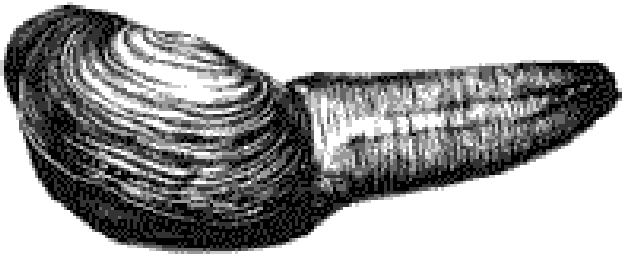
PACIFIC REGION

INTEGRATED FISHERIES MANAGEMENT PLAN

GEODUCK AND HORSE CLAM

MAY 1, 2022 TO APRIL 15, 2023



Geoduck clam: ***Panopea generosa***

Horse clam: ***Tresus spp***

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 regulations, the 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.

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FOREWORD

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

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

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

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1. OVERVIEW

1.1. Introduction

This IFMP for Geoduck and Horse Clam covers the period May 1, 2022 to April 15, 2023.

The IFMP provides a broad context to the management and interrelationships of all fishing sectors of the Geoduck and Horse Clam dive fisheries. Section 2 considers present stock status. Section 3 describes new considerations for Indigenous knowledge. Section 5 describes the most important current management issues. Section 6 describes the objectives to address issues identified in Section 5. Sections 7 and 8 describe the management procedures that will be employed during the year. Section 9 describes shared stewardship arrangements in place to achieve objectives. Section 10 describes the enforcement measures to achieve the objectives. Section 11 describes the ways and means by which the achievement of the objectives will be assessed in the following year. Sections 12 and 13 provide references and a glossary to define terms.

Information in addition to that presented here is available in the Canadian Manuscript Report of Fisheries and Aquatic Sciences series (Harbo and Wylie 2006). A detailed history of the commercial Geoduck and Horse Clam fisheries, quotas, landings, number of participants, numbers of licences and vessels, values and reasons for management decisions, is contained in Appendix 1, Post-Season Reviews. A Science Response for Geoduck is available from the Canadian Science Advisory Secretariat (CSAS) Internet site at:

https://www.dfo-mpo.gc.ca/csas-sccs/Publications/ScR-RS/2021/2021_035-eng.html

Note that Appendices 3 to 5 detail the First Nations, recreational and aquaculture harvest plans. The commercial harvest plan is detailed in Appendices 6 through 14.

The term “clam” is used throughout this plan and refers to both Geoduck and Horse Clam.

1.2. History

The word Geoduck is believed to originate from the Coast Salish First Nations word, *g^{w}ideq* meaning ‘dig deep’. The commercial dive fishery for Geoducks (*Panopea generosa*) and Horse Clams (*Tresus capax* and *T. nuttallii*) in B.C. began in 1976. The fishery expanded rapidly until 1979 when licences were limited and harvest quotas were set for conservation. In 1989, with the support of the commercial industry, a management program with individual vessel quotas (IQ or IVQ) for Geoducks was initiated. As part of this initiative, area licensing and a three-year area rotation period for the fishery, was established. Geoduck licence quotas were set at 1/55 of the annual commercial total allowable catch (TAC).

Horse Clams, generally harvested incidentally to Geoducks, were not included in the IVQ system. An “experimental” Horse Clam fishery began in 2003 and opportunities will continue. This fishery was designed to test the market for Horse Clams, and provide harvest and biological information needed to do further assessments of this fishery. The current low levels of harvest and the low price per pound has resulted in little market development.

1.3. Type of Fishery and Participants

1.3.1. First Nations

First Nations harvest for food, social and ceremonial (FSC) purposes may occur coast-wide where authorized by a communal licence or, domestic use under treaty, a harvest document and where

open under the Canadian Shellfish Sanitation Program (CSSP), Appendix 6, section 3. Communal licences and harvest documents may be issued annually in the Pacific Region that includes harvest for a number of shellfish species. There are an unknown number of First Nations harvesters for Geoduck and Horse Clam in the Pacific Region. The fishing effort for FSC purposes is thought to be minimal, due to the general inaccessibility of these deep-water clams.

1.3.2. Recreational

A recreational fishery may occur coastwide and where open under the CSSP, Appendix 6, section 3. A British Columbia Tidal Waters Sport Fishing Licence is required for the recreational harvest of all species of fish including shellfish. Tidal Waters Sport Fishing Licences can be purchased at many tackle stores and marinas or online by using the DFO website:

https://recfish-pechesportive.dfo-mpo.gc.ca/nrls-sndpp/index-eng.cfm

The Tidal Waters licence includes access to numerous species, so the number of recreational harvesters taking advantage of the bag limit of 3 per day is unknown.

The fishing effort by recreational harvesters is thought to be minimal, due to the general inaccessibility of these deep-water clams.

1.3.3. Commercial

Geoducks and Horse Clams are harvested commercially by divers. There are 55 commercial licences.

1.3.4. Aquaculture

There has been interest in Geoduck aquaculture in B.C. since the early 1990s. Since that time, industry stakeholders and the Provincial Government have invested in developing and refining Geoduck hatchery, nursery, and culture methods in B.C.

Approximately 65 tenures are currently licenced under the *Pacific Aquaculture Regulations* (PAR) for Geoduck aquaculture. These tenures total approximately 1,306 hectares. This includes tenures licenced for intertidal, subtidal, deepwater suspended or any combination of the three types. Of the 65 tenures, only 20 are currently authorized to harvest Geoduck and only 7 tenures have reported harvest in any one year since 2011. DFO has been tracking seeding effort, up to 24 of the 65 have ever seeded at some point since 2011. See Appendix 5 for more information.

1.3.5. Enhancement

The Underwater Harvesters Association (UHA) undertook an experimental Geoduck enhancement program that started in 1995, which involved seeding several crown land subtidal sites in the Strait of Georgia. Areas seeded for enhancement purposes are not removed from access to the commercial wild fishery and are intended to increase fishery production and the recruitment of juveniles into the wild Geoduck fishery. In June 2015 the Province of B.C. did not renew the map reserve designation for the sites where enhancement work was occurring. Seeding will not be authorized on areas that do not have map reserve designation.

1.4. Location of Fishery

1.4.1. First Nations and Recreational

First Nations and recreational harvest may occur coastwide, where appropriately licensed, and the area is not closed as a result of sanitary or biotoxin contamination. The B.C. coast north of Cape Caution (Areas 1 to 11 inclusive) is closed for the harvest of bivalves, unless the appropriate testing is in place to ensure safe harvest. See the Internet at:

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

1.4.2. Commercial

With the exception of permanent closures for various purposes (see Appendix 6, Section 4), and in-season changes to openings due to biotoxin contamination, the current commercial fishery occurs coastwide in units called Geoduck Management Areas (GMAs). GMAs are a defined portion of Pacific fisheries waters. Areas and Subareas, as defined in the *Pacific Fishery Management Area Regulations*, are referenced in describing GMAs. Each GMA has a name (i.e. QCA02 Cumshewa Inlet East), and is assigned a quota (see Appendices 6 and 9).

1.4.3. Aquaculture

Geoduck aquaculture occurs in the Strait of Georgia. Geoduck broodstock have been collected since 1993 and juvenile seed Geoducks have been successfully produced at licensed hatcheries. Five deep-water Geoduck areas were selected in 1995 (two sites near Marina Island, two near Savary Island, and one near Texada Island) and placed under tenure with the Province of B.C. for aquaculture.

The Department has worked with the Province of B.C. in the development of policy to guide the expansion of Geoduck aquaculture opportunities throughout B.C. consistent with the mandates of both governments. In early 2017, the Department finalized the Integrated Geoduck Management Framework (IGMF). Geoduck aquaculture, as outlined in the IGMF, represents an opportunity to diversify the economies of coastal and Indigenous communities in B.C. while maintaining the economic prosperity and long-term sustainability of the wild Geoduck fishery.

Historically, shellfish aquaculture licences were issued by the Province of BC while the regulatory responsibility of shellfish aquaculture, including geoduck, switched to DFO in December 2010. Aquaculture licence holders may be actively culturing geoduck with intentions to apply for an approved geoduck harvest plan while others may be licenced for geoduck species but not actively engaged in culture at this time. Until licence holders report sales associated with an approved geoduck harvest plan, it difficult to determine the exact number of tenures engaged in geoduck culture.

See Appendix 5 for more information.

1.4.4. Enhancement

The first harvest of enhanced Geoduck occurred as part of the South Coast Inside Waters area quota in 2007. Harvest has continued on these enhancement sites periodically since 2007. Seeding of these sites has not been authorized since June 2015 when the Province of B.C. did not renew map reserve designations for the sites. Any of these harvests are part of the regular commercial fishery.

1.5. Fishery Characteristics

1.5.1. First Nations

First Nations' harvest for FSC or domestic purposes may be open year round, subject to available sanitary and biotoxin contamination sampling and results, and is limited to the gear specified for bivalve harvest in the communal licence or Harvest Documents. Harvest should occur in waters that are classified as Approved by the Canadian Shellfish Sanitation Program, as per the *Safe Food for Canadians Regulations*. Approved areas are indicated in green on the maps found at: www.dfo-mpo.gc.ca/CheckBeforeYouHarvest.

Commitment to Reconciliation:

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

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

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

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

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

Information on Indigenous fisheries and reconciliation is available at: http://www.pac.dfo-mpo.gc.ca/abor-autoc/index-eng.html
Information on the Government of Canada work to advance reconciliation can be found here: https://www.rcaanc-cirnac.gc.ca/eng/1400782178444/1529183710887

FSC Fisheries:

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

Section 35(1) of the *Constitution Act* recognizes and affirms the existing Aboriginal and Treaty rights of the Aboriginal Peoples in Canada. However, it does not specify the nature or content of the rights that are protected. In 1990, the Supreme Court of Canada issued a landmark ruling in

the Sparrow decision which found that the Musqueam First Nation has an Aboriginal right to fish for food, social and ceremonial (FSC) purposes. The Supreme Court found that where an Aboriginal group has a right to fish for FSC purposes, it takes priority, after conservation, over other uses of the resource. The Supreme Court has also indicated the duty to consult with Aboriginal Peoples when their fishing rights might be affected.

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

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

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

Canada and First Nation Long-term agreements: Treaties and Reconciliation Agreements:

Court-defined Rights

Five Nuu-chah-nulth First Nations located on the west coast of Vancouver Island - Ahousaht, Ehattesaht, Hesquiaht, Mowachaht/Muchalaht, and Tla-o-qui-aht (the Five Nations) – have an Aboriginal right to fish for any species, with the exception of Geoduck, within their Fishing Territories and to sell that fish. It is important to note that access will align with *Species at Risk Act* (SARA) prohibitions.

Treaties and Self Government Agreements

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

Fisheries chapters in modern treaties may articulate a treaty fishing right for domestic purposes that are protected under Section 35 of the *Constitution Act*, 1982. Negotiated through a side agreement, some modern treaty First Nations have commercial access through a Harvest Agreement outside of the constitutionally protected treaty. Geoduck were unallocated under the Maa-nulth, Tsawwassen, Tla'amin and Nisga'a Treaties.

Reconciliation Agreements

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

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

Since 2019, the Government of Canada entered into several agreements with First Nations that lay the foundation for incremental development and implementation of new arrangements for collaborative governance on fisheries and marine matters. A 'framework agreement' sets out the subject matter for negotiation and describes how negotiations will proceed towards a final agreement. A 'final agreement' includes detailed commitments the Parties have agreed to implementing and governs the relationship between the Parties for its term.
See the BC Treaty Commission at https://www.bctreaty.ca/index.php and CIRNAC for more information on current treaty tables at https://www.rcaanc-cirnac.gc.ca/eng/1100100028574/1529354437231 and for current RIRSD tables at https://www.rcaanc-cirnac.gc.ca/eng/1511969222951/1529103469169.

Framework Agreements:
- *GayG̱ahlda "Changing Tide" Framework Agreement* between Haida and Canada
- *Haíłcístut Incremental House Post Agreement* between Heiltsuk and Canada
- *Reconciliation Framework Agreement for Fisheries Resources* between A-Tlegay Member Nations (We Wai Kai Nation, Wei Wai Kum First Nation, Kwiakah First Nation, Tlowitsis Nation, and K'ómoks First Nation) and Canada

Final Agreements:
- *Coastal First Nations Fisheries Resource Reconciliation Agreement* between Canada and Metlakatla, Gitxaala, Gitga'at, Kitasoo/Xai-Xais, Nuxalk, Heiltsuk, Wuikinuxv, and Haida Nations
- *Gwet'sen Nilt'I Pathway Agreement* between Tŝilhqot'in, Canada and BC
- *Burrard Inlet Environmental Science and Stewardship Agreement* between Tsleil-Waututh Nation and Canada

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

1.5.2. Recreational

The recreational fishery may be open year round, based on available sanitary and biotoxins contamination sampling and results, and is limited to hand digging methods. Commercial gear

("stingers") cannot be used for recreational harvest. Harvest should occur in waters that are classified as Approved by the Canadian Shellfish Sanitation Program, as per the *Safe Food for Canadians Regulations*. Approved areas are indicated in green on the maps found at www.dfo-mpo.gc.ca/CheckBeforeYouHarvest.

