,000	0
11D	10,000	10,000	0
12E	31,000	31,000	0
12F	85,000	85,000	0
12J	34,500	34,500	0
12L	13,500	13,500	0
13A	40,000	40,000	0
13D	41,500	32,000	9,500
15A	26,000	8,000	18,000
15B	31,000	7,000	24,000
15C	39,000	7,000	32,000
16A	18,000	18,000	0
16B	20,000	20,000	0
16C	25,000	0	25,000
16D	30,000	0	30,000
18A	19,000	9,000	10,000
Total	508,500	360,000	**148,500**

**All weights are in split pounds*

Precautionary Harvest Rate

North Coast and Central Coast Licence Areas and Portions of the East Coast of Vancouver Island Licence Area:

In order to facilitate the start of a three year rotational fishery in 2011, a harvest rate of up to 10 percent was applied to all QMAs within the North Coast, Central Coast and East Coast of Vancouver Island (ECVI) licence areas. A 10 percent harvest rate applied once every three years is equivalent to a 3.3 percent annual harvest rate and is below the range of 3.5 to 10.3 percent recommended in Hand et al. 2009 for an annual harvest rate (see Appendix 6). The Department is confident that moving to a rotational style fishery and applying a low harvest rate will be a precautionary management strategy until more is understood about the impacts of a rotational style harvest in the Sea Cucumber fishery.

The harvest rate for each QMA will be reviewed post-season by DFO resource managers and the Pacific Sea Cucumber Harvesters Association (PSCHA).

West Coast of Vancouver Island Licence Area and Portions of the East Coast Vancouver Island Licence Area:

The West Coast of Vancouver Island (WCVI) moved back to an annual style fishery in 2013 after being closed for the 2012 season. The WCVI licence area will retain the 4.2 percent annual harvest rate recommended during the Adaptive Management Plan (Phase 1 fishery) period in two of the three QMAs.
Some QMAs in the ECVI were moved to an annual style harvest in 2017 and a 3.3% or 4.2% annual harvest rate will be used for quota calculation.

Rotational Harvest Schedule

In the first two cycles of the ARFS, most QMAs were placed on a schedule in which they were harvested once every three years. The three year harvest schedule was meant to be a starting point since stock productivity varies in different areas. This spatial variation in productivity may be due to differences in habitat, exposure, recruitment patterns or other unknown factors. As a result, some QMAs may benefit from a longer rest between harvests and/or a lower harvest rate. After review of comments from harvest questionnaires and discussion with the PSCHA, some QMAs have been identified that will be rested for a longer period of time. Please see table 1 for proposed QMA harvest schedules.

APPENDIX 15: CONTACTS – 2020/2021

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

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

Resource Management

Regional Resource Manager - Invertebrates	Lisa Mijacika	(604) 666-3869
Lead Sea Cucumber Resource Manager	Pauline Ridings	(250) 756-7118
Regional Recreational Fisheries Co-ordinator	Greg Hornby	(250) 286-5886
North Coast Area, Areas 1 through 10	General Inquiries	(250) 627-3499
417 2nd Avenue West, Prince Rupert	Fax	(250) 627-3427
Resource Management Biologist	Pauline Ridings	(250) 756-7118
Resource Manager - Recreational Fisheries		(250) 627-3409
South Coast Area, Areas 11 through 27	General Inquiries	(250) 756-7270
3225 Stephenson Point Road, Nanaimo	Fax	(250) 756-7162
Resource Management Biologist, Nanaimo	Erin Wylie	(250) 756-7271
Resource Manager - Recreational Fisheries	Brad Beaith	(250) 756-7190
Lower Fraser Area, Areas 28 and 29	General Inquiries	(604) 666-8266
Unit 3, 100 Annacis Parkway, Delta	Fax	(604) 666-7112
Resource Management Biologist	Marisa Keefe	(604) 666-6390
Resource Manager - Recreational Fisheries	Barb Mueller	(604) 666-2370

Conservation and Protection

Sea Cucumber Enforcement Plan	Ashley Spencer	(250) 624-3414

Science Branch

Pacific Biological Station		
	Janet Lochead	(250) 756-7139
	Christine Hansen	(250) 756-7382

Commercial Licensing

National Online Licensing System (NOLS)
www.dfo-mpo.gc.ca/fm-gp/sdc-cps/licence-permis-eng.htm
Phone: 1-877-535-7307
Fax: 604-666-5855
Email: fishing-peche@dfo-mpo.gc.ca

Aquaculture Resource Management

Regional Manager	Reagan Newcomb	(778) 268-2854
Senior Shellfish Coordinator	Gabrielle Kosminder	(250) 754-0394
Chief, Conservation and Protection	Claire Doucette	(250) 618-8985
E-mail	Shellfish.Aquaculture@dfo-mpo.gc.ca	

Canadian Food Inspection Agency (CFIA)

Molluscan Shellfish Operations	(604) 666-3737

WorkSafe BC

Regional Prevention Manager, Courtenay	Pat Olsen	(250) 334-8777
Occupational Safety Officer, Courtenay	Cody King	(250) 334-8733
Occupational Safety Officer, Courtenay	Gregory Matthews	(250) 334-8734
Occupational Safety Officer, Courtenay	Mark Lunny	(250) 334-8732
Occupational Safety Officer, Victoria	Jessie Kunce	(250) 881-3461

Pacific Sea Cucumber Harvesters' Association **www.pscha.org**

President	Thom Liptrot	(250) 714-3511

Sea Cucumber Service Provider

D&D Pacific Fisheries Ltd.	Darin Macey	(604) 886-4819
Box 1445	Fax	(604) 886-8288
Gibsons, BC V0N 1V0	Hail-line	(800) 775-5505

Sea Cucumber Processors

Evergreen International Foodstuffs Ltd.	Paul DeMee	(604) 253-8835
Territory Seafoods Ltd.	Mike Crawford	(604) 322-7712
Grand Hale Marine Products Ltd.	Francis Cheung	(604) 325-9393
Seagate Fisheries	Alice Tse	(604) 278-8684
Premium International Food Sales Ltd.	Paddy Wong	(604) 821-0133
United Seafoods, Hookah Harvesters Ltd.	Charlie Greaves	(250) 287-1955
Moon Enterprises Ltd.	Thomas Lee	(604) 270-0088
RBS Seafoods	William Strong	(250) 893-9451
Sea World Fisheries Ltd.	Tony Wong	(604) 254-0525
Wen Lian Aquaculture Co. Ltd.	Bruce Qiu	(778) 724-1801