1.5.3. Commercial

The commercial licence year will be from May 1, 2022 to April 15, 2023. The fishery may open and close during that timeframe based on sanitary and biotoxin contamination conditions, market demand and quota completion. Divers use high pressure water delivered through a nozzle (known as a "stinger") to loosen the substrate around the clam and allow the diver to lift the clam out alive.

The schedule of openings and closures varies from year to year, but the goal is to allow for a year-round supply of Geoducks to the market.

The fishery operates under a Total Allowable Catch (TAC). There is a three-year area rotation period for the fishery within the North Coast and most of the Inside Waters area (portions of Area 16, 17, 18 and 19 are fished annually). The West Coast of Vancouver Island (WCVI) area switched back to an annual harvest for all areas in 2002, when more timely information on the possible impact of sea otters was needed.

1.6. Governance

The Geoduck and Horse Clam fishery is governed by the *Fisheries Act* (R.S., 1985, c. F-14) and regulations made thereunder, including the *Fishery (General) Regulations* (e.g. conditions of licence), the *Pacific Fishery Regulations* (e.g. open times), the *British Columbia Sport Fishing Regulations*, the *Aboriginal Communal Fishing Licences Regulations*, *Marine Mammal Regulations* and the *Pacific Aquaculture Regulations*. Areas and Subareas are described in the *Pacific Fishery Management Area Regulations*.

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

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

These documents are available on the internet at:

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

More information on the SARA is available at:

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

In addition, the Sustainable Fisheries Framework (SFF) is a toolbox of policies for DFO to sustainably manage Canadian fisheries by conserving fish stocks while supporting the industries that rely on healthy fish populations. The SFF provides planning and operational tools that allow these goals to be achieved in a clear, predictable, transparent, and inclusive manner, and provides

the foundation for new conservation policies to implement the ecosystem and precautionary approaches to fisheries management. These policies include:

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

As required under the SFF, DFO annually tracks the performance of major fish stocks that it manages through the sustainability survey for fisheries. The fish stocks are selected for their economic, environmental and/or cultural importance. The vast majority of the landings from fisheries managed by DFO come from these fish stocks. The survey reports on DFO's progress to implement its SFF policies, which guide the management of Canada's fisheries, and on other information about these fish stocks.

The Sustainable Fisheries Framework is available at:

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

Sustainability surveys for fisheries are available at:

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

Information about reconciliation and partnerships is available at:

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

Scientific advice for this fishery is peer-reviewed primarily through a committee called the Canadian Science Advisory Secretariat (CSAS). Information about the CSAS and publications are available at:

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

The Geoduck and Horse Clam Sectoral Committee is the primary body guiding management decision-making processes for this fishery. Others include a Research Subcommittee, and 'quota area committees' for the North Coast, Inside Waters and West Coast Vancouver Island (WCVI). See Appendix 17.

1.7. Approval Process

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

2. STOCK ASSESSMENT AND SCIENCE

2.1. Geoduck

2.1.1. Biological Synopsis

The Geoduck clam (*Panopea generosa*) occurs from Alaska to the Gulf of California in the northeast Pacific, from the intertidal zone to depths of at least 110 metres. It buries itself up to a metre deep in sand, silt, gravel and other soft substrates.

Geoducks have separate sexes. Spawning occurs annually, primarily from June to July. Females release from 7 to 10 million eggs, after fertilization, larvae develop in the water column for 40 to 50 days before settling on the bottom. At a shell length of 2mm, juvenile Geoducks burrow into the substrate and can bury to a refuge depth of 60cm in two years. Mature sex organs are found in clams ranging from 2 to 107 years old, suggesting that individuals may be capable of reproducing for over a century.

Geoducks are among the longest-lived animals in the world and can reach over 150 years of age. They grow rapidly in the first 10 to 15 years, after which time growth in shell length almost ceases and is replaced by a thickening of the shell and a slow increase in body weight. Geoducks begin to recruit to the fishery at age 4 and are fully recruited at 6 to 12 years.

2.1.2. Ecosystem Interactions

Geoduck and Horse Clam populations can overlap the distribution of eelgrass beds. Eelgrass beds are recognized as sensitive habitat and are critical for many fish and shellfish species for at least part of their lifecycle. No wild commercial harvesting is permitted within eelgrass beds.

Geoducks are consumed by Sea Otters. Along the WCVI, from Clayoquot Sound northward, around the top of Vancouver Island and down into Queen Charlotte Strait, and in portions of the Central Coast, Sea Otters have established themselves in sufficient numbers to have an impact on Geoduck populations and on fish harvesters' ability to harvest quotas. Sea Otter population expansion to other regions of the coast is ongoing or expected.

The exact role of geoduck within the ecosystem, other than a prey item, is largely unknown.

2.1.3. Ecological Knowledge

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

2.1.4. Stock Assessment

Since the early 1980s, a long-term approach has been used in the management of Geoduck stocks. Annual harvest rates were originally set at 1% of the estimated unfished (pre-fishery) biomass, with the objective of taking no more than that replaced by recruitment of juveniles into the population. Starting with the 2007 fishery year, Geoduck harvest options were calculated using regional exploitation rates, ranging from 1.2 to 1.8%, applied to the range of current biomass estimates of each bed (Zhang and Hand 2007). The use of current biomass for harvest option calculations eliminates the uncertainties around estimating unfished biomass.

Harvestable biomass is estimated as the product of harvestable bed area, Geoduck density and mean Geoduck weight on each bed. Bed area is estimated through harvest locations, substrate and dive surveys, and feedback from On-Grounds Monitors and harvesters at meetings and through logbook questionnaires. Density is estimated by dive surveys. Mean weight is estimated from landings data. Biomass on un-surveyed beds is estimated by extrapolating from surveyed beds and using density categories where appropriate. The harvest rate multiplied by the biomass estimates yields harvest options.

The latest Geoduck stock status updates (DFO 2020, 2021a, 2021b) are available on the Canadian Science Advisory Secretariat web site (https://www.dfo-mpo.gc.ca/csas-sccs/index-eng.htm).

http://www.dfo-mpo.gc.ca/csas-sccs/Publications/ScR-RS/2020/2020_054-eng.html

https://www.dfo-mpo.gc.ca/csas-sccs/Publications/ScR-RS/2021/2021_007-eng.html

https://www.dfo-mpo.gc.ca/csas-sccs/Publications/ScR-RS/2021/2021_035-eng.html

2.1.5. Stock Scenarios

The prospect for this fishery is that it is sustainable under the current assessment and management framework. Reductions in stocks are expected from Sea Otter predation as Sea Otter populations increase and expand. Ongoing marine spatial planning initiatives may impact access to Geoduck stocks in the future and would therefore have an impact on quotas.

Continued improvement in the estimates of Geoduck density and bed area are anticipated through the results of on-going surveys, better and more detailed bed descriptions and locations from harvesters in logbooks (aided by GPS technology) and on-grounds monitor reports.

There are large numbers of Geoducks that inhabit natural refugia. These include deep water stocks (as divers are limited to depths of around 20 meters) and shallow water stocks (harvest is restricted to outside eelgrass beds and deeper than 3 meters datum), populations in gravel- or shell-packed substrates from which Geoducks are difficult to extract, individuals considered aesthetically inferior and unacceptable to the market, and stocks in contaminated areas and areas closed for various purposes (i.e. research, parks, sea otter protection, sea bird protection etc.). These form a protected breeding pool that is exclusive of the harvestable population. In addition, the ability of Geoducks to retract their necks in response to disturbance serves to protect a portion of the harvestable population.

Experimental work on the effect of fishing on recruitment has found that recruitment to an area is similar between heavily and lightly harvested populations (Campbell and Ming 2003). Age compositions from biological samples and reports from fish harvesters indicate that there has been strong recruitment in recent years in some Geoduck beds.

2.1.6. Precautionary Approach

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

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

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

The framework requires that a harvest strategy be incorporated into respective fisheries management plans to keep the removal rate moderate when the stock status is healthy, to promote rebuilding when stock status is low, and to ensure a low risk of serious or irreversible harm to the stock. A key component of the Precautionary Approach Framework requires that when a stock has declined to the Critical Zone, a rebuilding plan must be in place with the aim of having a high probability of the stock growing out of the Critical Zone within a reasonable timeframe.

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

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 amendments draw upon the 2013 Guidance for the development of rebuilding plans under the Precautionary Approach Framework: Growing stocks out of the critical zone.
Information on the regulatory proposal regarding fish stocks and rebuilding plans is available at:

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

The regulatory proposal was consulted on from December 2018 to March 2019 with pre-publication of the proposed regulation in Canada Gazette Part I on January 2, 2021. The regulation will come into effect upon publication in Canada Gazette Part II. The publication is available at: https://gazette.gc.ca/rp-pr/p1/2021/2021-01-02/html/reg1-eng.html

Harvest Control Rules (HCR) compliant with the Precautionary Approach (PA) have been developed for the Geoduck Fishery.

The Limit Reference Point (LRP) used in the BC Geoduck fishery was defined by Zhang and Hand (2007) as current biomass being equal to 40% of unfished biomass and was initially applied at the by-bed spatial scale. The Limit Reference Point for the BC Geoduck Fishery is now applied at the coastwide spatial scale, because Geoducks form a single genetic stock in BC, and the LRP now is defined as coastwide current biomass being equal to 40% of coastwide unfished biomass (DFO 2021b). Details of methods used to estimate unfished biomass were provided in Bureau (2017).

Under the precautionary approach the Upper Stock Reference (USR) for the Geoduck stock will be defined as the total coastwide current biomass being equal to 50% of total coastwide unfished biomass. (DFO 2021b).

The removal reference, i.e., (maximum allowable harvest rate for the stock as a whole) for the BC Geoduck stock was defined as 1.8% of the coastwide current Geoduck biomass estimate (DFO 2021a).

The coastwide Stock Index, defined as the ratio of coastwide current biomass to coastwide unfished biomass is estimated yearly and compared to the LRP and USR to determine stock status under the Precautionary Approach.

2.1.7. Research

Research studies to investigate aspects of recruitment, growth and the response of Geoduck populations to fishing were initiated in the early 1990s in selected sites in the Strait of Georgia and the WCVI (Campbell et al 2004, Zhang and Campbell 2004).

DFO, the Underwater Harvesters Association (UHA), and First Nations have conducted surveys since 1992 to estimate Geoduck density. To date, over 200 surveys have been conducted coast-wide. Biological samples are collected on some surveys, and age compositions and growth parameters are obtained from them (Bureau et al 2002, 2003). Published survey reports form part of the Canadian Technical Report of Fisheries and Aquatic Sciences series (Campbell et al 1995a, 1995b, 1998; Babuin et al 2006; Hand et al 1998) and the Canadian Manuscript Report of Fisheries and Aquatic Sciences series (Hand and Dovey 1999, 2000). See the References in Section 11, or the Internet at:

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

The availability of this substantial accumulation of biological information warranted a new assessment of the Geoduck stocks and re-evaluation of harvest rates in B.C. Age-structured projection modelling was conducted to investigate the impacts of alternative exploitation intensities on estimates of current, rather than unfished Geoduck populations. Recommendations, presented to the PSARC Invertebrate Subcommittee in November 2005 (Zhang and Hand 2007), were that exploitation rates of 1.2% on the WCVI, 1.6% in Haida Gwaii and 1.8% to the rest of the coast be applied. On the WCVI, 1.8% was used in areas impacted by otters. Considering the high rate of otter predation, the difference between 1.2% and 1.8% in the commercial fishery was judged to be negligible.

2.2. Horse Clam

2.2.1. Biological Synopsis

Two species of Horse Clams (also known as gaper clams), *Tresus capax* and *Tresus nuttallii* occur commonly along the west coast of North America from California to Alaska. The Horse Clams live in mud, sand and gravel substrates. *T. nutallii* is found from the low intertidal to the subtidal depths of 50m, buried to a depth of 1m, whereas *T. capax* is found from mid-intertidal to subtidal to depths of 30m, but may not be buried as deep in the subtidal (Lauzier, 1998).

Both species of Horse clams have separate sexes. Spawning occurs at different times for the two species. *T. Capax* typically spawns at seasonal low temperatures and the process begins at progressively later dates moving south to north, between January and April. *T. nuttallii* is typically a summer spawner occurring between April and August. It is believed that the larvae for both species settle after about 30 days, depending on the temperature.

The maximum ages observed in B.C. are 18 and 22 years, for *T. capax* and *T. nuttallii*, respectively.

2.2.2. Assessment

While Geoduck do occur intertidally and can be harvested it is generally believed, by DFO, that even though First Nations and recreational harvesters are targeting Geoduck, they may be more likely to catch Horse Clams when harvesting in shallow and intertidal areas.

Due to a lack of stock assessment information, the commercial fishery for Horse Clams has been limited since 1992 to an incidental fishery open only when the Geoduck fishery is open. Studies on the productivity of Horse Clam stocks and preliminary abundance (Zhang, 2000) surveys led to two pilot fisheries for Horse Clams, one at Comox Bar in the Strait of Georgia and another in Lemmens Inlet on the WCVI. These closely monitored fisheries began in 2003, and the Comox Bar fishery continues to date. The Lemmens Inlet fishery was discontinued as the substrate at harvestable depths was not easily fished.

The Comox Bar area was re-surveyed in 2007 and 2017. The fishery has an assigned quota of 20,500 lb. (9,300 kg). Market feedback to date indicates the fishery is not profitable with the current quota and the monitoring and survey requirements that are funded by the UHA. The survey and fishery data will provide some insight into stock response to harvest and the market receptiveness to the product.

The prospect for this fishery is that it is sustainable under the current TAC and management framework. Harvestable beds with sufficient quantities of Horse Clams to make the survey requirements economic appear to be very limited at this time. Horse Clams tend to be widely distributed and are often found in areas of eelgrass, and thus are often not available to the commercial fishery.

3. INDIGENOUS KNOWLEDGE

In 2019, the *Fisheries Act* was amended to include provisions where the Minister may, or shall consider provided Indigenous knowledge in making decisions pertaining to fisheries, fish and fish habitat, as well as provisions for the additional protection of that knowledge when shared in confidence.

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

Indigenous knowledge can inform and fill knowledge gaps related to the health of fish stocks, and aid decision making related to fisheries management. The Government of Canada and the scientific community acknowledge the need to access and incorporate IK in meaningful and respectful ways. Work is underway at a National level to develop processes for how DFO receives Indigenous knowledge and applies it to inform decision making. This will include consideration of how to engage knowledge holders, and how to ensure that the knowledge can be shared and considered in a mutually acceptable manner by both knowledge holders and the broader community of First Nations, stakeholders, managers, and policy makers involved in the fisheries. This work will be an iterative process done in collaboration with First Nations, Indigenous groups and knowledge holders, to ensure protection of the knowledge provided.

4. SOCIAL CULTURAL AND ECONOMIC IMPORTANCE

4.1. Socio-Economic Profile

The Pacific Region has the only commercial Geoduck fishery within Canada. In this fishery, harvested Geoducks are shipped to processing plants where they are packed and delivered live to Asian markets. This is a high-value fishery.

From 2015 to 2019, Geoducks accounted for an average of 9% of the shellfish harvest by weight and an average of 28% of the total shellfish landed value (DFO Data, logbooks and sales slips). In 2019 alone, Geoducks represented 8% of the total volume of shellfish landings and 25% of the total ex-vessel value (DFO Data, logbooks, sales slips). Please note that economic analyses are conducted by calendar year, not fishing year. Values will differ depending on the type of year used.

The commercial Geoduck fishery includes the harvest sector and the processing sector (including export activities). These activities provide benefits to the individual businesses (producer surplus or economic profits) and also contribute directly and indirectly to the economy through expenditures on labour, supplies and services. The Geoduck fishery accounts for about $589,000 dollars in processing sector wages. It constitutes about 4% of all wild shellfish direct labour processing costs (and 4% of direct labour processing hours) (GSGislason & Associates Ltd., 2017).

There is a limited recreational and First Nations fishery for Geoduck. Clams identified as Geoduck in these fisheries are likely horse clam, which are often found in shallower, more intertidal waters and are more accessible to those that hand dig for clams.

Coast-wide landings of Geoducks peaked in 1987 at 12.7 million lb. (5,735 t), but as a result of decreasing TAC, landings decreased and averaged approximately 3.96 million lb. (1,798 t) between 1996 and 2004. The drop in TAC was a result of stock assessments and increasingly conservative management strategies. A subsequent decrease in TAC brought annual landings between 2005 and 2011 to 3.44 million lb. (1,559 t). In 2012, the allocated quota was reduced by a further 4% to 3.30 million lb. (1,497 t) and remained at this level to 2015. In 2016 the TAC was further reduced to 3.08 million lb. (1,397 t) and it remained the same through to 2019. The Geoduck TAC is fully harvested.

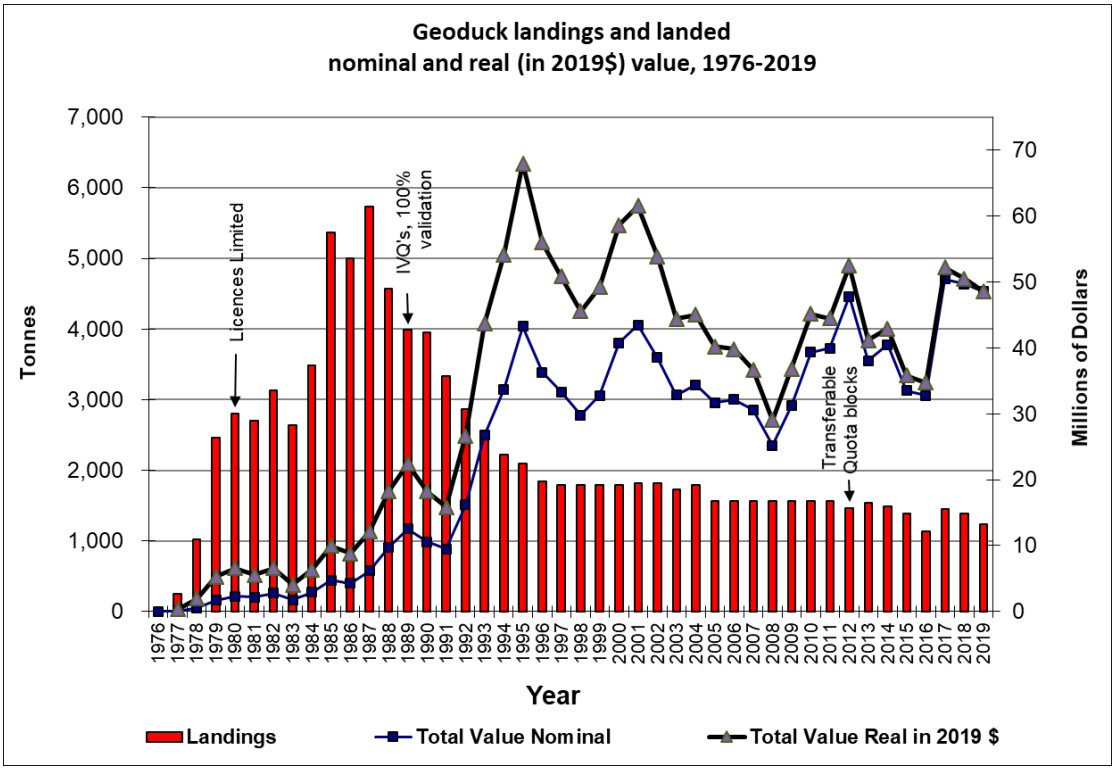
The commercial Geoduck fishery in BC has been a limited access fishery since 1979, with individual vessel quotas introduced in 1989. Each of the 55 licences were allocated 1/55 (1.8%) of the total allocated quota and the quota could not be separated from the licence. In 2012, a pilot program divided the quota for each licence into ten tradable blocks (1/550th of the TAC). In 2019 there were 5 communal commercial licences allocated to First Nations.

Figure 1 below presents total landings, nominal and real values for years 1976 to 2019. The nominal price paid to fish harvesters for Geoduck has increased significantly since the inception of the fishery in 1976. Then the average price paid was 7.5 cents per pound and the product was frozen and used locally for bait, clam chowder, and clam fritters. Price increased with a shift to live Geoducks and strong economic growth in the major markets of Hong Kong and the People's Republic of China. Over the years, there have been several price peaks for Geoduck including: 1995 ($20.63/kg), 2001 ($23.88/kg), 2012 ($32.74/kg) and more recently 2019 ($39.33/kg). Adjusting the prices to account for inflation (i.e. putting all prices in 2019 dollars) shows a similar pattern, although the price differences between the peaks are smaller: 1995 ($32.39/kg), 2001 ($33.77/kg), 2012 ($35.98/kg), and 2019 ($39.33/kg) (DFO Data, logbooks, sales slips).

Prices dropped after 2012, but rose quickly from 2016 to 2019. One of the reasons for this recent increase in price may be significant tariffs imposed by China on US Geoduck. These tariffs were first imposed in 2018 and continued into 2019. The increased cost of US Geoduck would have resulted in increased demand for BC product, in turn driving up the price (The Seattle Times, 2019).

In 2019, the ex-vessel price for Geoduck was $39.33/kg and the wholesale price was about $45.10/kg (BC Seafood Year in Review 2015-2019, DFO Data, logbooks, sales slips).

Figure 1



Landings were calculated based on calendar year, not harvesting season. Since 2016, the harvesting season has differed from the calendar year.

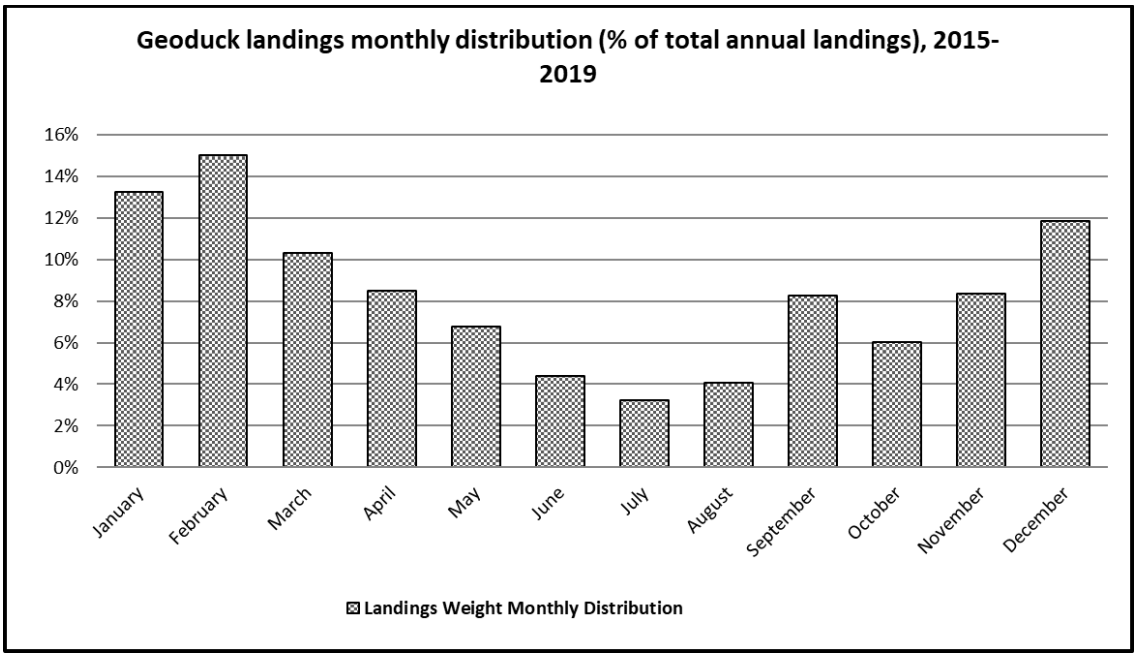
Source: DFO, Logbooks, saleslips data. 2019 - Preliminary).

4.2. Viability and Market Trends

The Geoduck fishery is one of BC's most profitable fisheries. The profitability of the fishery is reflected in the value of the licences; value estimates exceeded $1 million in the early 1990s, and rose quickly to exceed $3 million in 2011 (Nelson, 2012). The separation of the licence and quota in 2012 resulted in a slight increase in the valuation for a total package (licence plus 10 quota blocks) in 2012, and larger increases in following years. In 2019, the estimated value is $8.1 million (Castlemain, 2019). Lease rates for a licence or quota block appear to track the price for Geoduck. Lease rates peaked in 2012 (at around $700,000 for a full G licence with 10 quota blocks) and has declined by around 11% (of that value) by 2019 (to approximately $620,000). (Castlemain, 2019).

The commercial fishery is managed, within the TAC, to ensure stability and profitability by managing the timing of the harvest and the rate at which product enters the market. Changes in TAC occur due to new information on stock sizes that influence biomass calculations. The Underwater Harvesters Association (UHA) maintains that fluctuating TACs are interpreted by the market as lack of stability, and will influence price, and thus profit. However, constraints on TAC have been matched by price increases. Barring closures due to biotoxins or sanitary contamination, the fishery operates year-round in any given year. Landings fluctuate monthly in response to market demands and supply from other countries (Figure 2). The largest harvests are in the winter months (December to February), with less Geoduck landed over the summer.

Figure 2



Monthly landings were calculated based on calendar year, not harvesting season. Since 2016, the harvesting season has differed from the calendar year.

Source: DFO Logbooks data for 2015-2019.

4.3. Processing & Exporting

Geoduck is harvested on the north coast, the inside waters, and the west coast of Vancouver Island. Since 1994, due to changes in stock assessment, TAC has become more concentrated in the north coast area.

Currently, all Geoduck is processed in the Lower Mainland. Processing for Geoduck is minimal with the majority exported live to Asian markets. In general, Geoduck is caught one day and packaged and shipped the following day. Since the product is consumed fresh, timeliness is very important. Vancouver is North America's gateway to Asian markets for Geoduck and much of the U.S. harvest is shipped to Canada, packaged and re-exported to Asia. In response to demand, in 2011, China Southern Airlines opened a dedicated cargo service running from Vancouver to Shanghai to facilitate the transportation of fresh shellfish, including Geoduck. Regular dedicated air cargo service between Canada and mainland China continues.

The majority of Geoduck harvested in Canada is exported, and high-value live Geoduck accounts for over 99% of Geoduck exports both by weight and by value.

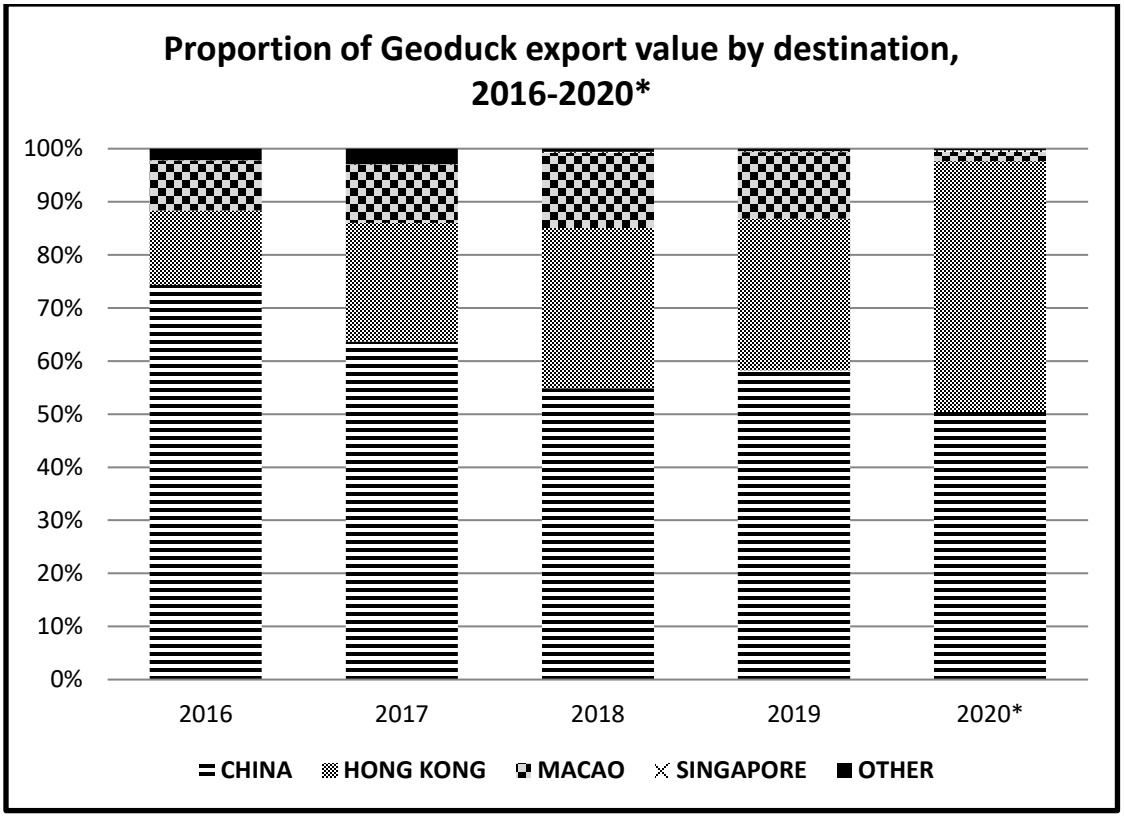
Historically, Geoduck exports have gone predominately to Hong Kong and the People's Republic of China, with 5-year average shares of joint real value of about 88% from 2016 to 2020 (Figure 3 below). While in the years 2016 to 2020 the volume of Geoduck exports to China has fluctuated up and down, exports to Hong Kong have consistently increased. In the years between 2016 and 2020 the real value of Geoduck exports to Hong Kong increased by 284%, while in the same time period the value of exports to China decreased by 23%.

Macao has been the third most valuable destination since 2016. There has also been an increase in exports to Singapore bringing it to the fourth most valuable destination. In 2020 the real value of Geoduck exports to Macao and Singapore was 1.8% and 0.3% of the total value of Geoduck exports, respectively. From 2016 to 2020, the real value of exports to Singapore increased 657%.

Vietnam and the United States were important export destinations from 2012 to 2017, representing 8% and 1% of the average real value of exports over those years. However, both countries have imported much less Geoduck since 2017. In 2020, the United States imported 0.02% and Vietnam imported none of BC's export value.

The number of countries Geoduck is exported to from British Columbia decreased in 2020 to 9, compared to an average of 17 from 2016 to 2019. Figure 3 (below) presents the percentage of Geoduck export value by main export destination from 2016 to 2020.

Figure 3



* Estimates for 2020 are to be treated as preliminary.
Source: EXIM Statistics Canada export database, accessed on January 2021

Export value proportions were calculated based on calendar year, not harvesting season. Since 2016, the harvesting season has differed from the calendar year.

The Canadian industry has two main competitors in the US: the Washington and Alaskan Geoduck fisheries. Washington is a well-established producer and harvests both wild and cultured Geoduck, while Alaska became active in the live market after 2000. In 2018, the US exported 3,811 t of domestic Geoduck valued at $106 million USD. This constituted a 10% decrease in the volume of Geoduck exports, but a 2% increase in the value of exports as compared to year 2017 (NOAA, 2019). There has been a number of temporary bans on exports of live shellfish to China from the US northwest; however, as of June 2016, the ban on imports of live shellfish from Washington and Alaska, including Geoduck, had been lifted (Washington DOH, 2016). Mexico also entered the market with a slightly different species in 2002, with rapid growth in supply until 2006 (GSGislason, 2012). In 2010, Mexico produced 21% of global commercial Geoduck (Cap Log Reports 2013). In 2014, the Mexican federal government published guidelines for sustainable development to regulate the Geoduck export industry, a possible indication that the Mexican Geoduck industry will be a greater competitive force against the Canadian industry in future years (FishSite, 2014).

5. MANAGEMENT ISSUES

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

5.1. Conservation and Sustainability

5.1.1. Sea Otters

Along the WCVI from Clayoquot Sound northward, Central Coast areas and more recently northern Vancouver Island, Sea Otters have established themselves in sufficient numbers to have a significant impact on Geoduck populations and on harvesters' ability to harvest quotas. Sea Otters are efficient predators on Geoducks and other bottom fauna (such as urchins, crabs, and other clams), and there is concern over the effect otters will have on the Geoduck fishery in areas where otters are present. In some areas on the WCVI, Geoduck fishing has been severely curtailed due to Sea Otter predation. At the same time, some areas with Sea Otter predation appear to be experiencing good recruitment of juveniles.

5.1.2. Impacts of Climate Change

Climate change is expected to result in a variety of potential impacts, including, but not limited to, 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 Geoduck populations in B.C. Oceans absorb anthropogenic 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 also impact recruitment (increase or decrease), growth of Geoduck and may lead to increased instances of disease.

5.2. Social, Cultural and Economic

5.2.1. Biotoxin

Geoduck are a bivalve that can retain biotoxins. Biotoxins (generally Paralytic Shellfish Poison, PSP or red tide) are poisonous compounds accumulated by shellfish feeding upon toxin containing dinoflagellates and marine diatoms. In recent years testing has indicated a more common presence and persistence of accumulated biotoxins. This has resulted in challenges for opening and maintaining open areas for Geoduck harvest. For the past few years, season extensions have been required to complete the quota as a result of PSP. However, if PSP continues to cause interruptions in harvest the annual TAC may not be achieved. The added cost and effort for the required biotoxin testing has been significant for industry and government labs.

5.2.2. Geoduck Aquaculture

There is increasing interest in Geoduck aquaculture. Geoduck aquaculture has the potential to be a lucrative economic venture but also has the potential to remove significant areas from the wild fishery, thus reducing the commercial TAC. Planted Geoducks have the potential to increase the spawning biomass and potentially increase wild production but may also negatively affect the genetic diversity and disease occurrence in wild Geoduck populations, (DFO 2014).

There is also a concern that illegal harvest of wild Geoduck could be reported as coming from aquaculture which could impact the Department's ability to ensure conservation.

5.2.3. First Nations

First Nations have an interest in economic opportunity from Geoduck, both through aquaculture and through access to the wild fishery.

Access to the wild fishery is currently being addressed by two programs; the Allocation Transfer Program (ATP) and the Pacific Integrated Commercial Fishery Initiative (PICFI). These programs retire existing commercial licence eligibilities from fish harvesters, on a voluntary basis, and re-issue these to eligible First Nation organizations as communal commercial licences. The ATP program facilitates the voluntary retirement of commercial licences and the issuance of licences to eligible Indigenous commercial fishers in a manner that does not add to the existing fishing effort. The PICFI, first announced in 2007, receives $22.05 million annually. In 2018/2019, an Aquaculture Development Source (ADS) funding envelope with an annual budget of $1M was launched to support aquaculture projects under PICFI, and the annual budget increased to $1.5M beginning in 2021/22.

To date the PICFI program has acquired five Geoduck licences and thirty-one (31) quota blocks. The ATP program has acquired two (2) quota blocks. An additional block has been acquired by DFO from another funding source through the Reconciliation and Partnership programs. All five licences and the thirty-four quota blocks have been provided to multiple First Nations.

First Nations are also purchasing their own quota blocks through private sales.

For more information on the Aboriginal Fisheries Strategy (AFS) and ATP, contact a resource manager listed in Appendix 15 or see the DFO website at:

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

More information on the PICFI is available at:

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

5.2.4. 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 2020/2021 recreational angling season, 238,600 anglers were licensed to fish in BC's tidal waters recreational fishery. Most (90%) were BC residents, with the remainder being Canadians from outside BC. Due to COVID-19, no licences were sold to visitors outside of Canada. These activities provide a range of benefits to the participants as well as contribute directly and indirectly to economic activity.

Recreational interest in harvesting shellfish species is directed mainly at crab, prawns and shrimp. The recreational harvest of Geoduck and Horse Clams is believed to be minimal.

5.3. Compliance

There are no emerging issues for enforcement other than those already highlighted in the Compliance Plan (Section 10).

5.4. Ecosystem

5.4.1. Depleted Species Concern

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

https://www.registrelep-sararegistry.gc.ca

The Geoduck and Horse Clam fishery is a selective fishery and there are no concerns for potential impacts on depleted species such as Sea Otters. Sea Otters are listed by the *Species at Risk Act* (SARA) as a species of special concern.

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.

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

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

5.4.2. Marine Mammal Regulations

The *Marine Mammal Regulations* provide direction on conservation and protection of marine mammals, provide guidance for recovery of Endangered Species under the *Species at Risk Act*, and set out provisions related to reducing human disturbance of marine mammals (e.g. viewing of marine mammals) and mandatory reporting requirements in the case there is accidental contact

with a marine mammal and a vessel or fishing gear. These regulations were amended in 2018 and now specify mandatory requirements to prevent disturbance of marine mammals.

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

- Feeding, swimming or interacting with a marine mammal.
- Moving a marine mammal (or enticing/causing it to move).
- Separating a marine mammal from its group or going between it and a calf.
- Trapping a marine mammal or a group either between a vessel and the shore, or between a vessel and other vessels.
- Tagging or marking a marine mammal.
- Checking nautical charts for the locations of various protected areas and no go zones.
- Ensure to check nautical charts for the locations of various protected areas and no go zones.

Boats are required to maintain a minimum approach distance of 100 m for whales, dolphins or porpoises, 200m when whales, dolphins or porpoises are in a resting position or with a calf, and 200m from all Killer Whales in Pacific Canadian waters except when in southern BC coastal waters which requires a 400m minimum approach distance to all killer whales (please see section 5.4.4). For more information on safe boating behavior around whales please visit: Watching Marine Mammals and Be Whale Wise.

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

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

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

Further information regarding the *Marine Mammal Regulations* can be obtained by contacting the DFO Marine Mammal Unit (MMU) (MarineMammals@pac.dfo-mpo.gc.ca).

5.4.3. Marine Mammal, Leatherback Sea Turtle and Basking Shark Sightings or Entanglements

The Department welcomes assistance in the reporting of any marine mammal, Leatherback Sea Turtle or Basking Shark entanglement or sighting. While there are many marine mammal species found in Pacific Canadian waters, sightings of Basking Shark and Leatherback Sea Turtles are infrequent. The collection of sighting data is useful to scientists in determining population size and species distribution and aids in recovery efforts under the Species at Risk Act (SARA).

Species identification guides for Sharks are available at https://waves-vagues.dfo-mpo.gc.ca/Library/40757067.pdf.

Guides to distinguish between pinnipeds, emphasizing differences between Steller and California Sea Lions can be found here:

https://wildwhales.org/wp-content/uploads/2020/08/BCCSN_IDGuide_Pinniped_email.pdf, and between

Sea and River Otters:

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

Best practices to reduce entanglement and reporting an incident: http://dev-public.rhq.pac.dfo-mpo.gc.ca/whales-baleines/docs/entanglements-empetrements-pub-eng.html

Information on approach distances from Marine Mammal Regulations can be found here: https://www.dfo-mpo.gc.ca/about-notre-sujet/publications/infographics-infographies/documents/100-200-400-eng.pdf

To report whale or turtle sightings contact the BC Cetacean Sighting Network:
Toll free: 1.866.I.SAW.ONE (1-866-472-9663)
Email: sightings@ocean.org
Website: http://wildwhales.org/
App : WhaleReport

To report Basking Shark sightings contact the Basking Shark Sightings Network:
Toll free: 1-877-50-SHARK (1-877-507-4275)
Email: BaskingShark@dfo-mpo.gc.ca,
Website: www.pac.dfo-mpo.gc.ca/SharkSightings

Marine Mammal Incident Reporting Hotline

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

1-800-465-4336 OR VHF CHANNEL 16

What to report:

- Your name and contact information
- Date and time of incident
- Species
- Animal alive/dead
- Nature of injury
- Location: Latitude/Longitude coordinates, landmarks
- Pictures/Video taken

5.4.4. Southern Resident Killer Whales Management Measures

The Government of Canada is taking important steps to protect and recover the Southern Resident Killer Whale population, in keeping with direction provided in *Species at Risk Act* (SARA) recovery documents. In May 2018, the Minister of Fisheries, Oceans and the Canadian Coast Guard and Minister of Environment and Climate Change determined the Southern Resident Killer Whale population faces imminent threats to its survival and recovery. Given the status of the population and ongoing threats to Southern Resident Killer Whale recovery, DFO implemented a number of measures in 2018 through 2021, including measures aimed at increasing prey availability and accessibility for Southern Resident Killer Whales - particularly Chinook salmon—and reducing threats related to physical and acoustic disturbance with a focus in key foraging areas within Southern Resident Killer Whale critical habitat.

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

For the 2022 fishing season, the Government of Canada intends to ensure actions for the 2022 season to mitigate threats of prey availability and acoustic and physical disturbance can be implemented to coincide with the return of Southern Resident Killer Whales in typically greater numbers to Canadian Pacific waters. Any in-season changes will be announced via Fishery Notices.

To address vessel disturbance in the presence of whales, a mandatory 400-metre vessel approach distance for all killer whales is in effect until May 31, 2022 in southern BC coastal waters between Campbell River and just north of Ucluelet. The *Marine Mammal Regulations* remain in effect year-round, and require maintaining a minimum 200 metre approach distance from all killer whales in Canadian Pacific waters other than those described above, and, 100 metres for other whales, porpoises and dolphins or 200 metres when the animal is in resting position or with a calf.

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

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

For information regarding the Southern Resident Killer Whale management measures to support recovery, please contact the Marine Mammal Team (DFO.SRKW-ERS.MPO@dfo-mpo.gc.ca) or visit https://www.canada.ca/southern-resident-killer-whales)

5.5. Ocean and Habitat Considerations

The *Oceans Act* came into force in 1997. 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.

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

The *Oceans Act*, the *Canada Wildlife Act*, and the *National Marine Conservation Areas Act* have given rise to several initiatives on the Pacific 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 Plan processes.

5.5.1. Canada's Marine and Coastal Areas Conservation Mandate

In August 2019, the Government of Canada surpassed its milestone of protecting 10% of Canada's marine and coastal areas by 2020, a target which is a reflection of Canada's United Nation Convention on Biological Diversity Aichi Targets commitments, collectively referred to as Canada's marine conservation targets. The Government of Canada further committed domestically to protecting 25% by 2025, and working towards 30% by 2030.

More information on the background and drivers for Canada's marine conservation targets is available at the following link:

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

To meet our marine conservation target, Canada is establishing Marine Protected Areas (MPAs) and "other effective area-based conservation measures" ("Other Measures"), in consultation with industry, non-governmental organizations, and other interested parties.

An overview of these tools, including a description of the role of fisheries management measures that qualify as Other Measures is available at the following link: http://www.dfo-mpo.gc.ca/oceans/mpa-zpm-aoi-si-eng.html.

5.5.1.1. Pacific North Coast Integrated Management Area (PNCIMA)

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

stakeholders, move together towards a more holistic and integrated approach to ocean use in the planning area.

The endorsement of the PNCIMA plan supports the Government of Canada's commitment to collaborative oceans management for the Pacific North Coast and provides a joint federal-provincial-First Nations planning framework for conservation and the management of human activities in the Pacific North Coast. One of the key priorities for the plan is the development of a marine protected area network. The planning for this network is well underway in the Northern Shelf Bioregion. It is anticipated that the network development will contribute to the Government of Canada's commitment to protecting 25% of Canada's oceans by 2025, and working toward 30% by 2030.

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

5.5.1.2. Northern Shelf Bioregion MPA Network

The Government of Canada, the Province of BC and 18 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, the Canada-British Columbia MPA Network Strategy, and is informed by previously developed First Nation marine plans.

Draft MPA network design scenario 1, which consists of areas proposed for conservation as well as their proposed management measures, was shared with non-partnering First Nations, who are not part of the collaborative governance arrangement, and with members of the Network Integrated and Ocean Advisory Committees in February 2019.

Governance partners considered all the input received about the first network scenario and developed scenario 2, which was discussed and further revised by partners and stakeholders during workshops held during the winter and spring of 2021. Throughout the summer and fall 2021, significant technical work was undertaken to develop a draft Network Action Plan which describes the draft network design scenario, as well as additional information such as proposed designation tools, implementation timelines, and monitoring recommended governance frameworks. Considerations are underway with respect to next steps for the process, including timelines for consultation and engagement. The Department will share more information as it becomes available. 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

5.5.1.3. Marine Spatial Planning South Coast

As part of a national marine spatial planning initiative, DFO is in pre-planning phase, collaborating with Indigenous groups and organizations, the Province of BC, and other federal departments (Transport Canada, Natural Resources Canada, Environment and Climate Change

Canada, Parks Canada and others), to gather information and data relevant to a marine spatial planning process in southern BC, which includes the Strait of Georgia and Southern Shelf bioregions. The concept of marine spatial planning is to improve coordination across jurisdictions and activities in the marine space. Deliverables by 2023 include: recommendations for a trilateral governance model/approach, a Marine Atlas (working draft), and a Framework to inform future planning phases, including the development of a marine spatial plan.

5.5.1.4. Marine Protected Areas (MPAs)

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

MPA regulations and management plans articulate any restrictions on activities taking place within the MPA, where applicable. More information on MPAs can be found at: http://www.dfo-mpo.gc.ca/oceans/conservation/areas-zones/index-eng.html, and in Appendix 10 of this IFMP.

5.5.1.4.1. Endeavour Hydrothermal Vents (EHV) MPA

The EHV MPA was designated in 2003 with the objective of conserving the unique hydrothermal vent ecosystems. The hydrothermal vents lie in waters 2,250 m deep 250 km southeast of Vancouver Island. The occasional licenced commercial pelagic fishing that occurs very near the ocean surface in the MPA is not considered to be in conflict with the conservation objectives of the MPA and will continue.. All commercial groundfish fisheries are restricted within the Endeavour MPA. More information can be found online at: http://www.dfo-mpo.gc.ca/oceans/mpa-zpm/endeavour/index-eng.html..

5.5.1.4.2. SGaan Kinghlas-Bowie Seamount (SK-B) MPA

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

5.5.1.4.3. Hecate Strait and Queen Charlotte Sound Glass Sponge Reefs (HS/QCS) MPA

The Hecate Strait and Queen Charlotte Sound Glass Sponge Reefs Marine Protected Area (Hecate MPA) was designated under the Oceans Act in February 2017 to conserve the biological diversity, structural habitat and ecosystem function of four glass sponge reefs off the coast of British Columbia. The Hecate MPA protects rare glass sponges from human activities that may break their silica (glass) structure, or may result in smothering through increased

suspended sediment. Under the Hecate MPA Regulations, human activities are regulated/managed using three different management zone types:

I. Core Protection Zones (CPZs) include the water columns surrounding the glass sponge reefs--extending from the seafloor to depths that vary depending on the Reef (100 m in Northern Reef, 120 m in the Central Reefs, 146 m in the Southern Reef).

II. Vertical Adaptive Management Zones (VAMZs) include water columns immediately above the CPZs, and each extends from that boundary to the sea surface.

III. Adaptive Management Zones (AMZs) are buffers around the CPZ/VAMZ water columns at each reef.

5.5.1.4.4. The CPZs are closed to anchoring and all fishing activities. In addition, the VAMZ and AMZs are closed to some commercial and recreational fishing activities. For more information on the Hecate MPA—including maps, boundaries, and restrictions to fisheries or human activities—please visit: http://www.dfo-mpo.gc.ca/oceans/mpa-zpm/hecate-charlotte/index-eng.html.Offshore Pacific Area of Interest

In May 2017, DFO announced the new Pacific Offshore Area of Interest (AOI) with the intention of making it one of Canada's largest Marine Protected Areas (MPAs) by 2021. The proposed MPA will provide protection to ecologically and biologically significant seamount and hydrothermal vent features within the Offshore Pacific Bioregion. Although the AOI has not yet been designated as an MPA, much of it is protected from under the Offshore Pacific Seamounts and Vents Closure (Offshore Fishery Closure). For more information on the Offshore Fishery Closure—including maps, boundaries and restrictions to other fisheries—please visit: https://www.dfo-mpo.gc.ca/oceans/oecm-amcepz/refuges/offshore-hauturiere-eng.html.

5.5.1.4.5. Race Rocks Area of Interest

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

5.5.1.5. National Marine Conservation Area Reserves (NMCARs)

5.5.1.5.1. Gwaii Haanas

Gwaii Haanas National Park Reserve, National Marine Conservation Area Reserve, and Haida Heritage Site is a 5000 km^2 land-and-sea protected area in the southern part of Haida Gwaii (formerly the Queen Charlotte Islands), approximately 100 kilometres off the north coast of British Columbia. The Haida Nation designated the area a Haida Heritage Site in 1985. The terrestrial part of Gwaii Haanas was designated a National Park Reserve by the Government of Canada soon after, and Canada and the Haida Nation have been managing the area cooperatively since 1993. In 2010, the Gwaii Haanas marine area was designated a National Marine Conservation Area Reserve.

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

Agreement (2010), which describes how Canada and the Haida Nation will manage Gwaii Haanas cooperatively.

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

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

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

Refer to Fishery Notice 0536, released June 13, 2019 for a detailed description of the Strict Protection Zones and can be found at: https://notices.dfo-mpo.gc.ca/fns-sap/index-eng.cfm?pg=view_notice&DOC_ID=222098&ID=all

Council of the Haida Nation Fisheries Management Directions for the Gwaii Haanas Haida Heritage Site can be found at: http://www.haidanation.ca/wp-content/uploads/2019/04/CHN-Fisheries-Management-Directions-FINAL.pdf#:~:text=COUNCIL%20OF%20THE%20HAIDA%20NATION%20FISHERIES%20MANAGEMENT%20DIRECTIONS,jurisdiction%20of%20the%20Council%20of%20the%20Haida%20Nation.

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

Implementation of the Land-Sea-People plan will also involve cooperative management of fisheries using an ecosystem-based management framework, and monitoring activities will be supported through partnerships. For more information on Gwaii Haanas and the Archipelago Management Board, visit www.parkscanada.gc.ca/gwaiihaanas. The Land-Sea-People plan can be downloaded at https://www.pc.gc.ca/en/pn-np/bc/gwaiihaanas/info/consultations/gestion-management-2018.

Users of the Gwaii Haanas marine area should be aware that, as specified in the *Gwaii Haanas Agreement*, there is "no extraction or harvesting by anyone of the resources of the lands and non-tidal waters of the Archipelago for or in support of commercial enterprise" (s3.3). There are specific requirements for visiting the Gwaii Haanas terrestrial area and advanced planning is necessary. Please contact the Gwaii Haanas administration office at 1-877-559-8818 for further information.

5.5.1.5.2. 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 (NMCAR) in the southern Strait of Georgia in 2004. Since then, consultations with First Nations, key stakeholders, communities and the public have occurred. Informed by those discussions, a proposed boundary for consultation was announced by the provincial and federal Ministers of Environment in 2011.

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

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

5.5.1.6. Scott Islands Marine National Wildlife Area

The Scott Islands Marine National Wildlife Area (mNWA) is the first protected marine area established by Environment and Climate Change Canada (ECCC) under the Canada Wildlife Act. In support of the conservation objectives of the Scott Islands mNWA, DFO is consulting on new regulations under the Fisheries Act to restrict certain fisheries that pose a risk to seabirds. A Notice of Intent was published in Canada Gazette Part 1 in June 2018 indicating the proposed regulations would prohibit fishing for three key forage fish species that serve as a key food source for seabirds (Pacific sand lance, Pacific saury, and North Pacific krill) as well as groundfish bottom trawling (in portions of the mNWA consistent with existing commercial closures). The anticipated pre-publishing of the regulations in Canada Gazette 1 is expected to occur in 2022.

For further information on this, please contact - DFO.ScottIslands-IlesScott.MPO@dfo-mpo.gc.ca

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

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

The Scott Islands Protected Marine Area Regulations can be found at:

https://laws-lois.justice.gc.ca/eng/regulations/SOR-2018-119/index.html

5.5.1.7. Strait of Georgia and Howe Sound Glass Sponge Reef Marine Refuges

Between 2016 and 2019, 17 marine refuges have been established under the Strait of Georgia and Howe Sound Glass Sponge Reef Conservation Initiative, which aims to protect glass sponge reefs from all bottom-contact fishing activities in alignment with DFO's Policy for Managing the Impacts of Fishing on Sensitive Benthic Areas. All commercial, recreational and Indigenous

food, social and ceremonial (FSC) bottom-contact fishing activities for prawn, shrimp, crab and groundfish, are prohibited within the 17 marine refuges as well as the use of downrigger gear for recreational salmon trolling (restricted via Condition of Licence) is prohibited within portions of Subareas 28-2 and 28-4 to protect Howe Sound glass sponge reefs. Prohibition fishing activities include:

- prawn and crab by trap
- shrimp and groundfish by trawl
- groundfish by hook and line
- use of downrigger gear in recreational salmon trolling

The following link contains the closure information regarding all of the Sponge Reef Closures within the Strait of Georgia and Howe Sound:

https://www.dfo-mpo.gc.ca/oceans/ceccsr-cerceef/closures-fermetures-eng.html

For further information on this, please contact Danielle Derrick at Danielle.Derrick@dfo-mpo.gc.ca.

5.5.1.8. Cold-Water Coral and Sponge Conservation Strategy

DFO's Pacific Region Cold-water Coral and Sponge Conservation Strategy encompasses short and long-term goals and aims to promote the conservation, health and integrity of Canada's Pacific Ocean cold-water coral and sponge species. The Strategy also takes into consideration the need to balance the protection of marine ecosystems with the maintenance of a prosperous economy. It was created with input from stakeholders throughout the Pacific Region and will help regional partners and stakeholders to understand how DFO's existing programs and activities tie into cold-water coral and sponge conservation.

5.5.2. Managing Impacts of Fishing on Sensitive Benthic Areas

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

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

5.5.3. Rockfish Conservation Areas

There are 162 Rockfish Conservation Areas (RCAs) in British Columbia, covering roughly 4,350km^2 of the Canadian Pacific Coast. These areas are closed to a range of recreational and commercial fisheries to protect inshore rockfish and their habitat.

DFO is currently undertaking a multi-year review of the conservation effectiveness of RCAs, including meeting the national criteria and standards for marine refuges to better conserve sensitive areas and contribute towards Canada's Marine Conservation Targets (MCT). To meet these standards, the risks to inshore rockfish, their habitat, and benthic communities will need to be avoided or mitigated. Peer-reviewed science advice also recommends that boundary changes to some RCAs will improve their spatial design by better capturing rockfish habitat features. RCAs in the Northern Shelf Bioregion have been selected for the first phase of engagement to align with the MPA network planning process in that area. Workshops with First Nations and stakeholders and online consultations were held in 2019. A summary of what we heard is available online at: https://www.pac.dfo-mpo.gc.ca/consultation/ground-fond/rca-acs/2020-heard-entendu-eng.html#6. There will be more opportunities to provide feedback on Rockfish Conservation Areas in the Northern Shelf Bioregion in the near future. DFO is also planning to review Rockfish Conservation Areas in other regions of British Columbia at a later date.

For further information on this, please contact DFO.RCA-ACS.MPO@dfo-mpo.gc.ca.

5.5.4. Gear Impacts

In the past, there have been concerns about the potential impacts of Geoduck harvesting on the benthic environment as the harvesting process uses high-volume water hoses ("stingers") that liquefy the substrate around the clams in order to extract them. This technique is used in both the aquaculture industry and in the wild fishery. Cultured or enhanced Geoduck densities are generally much higher than that of wild stocks and therefore impacts from harvests of cultured or enhanced clams could be potentially amplified.

Since 2005, research of the potential effects of both intertidal and subtidal Geoduck clam harvest in aquaculture and enhancement plots has occurred. The potential effects on a variety of physical (sediment grain size, suspended sediment load), chemical (sulphide concentration, redox potential, organic matter, total organic carbon, total nitrogen), and biological (infaunal abundance/diversity, eelgrass density/shoot length/biomass) factors have been examined in four separate experiments [two small-scale studies (3 x 20 m intertidal plot and 7 x 21 m subtidal plot) and two large-scale studies (15 x 30 m intertidal plot and 60 x 100 m subtidal plot)]. Results from these four studies indicate that the effects of Geoduck harvest range from minimal (both temporally and spatially) to non-existent. Suspended sediments generated during the harvest were generally limited to within the harvest plot and the levels were not greater than those during wind/storm conditions.

Information obtained from these studies has helped to inform a review of the fishery against the requirements under the national policy for managing the impacts of fishing on sensitive benthic areas. The ecological risk analysis framework drafted under this policy will be used to determine the level of risk in this fishery and whether mitigation measures are required in any areas. The intertidal study has been published and available at:

http://www.dfo-mpo.gc.ca/csas-sccs/Publications/ResDocs-DocRech/2013/2013_001-eng.html

Assessing Potential Benthic Impacts of Harvesting the Pacific Geoduck Clam in Intertidal and Subtidal sites has been published in the Journal of Shellfish Research and is available at: http://www.bioone.org/doi/pdf/10.2983/035.034.0305

5.6. National Fishery Monitoring Policy and Catch Reporting

Robust fishery monitoring information is essential for stock assessment and to effectively implement management measures such as target and bycatch limits, quotas and closed areas. Fishery monitoring information is also needed to support the long-term sustainable use of fish resources for Food, Social, and Ceremonial and other Indigenous fisheries, commercial fisheries, recreational fisheries, and to support market access for Canadian fish products.

Following multi-sectoral consultations, DFO released the national "Fishery Monitoring Policy" in 2019, replacing the regional "Strategic Framework for Fisheries Monitoring and Catch Reporting in the Pacific Fisheries" (2012). The national Fishery Monitoring Policy seeks to provide dependable, timely and accessible fishery information through application of a common set of procedural steps used to establish fishery monitoring requirements across fisheries. Policy principles include respecting Indigenous and Treaty rights, linkage of monitoring requirements to the degree of risk and complexity of fisheries, linkage of monitoring programs to fishery and policy objectives while accounting for cost-effectiveness and practicality of implementation, and shared accountability and responsibility between DFO, Indigenous groups and stakeholders.

To ensure consistent national application of the Fishery Monitoring Policy, further guidance is provided through the "Introduction to the Procedural Steps of Implementing the Fishery Monitoring Policy". Fish Stocks are first prioritized for assessment through collaboration with Indigenous groups and Stakeholders. Risk and data quality assessments are then conducted on priority stocks and associated fisheries and monitoring programs. Next, monitoring objectives are set in alignment with the Fishery Monitoring Policy, followed by specifying monitoring requirements and then monitoring programs are operationalized. Finally, a review and evaluation of the fishery monitoring programs against the monitoring objectives will be conducted and reported on.

The Fishery Monitoring Policy is part of DFO's Sustainable Fisheries Framework and is available at:

https://www.dfo-mpo.gc.ca/reports-rapports/regs/sff-cpd/fishery-monitoring-surveillance-des-peches-eng.htm

The "Introduction to the Procedural Steps of Implementing the Fishery Monitoring Policy" is available at:

https://www.dfo-mpo.gc.ca/reports-rapports/regs/sff-cpd/fmp-implementation-psp-mise-en-oeuvre-eng.htm

In cases where assessment of monitoring programs identifies a gap between the current and target level of monitoring, discussions will be held between DFO Indigenous groups and stakeholders to identify options to address the monitoring gap, and the feasibility of these options (e.g. cost, technical considerations, etc.).To support Fishery Monitoring Policy principles, a collaborative approach is required.

Where monitoring options are determined to be feasible, the monitoring and reporting regime will be revised to incorporate these options, providing resource managers with sufficient information

to meet Fishery Monitoring Policy objectives. Where monitoring options are not feasible, alternative management approaches are required to reduce the risk posed by the fishery. If there is no gap between the current and target level of monitoring, the management approach will not require any change.

6. OBJECTIVES

The "longer term" objectives for this and other invertebrate fisheries in B.C. are outlined below.

6.1. National

DFO aims to:

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

6.2. Pacific Region

In 1994, the Biological Objective Working Group of the Pacific Scientific Advice Review Committee (PSARC) identified three biological objectives for management of Pacific Region fish and invertebrate stocks (Rice et al, 1995). The objectives remain relevant today, particularly in light of development of the national objectives around sustainable fisheries:

- Ensure that subpopulations over as broad a geographical and ecological range as possible do not become biologically threatened (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.

6.3. Geoduck and Horse Clam

6.3.1. Stock Conservation

The biological objective is to harvest the available biomass on a sustainable basis and to manage this on a bed-quota basis. The management objectives to accomplish these biological objectives are to:

- Conduct ongoing surveys and research to improve information on Geoduck stocks, bed location, and biological characteristics;
- Reduce uncertainty in Geoduck biomass estimates by constantly improving information on the three key elements of biomass estimation: bed area, weight, and density;
- Harvest at a maximum sustainable annual (Geoduck) harvest rate of 1.2 to 1.8% of estimated current biomass;

- Track accurate harvest information for all users. For the commercial fishery this is accomplished through a Dockside Monitoring Program and on-grounds monitors;
- Management closures: Close beds where estimated current biomass has fallen below 40% of estimated unfished biomass (Stock index). Only re-open beds when the current biomass estimates rebound above the 40%, typically when a survey shows an increase in density as a result of recruitment. (Note: This management tool, i.e. using the stock index as a metric for closure may not be meaningful in areas where Sea Otters are abundant and where Sea Otter predation has been documented.)
- Manage the commercial fishery to an appropriate scale in order to avoid any risk of localized overfishing; and
- Limit Horse Clam harvest until basic biological parameters allowing calculation of a TAC are known.

6.3.2. Sustainability

Two primary issues are of particular concern when considering the sustainability of the Geoduck fishery. The first is the presence of Sea Otters in areas where the Geoduck fishery is carried out. The second issue is the appropriateness of the management objectives above. The objectives for addressing these issues are to:

- Build an ecosystem-based adaptive management strategy that will allow a Geoduck fishery even with the recovery of otters. The UHA funds on-grounds monitors whose tasks now include, among others, collecting data on otters and their effects on Geoduck populations, such as otter counts and recording effects of otter predation on Geoduck beds.
- Consider historical and socio-economic review of B.C. shellfish fisheries and Sea Otters. The technical report is intended to assist shellfish managers to work with shellfish harvesters to develop innovative solutions to mitigate the economic effects of Sea Otters.
- Periodically re-evaluate harvest data and data collected through surveys and other observations. The Department, in collaboration with the UHA, continues to review population age structure and recruitment, and annually refines estimates of bed size (through geo-reference studies), clam sizes (through market samples and biological samples), and densities (through surveys). The estimates of current biomass from surveys and extrapolation to un-surveyed areas require on-going study.

6.3.3. Ecosystem

Harvest and culture activities should occur in a manner that will prevent impacts to eelgrass beds and other sensitive fish habitats. Harvesters should avoid eelgrass beds when anchoring and dragging air hoses. The DFO Fisheries Protection Program advises that activities are unlikely to negatively impact eelgrass beds if they occur at least 10 meters away. If commercial harvesters have any concerns or questions that a fishing activity may adversely affect fish habitat, they are encouraged to contact the local Fisheries Protection Program manager.

6.3.4. Social, Cultural, and Economic Considerations

6.3.4.1. First Nations

The Department's objective is to provide opportunities for First Nations to harvest fish for FSC purposes, or domestic use under treaty, in a manner consistent with the decision of the Supreme

Court of Canada in the Sparrow Decision, and other court decisions. For more information, see the Internet at: http://www.pac.dfo-mpo.gc.ca/abor-autoc/index-eng.html or Appendix 3.

6.3.4.2. Recreational

DFO's objective is to affirm the social and economic importance of the recreational fishery, provide sustainable recreational harvesting opportunities as part of integrated management plans consistent with DFO's policies, to create an environment within the advisory process in which recreational fishing representatives are welcome to express their concerns and opinions at the table, and to establish working mechanisms in conjunction with the other fishing sectors to reduce conflict and mitigate issues.

DFO's objective is to develop standards for catch monitoring for all sectors, including recreational, commercial and First Nations.

For more information, see Appendix 4.

6.3.4.3. Commercial

The Department will continue to work collaboratively with interested stakeholders and First Nations to:

- Maximize the long term sustainability, profitability and stability of the Geoduck and Horse Clam fishery and industry in B.C.;
- Manage the fishery to allow for a year round supply of product to the market;
- Establish and monitor conditions of harvest to continue to develop knowledge of the stock;
- Continue to develop policies and programs that will allow for the orderly development of Geoduck and Horse Clam culture activities with no undue detrimental effect on the wild stocks or the wild fishery;
- Ensure safe harvest of shellfish through compliance with the CSSP programs;
- Manage the fishery to ensure safety for harvesters; and
- Implement protocols to address the impact of PSP on completion of the annual quota.

6.3.4.4. Aquaculture

The Department is continuing to collaborate with the Provincial Government to develop policies and programs that will allow for the orderly development of Geoduck and Horse Clam culture activities without undue detrimental effect on the wild stocks or wild fishery. In early 2017, Fisheries and Oceans Canada finalized the Integrated Geoduck Management Framework (IGMF). Geoduck aquaculture, as outlined in the IGMF, represents an opportunity to diversify the economies of coastal and Indigenous communities in British Columbia while maintaining the economic prosperity and long-term sustainability of the wild Geoduck fishery. See Appendix 5.

6.4. Compliance Objectives – Food Safety

The Canadian Shellfish Sanitation Program (CSSP) was established to co-ordinate the efforts of federal government agencies concerning the standards for sanitary shellfish practices. The purpose of the CSSP is to ensure that bivalve molluscs are safe for human consumption. To achieve this, the CSSP:

- sets standards for the harvest and handling of all bivalves within Canadian tidal waters;
- commits, by way of the Agreement, to improve sanitary practices within the shellfish industry;
- designates the responsibilities of DFO, Environment and Climate Change Canada (ECCC) and the Canadian Food Inspection Agency (CFIA) to properly facilitate the mandate of the CSSP to Canadians and foreign governments; and
- strives to increase the efficiency and effectiveness of the CSSP by co-operation, communication, and participation.

The Pacific Region Interdepartmental Shellfish Committee (PRISC) meets biannually to discuss the recommendations that have arisen from water quality survey work conducted by ECCC.

7. ACCESS AND ALLOCATION

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

7.1. First Nations

To date, no limits have been placed on First Nations Geoduck harvest for FSC.

7.2. Recreational

The daily limit for Geoduck is three per day; the daily limit for Horse Clam is six per day. The possession limits for all clam species are two times the daily limit.

7.3. Commercial

The coast-wide Geoduck TAC for 2022/23 is 2,811,000 lb. (1,275 tonnes). 6,000 lb. of the TAC is allocated for biological samples. Additional small harvests are authorized for biotoxin monitoring and broodstock collection. A commercial TAC of 2,805,000 lb. provides for 550 Quota Blocks each with 5,100 lb. In addition, there may be limited supplemental harvest opportunities of Geoduck harvested from areas tenured for the purpose of aquaculture, which are conducted through amended licence conditions.

Commercial Horse Clam harvests will be permitted only in those areas opened for Geoducks. The incidental harvest of Horse Clams while fishing for Geoduck is limited to small area caps. In areas with a survey-based TAC, additional harvest may occur in addition to the area caps.

7.4. Aquaculture

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.

DFO will aim to facilitate access for relatively low numbers of wild juvenile or adult fish for limited time periods (e.g. for broodstock development), where populations would face insignificant to low risk from the additional harvest pressure (DFO 2004).

8. MANAGEMENT MEASURES FOR THE DURATION OF THE PLAN

See the Harvest Plans, Appendix 3 to 6 for detail on the following:

- Total Allowable Catch (TAC)
- Fishing Seasons/Areas
- Control and Monitoring of Removals
- Decision Rules
- Licensing
- Habitat Protection Measures

9. SHARED STEWARDSHIP ARRANGEMENTS

9.1. Commercial

The UHA undertakes annual stock assessment activities in support of the commercial fishery. The UHA funds density surveys and research activities and their costs include vessel time, diver salaries, travel costs and costs for a third party biologist. DFO provides in-kind support and data analysis.

The UHA funds the catch verification program to track all commercial Geoduck and Horse Clam landings as well as PSP sampling and other fishery related costs.

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

9.2. Fisheries and Oceans Canada

Several Stock Assessment personnel, including staff managing landing data, and two Fisheries Management personnel are directly involved in this fishery for some part of their activities. Contributions to the IFMP are provided by Fisheries Management in the areas and at regional headquarters, the Science Branch, the Shellfish Data Unit, Conservation and Protection Branch (C&P), the Pacific Fishery Licence Unit, and numerous administrative personnel. Generally, all personnel are multi-tasked, i.e. Resource Managers may work on all dive fisheries.

10. COMPLIANCE PLAN

10.1. Overview

DFO's Conservation and Protection (C&P) program is responsible for enforcing the *Fisheries Act* and pursuant regulations and related legislation. Enforcement activities are carried out by Fishery Officers across Canada who conduct patrols on land, at sea and in the air.

The Department promotes compliance with the law through a range of actions including education and awareness activities that encourage Canadians to protect fishery resources and habitats, patrol activities to detect violations and major case management. These activities are further outlined in the C&P National Compliance Framework.

There are approximately 160 Fishery Officers stationed in the Pacific Region, which encompasses B.C. and the Yukon Territory. They are designated as "Fishery Officers" under Section 5 of the *Fisheries Act*. The *Fisheries Act* and the *Criminal Code of Canada* are the primary pieces of

legislation outlining the powers and responsibilities of Fishery Officers. Officers are designated under other Acts as well, such as the *Coastal Fisheries Protection Act* and *Species at Risk Act*.

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

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

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

10.2. Enforcement Issues and Strategies

Enforcement of the Geoduck and Horse Clam fisheries will be tempered by commitments to higher priority issues, such as species at risk, CSSP 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.

Fishery Officers conduct a range of activities to promote compliance. These activities include attending industry and internal management meetings, defining key enforcement concerns with Fisheries Management prior to the commercial fishery, conducting patrols, at sea boardings and plant inspections during the fishery, and post season reporting.

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.

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 C&P enforcement program. C&P conducts joint patrols of First Nations fisheries and strives to complete enforcement protocols to better define our working relationship.

ISSUE	SECTION	STRATEGY
Licensing Verification: Vessel licensed. No fishers' registration card (FRC). Fail to produce FRC.	*Pacific Fishery Regulation*s (PFR) Section (S) 22, PFR S 25, *Fishery General Regulations* (FGR) S 11	At sea and dockside inspections will occur when opportunities exist. These inspections may include inspection of all licensing documents to ensure compliance with regulations.
Harvest from contaminated area.	*Management of Contaminated Shellfish Regulations* (MCSR) S 3	Patrols are increased for all bivalve fisheries when areas close due to PSP. Due to hail-in requirements, commercial fish harvesters can be notified of closures.

ISSUE	SECTION	STRATEGY
Fish during closed time/area.	PFR S 63	Patrols utilizing program vessels will be made when opportunities exist. May use charter or DFO aircraft.
Fail to provide proper landing and hail information, lack of notification for change of area, cancellation of trip, or incorrect reporting of area fished.	FGR S 22(7) (Fail to comply with terms and conditions of licence.)	At-sea and dockside inspections will occur when opportunities exist. Investigations will occur on an opportunistic basis after notification by Fisheries Management that a violation may have occurred. Charter aircraft may be used in co-ordination with scheduled priority fishery patrols.
Fail to use proper cage. Fail to tag cage. Fail to use proper tag.	FGR S 22(7)	At-sea and dockside inspections will occur when opportunities exist. Investigations will occur on an opportunistic basis after notification by Fisheries Management that a violation may have occurred.
Fail to maintain Harvest Log Book.	FGR S 22(7)	At-sea and dockside inspections will occur when opportunities exist. Investigations will occur on an opportunistic basis after notification by Fisheries Management that a violation may have occurred.
Fail to weigh before transhipping to packer.	FGR S 22(7)	At-sea and dockside inspections will occur when opportunities exist. Investigations will occur on an opportunistic basis after notification by Fisheries Management that a violation may have occurred.
Packer fails to hail.	FGR S 22(7)	Dockside inspections will occur when opportunities exist.
Pack without conditions of licence attached.	FGR S 22(7)	Dockside inspections will occur when opportunities exist.
Fail to have clams weighed and validated at landing.	FGR S 22(7)	Dockside inspections will occur when opportunities exist.
Smash shells or slit membrane. Dump or throw overboard.	FGR S 22(7)	Dockside inspections will occur when opportunities exist. Investigations may be initiated if reports from observers are received.

ISSUE	SECTION	STRATEGY
Fail to provide assistance to observers. Fail to permit observers to carry out duties.	FGR S 46,47,48,49	Fishery Officers will attend when observers are unable to conduct their duties. Investigations will be initiated.
High grading of product underwater and on board.	FGR S 22(7)	Peer pressure within the commercial sector is a deterrent. Fishery Officers will respond to reports of this activity through inspections and surveillance.
Damaging eelgrass beds.	FGR S 22(7) FA S 35(1)	Inspection dives may be conducted by Fisheries Protection Program (FPP) staff to assess damage to eelgrass beds.
Fail to advise observer of transfer of quota.	FGR S 22(7)	Fishery Officers may respond if Fisheries Management and the contractor cannot resolve the issue.
Obstruct or assault Fishery Officer or Fishery Guardian.	FA S 62 Criminal Code of Canada (CCC) S 129	Fishery Officers will investigate and lay charges for obstructing a Fishery Officer/Peace Officer.

11. PERFORMANCE REVIEW

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

11.1. Stock assessment and Research

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

11.2. First Nations Fishery

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

11.3. Recreational Fishery

The post season review may include outcomes of meetings with recreational harvesters on specific issues.

11.4. Commercial Fishery

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

11.5. Compliance

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

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13. GLOSSARY

abundance	Number of individuals in a stock or a population.
age composition	Proportion of individuals of different ages in a stock or in the catches.
aquaculture	As defined by the United Nations Food and Agriculture Organization (FAO), aquaculture is the culture of aquatic organisms, including fish, molluscs, crustaceans, and aquatic plants. Aquaculture implies some form of intervention in the rearing process to increase production, such as regular stocking, feeding, protection from predators, etc. It also implies individual or corporate ownership of the cultivated stock.
Area and Subarea	Defined in Section 2 of the *Pacific Fishery Management Area Regulations*. A map of Pacific Fishery Management Areas is available on the Department's Internet site at: http://www.pac.dfo-mpo.gc.ca/fm-gp/maps-cartes/areas-secteurs/index-eng.html
biomass	Total weight of all individuals in a stock or a population.
bycatch	The unintentional catch of one species when the target is another.
catch validation program	A program designed to monitor, record, and verify catches.
chart datum	The zero tide elevation on a hydrographic chart which usually approximates the lowest tide level for the local area.
Committee on the Status of Endangered Wildlife in Canada (COSEWIC)	Committee of experts that assess and designate which wild species are in some danger of disappearing from Canada.
communal commercial licence	Licence issued to First Nations organizations pursuant to the *Aboriginal Communal Fishing Licences Regulations* for participation in the general commercial fishery.
communal licence	A licence issued to First Nations organizations under Section 4 of the *Aboriginal Communal Fishing Licences Regulations*, pursuant to the *Fisheries Act*, to carry on fishing and related activities.
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.
CSAS	Canadian Science Advisory Secretariat

CSSP	Canadian Shellfish Sanitation Program ensures that bivalve shellfish are harvested from waters meeting acceptable sanitary and biotoxin criteria.
dockside monitoring program (DMP)	A monitoring program that is conducted by a company that has been designated by the Department, which verifies the species composition and landed weight of all fish landed from a commercial fishing vessel.
Domoic Acid Poisoning	A marine biotoxin sometimes found in bivalves. Also referred to as ASP or Amnesic Shellfish Poisoning.
DSP	Diarrhetic Shellfish Poisoning. A marine biotoxin sometimes found in bivalves.
enhancement	The culture and release of wild stocks for stock rehabilitation and/or to increase stock sizes above natural levels of abundance. An enhanced stock is a common property resource and is subject to the public right to fish.
fishing effort	Quantity of effort using a given fishing gear over a given period of time.
Food, Social, and Ceremonial (FSC)	A fishery conducted by Aboriginal groups for food, social and ceremonial purposes.
GMA	Geoduck Management Area. Subdivisions of the coast of BC appropriate to the purpose of managing portions of the coast-wide quota.
harvest quotas	A fixed amount of catch provided as an opportunity for harvest to a licensed fisher or vessel.
high grading	Sorting through the catch and discarding less desirable animals (small, dark, other characteristics) underwater at the time of harvest, or on board the vessel.
Indigenous Knowledge	There is no universal definition of Indigenous knowledge, and the composition of Indigenous knowledge is for Indigenous peoples to determine. Indigenous knowledge is intricately tied to Indigenous worldviews and ways of life, rather than knowledge in a western sense.
intertidal	The area of the ocean shoreline located between the highest high water and lowest low water tidal levels.
invertebrate	An animal without a backbone.
IVQ	Individual Vessel Quota: a portion of the total allowable catch (TAC) allocated annually to an individual vessel licence. In the Geoduck fishery, each IVQ is equivalent to 1/55 of the commercial TAC.
landed value	Value of the product when landed by the licensed vessel.
landing	Quantity of a species caught and landed. Harvested animals transferred from a vessel to land.
Marine Biotoxin	Poisonous compounds accumulated by shellfish feeding upon toxin containing dinoflagellates and marine diatoms.
natural mortality	Mortality due to natural causes, symbolized by the mathematical symbol M.
observer	An individual who has been designated as an Observer by the Regional Director General for the Pacific Region of Fisheries and Oceans Canada pursuant to section 39 of the *Fishery (General) Regulations*

	and in the employ of a service provider company that has been certified by the Canadian General Standards Board (CGSB) for Dockside Monitoring.
observer coverage	When a licence holder is required to carry an officially recognized observer onboard their vessel for a specific period of time to verify the amount of fish caught, the area in which it was caught and the method by which it was caught.
OGM, on-grounds monitor	"On-Grounds Monitor" means a third party individual, who may or may not be designated as an "Observer", whose role is to co-ordinate sampling for the Marine Biotoxin Monitoring Program, communicate with dockside observers, write Incident Reports, advise operators of open and close times and fishing locations, monitor effort, co-ordinate fishing activity to avoid excessive harvesting in specific Geoduck and Horse Clam beds, observe product transfers to packer vessels, check dive harvest information, and record other observations about the prosecution of the Geoduck and Horse Clam fishery, and about sea otter impacts.
Population	Group of individuals of the same species, forming a breeding unit, and sharing a habitat.
precautionary approach	Set of agreed cost-effective measures and actions, including future courses of action, which ensures prudent foresight, reduces, or avoids risk to the resource, the environment, and the people, to the extent possible, taking explicitly into account existing uncertainties and the potential consequences of being wrong.
PSARC	See CSAP
PSP	Paralytic Shellfish Poisoning. A marine biotoxin sometimes found in bivalves. Also commonly referred to as "red tide".
quota	Portion of the total allowable catch that a unit such as vessel class, country, etc. is permitted to take from a stock in a given period of time.
Quota Block	The Commercial Total Allowable Catch has been divided into 550 equal blocks that can be traded, permanently or temporarily amongst G or FG licences.
recruitment	Amount of individuals becoming part of the exploitable stock e.g. that can be caught in a fishery. The process whereby young animals are added to a fishable stock or population.
sampling program	A program in which representative samples of animals are collected for the calculation of parameter estimates that describe such things as weight, length or age within the general population.
shell ageing	The process of examining growth marks on a bivalve shell to determine the animal's age.
spawner	Sexually mature individual.
Species at Risk Act (SARA)	The Act is a federal government commitment to prevent wildlife species from becoming extinct and secure the necessary actions for their recovery. It provides the legal protection of wildlife species and the conservation of their biological diversity.
stakeholders	Individuals or groups with an interest in a particular fishery or activity.

stock	Describes a population of individuals of one species found in a particular area, and is used as a unit for fisheries management. Ex: NAFO area 4R herring.
stock assessments	Scientific evaluation of the status of a species belonging to a same stock within a particular area in a given time period. Results of analyses of fisheries and research data used to evaluate the effects of fishing on a stock or population and to predict the reactions of populations to alternative management choices.
substrate	The ground (often the ocean bottom) and its composition, in or on which animals live.
subtidal	A portion of the bottom of the ocean that is not exposed at low tide stages. The ocean bottom at elevations below low water or chart datum.
tonne	Metric tonne, which is 1,000 kg or 2,204.6 lb.
total allowable catch (TAC)	Total allowable catch: the amount of catch that may be taken from a stock, determined by analytical procedures, to achieve management objectives.
total validated landings	The sum of all landed Geoducks which have been validated by the Validation Program.
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.
validation	The verification, by an observer, of the weight of fish landed.

APPENDIX 1: POST-SEASON REVIEW

1. SUMMARY

The 2020/21 fishing season was not without its challenges. The most significant being the closure of markets for a number of months due to a global pandemic. The season was delayed for just over 2 months to allow for completion of the previous season which was extended. The provision to allow transfer of quota between quota regions, see Appendix 6, section 5.9.5.3, was utilized due to the persistent PSP on the West Coast of Vancouver Island. 27,500 lbs of quota was transfer from the West Coast to the North Coast. At the time of finalizing this document, as a result of quota transfers inseason, 45 of 55 licences held quota for the 2020/21 season and was being fished off approximately 45 vessels. Completing the quota on the West Coast Vancouver Island may be challenging if biotoxin continues. It is expected the allocated Total Allowable Catch (TAC) for the North Coast and the Gulf will be harvested by the end of the season, assuming biotoxin and weather do not become a problem.

1.1. Stock Assessment and Research

Surveys are typically planned, for most of the coast, two years in advance of harvesting in order to ensure results are included in the quota planning. Areas targeted for surveys include areas that have never been surveyed, areas not surveyed recently, areas that are approaching reference point and areas in which the science advice contradicts harvester's advice.

In 2020, the Central Coast rotation was the focus for surveys. Twenty-five days were spent in May/June doing surveys, targeting portions of Pacific Fishery Management Areas (PFMA) 6 and 7. Ten (10) days were spent in the Gulf in PFMA 17. There were four (4) survey days on the West Coast of Vancouver Island (WCVI) in Area 24.

The current assessment model does not account for natural recruitment and relies heavily on calculation of the original biomass. The Department completed a research paper to more appropriately calculate original biomass. This has better addressed natural recruitment occurring on surveyed sites. This paper was presented through the Canadian Science Advisory Secretariat (CSAS) peer review process and accepted. The paper is final and has been used in the calculation of quotas since the 2019/20 season.

1.2. First Nations Fishery

Catch information on food, social and ceremonial (FSC) harvest is collected by some First Nations, by First Nation fisheries program personnel or by band administration offices. Fisheries and Oceans Canada (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. FSC harvest for Geoduck has not been reported and it is not expected that there are any significant Geoduck harvests for FSC.

1.3. Recreational Fishery

No advice or comments were received from the recreational sector. The amount of Geoduck harvested by the recreational sector is unknown but believed to be minimal.

1.4. Wild Commercial Fishery

At the time of finalizing this document the quota had been achieved in the Gulf and approximately 85% of the North Coast quota was achieved. The West Coast of Vancouver Island has only harvested 70% of the allocated quota and much of the area is closed at the end of the season for herring spawn. The Underwater Harvesters Association (UHA) has requested the shift of quota allowed within the IFMP, see Appendix 6, section 5.9.5.3, to be moved from the West Coast of Vancouver Island to the North Coast. However, the West Coast quota may still be difficult to achieve prior to the end of the season if biotoxin levels persist.

The quota is set on a GMA basis as a sum of bed quotas. In some GMAs this allocated quota was exceeded and in some GMAs the quota wasn't achieved. But the overall quota was within the bounds of the IFMP.

The North Coast area has progressed with little interruptions due to PSP this season. Many of the areas with known otter populations have not been harvested to date. More information about stocks in these areas will be available once the fleet goes fishing there, scheduled for the 2022/23 season. The North Coast fleet, along with buyers opted to stop fishing early (in May) for there usual Summer shut down.

There continues to be interest by First Nations to engage in the harvest of Geoduck from the wild or through aquaculture. The Department has purchased a total of five Geoduck licences with 30 quota blocks under the Pacific Integrated Commercial Fisheries Initiative (PICFI) program and two (2) quota blocks under the ATP program. All five of the licences with all 30 quota blocks within the PICFI program were provided to First Nations in this season. The two quota blocks purchased by the ATP program were also allocated to First Nations.

The UHA, through inquiries, (it is difficult to ascertain the ownership of Geoduck quota the way the quota is linked to a vessel) has determined that a total of 61 (11%) of quota blocks are owned by First Nations, either through a Commercial Fishing Enterprise or privately.

The Quota Block Transfer Program was initiated in 2012 and, as a result of a third party review, a DFO internal review and a survey of all licence holders, the quota transfer program was made indeterminate in the 2017/18 season. By all accounts the program has proven successful and continues to be supported by industry. There were approximately 29 temporary transfer transactions and nine permanent transfer transactions in 2014. In 2015, there were 32 temporary transfer transactions and four permanent transfer transactions. In 2016/17 there were 46 temporary transfers and ten permanent transfers. In 2017/18, there were 40 temporary transfer transactions and five permanent transfer transactions. In 2018/19, there were 56 temporary transfer transactions and two permanent transfer transactions. In 2019/20, there were 52 temporary transfer transactions and four permanent transfer transactions. To date in 2019/20, there have been 45 temporary transfer transactions and seven permanent transfer transactions.

Sea Otters continue to expand in British Columbia and harvest Geoduck for food. Many areas in which Sea Otters reside are no longer a viable area for the commercial Geoduck fishery. The on-grounds monitors for the West Coast Vancouver Island (WCVI) and the North Coast made some observations about Sea Otter effects in the areas. Areas are tracked to assist in quota allocation. Sea Otters are considered the largest impact to the sustainability of this fishery.

1.5. Compliance

In general, compliance with the catch validation program and other management programs was considered good. There have been no high priority incidents reported for the 2021/22 season.

1.6. Historic Information

Figure 1. Geoduck: Landings (t), commercial TAC (t), and landed value ($), 1976-2020/21.

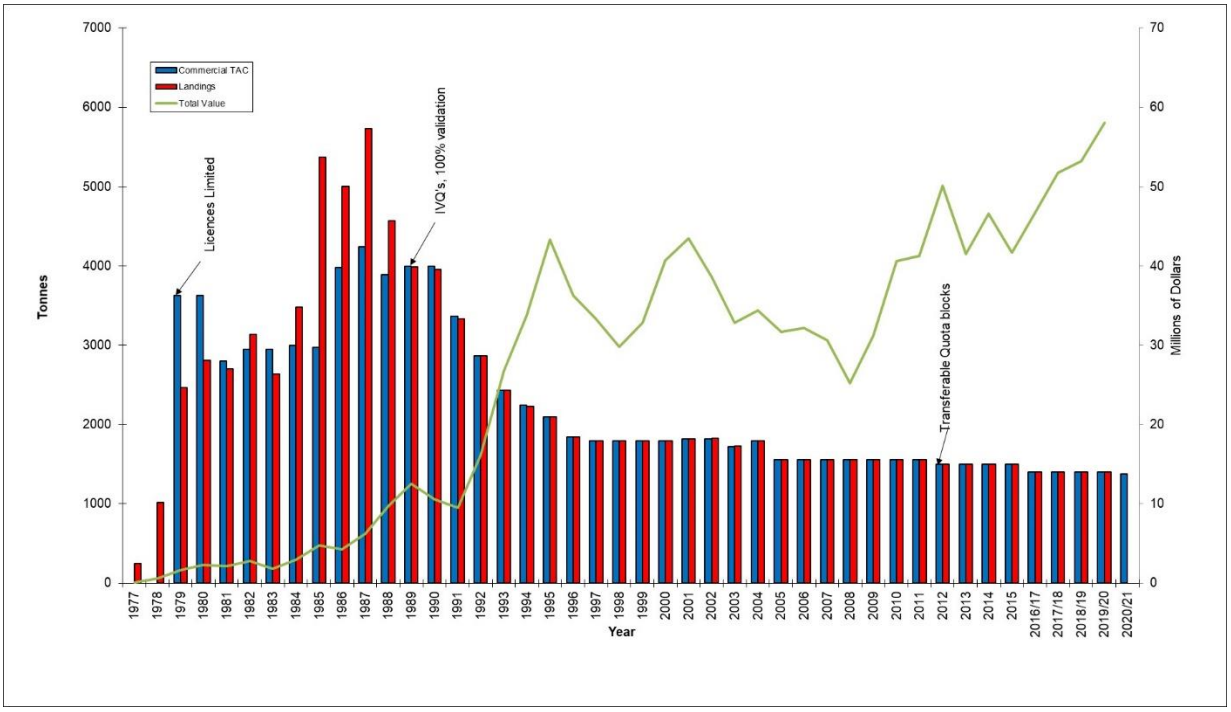

Figure 2. Horse Clam: Landings (t)

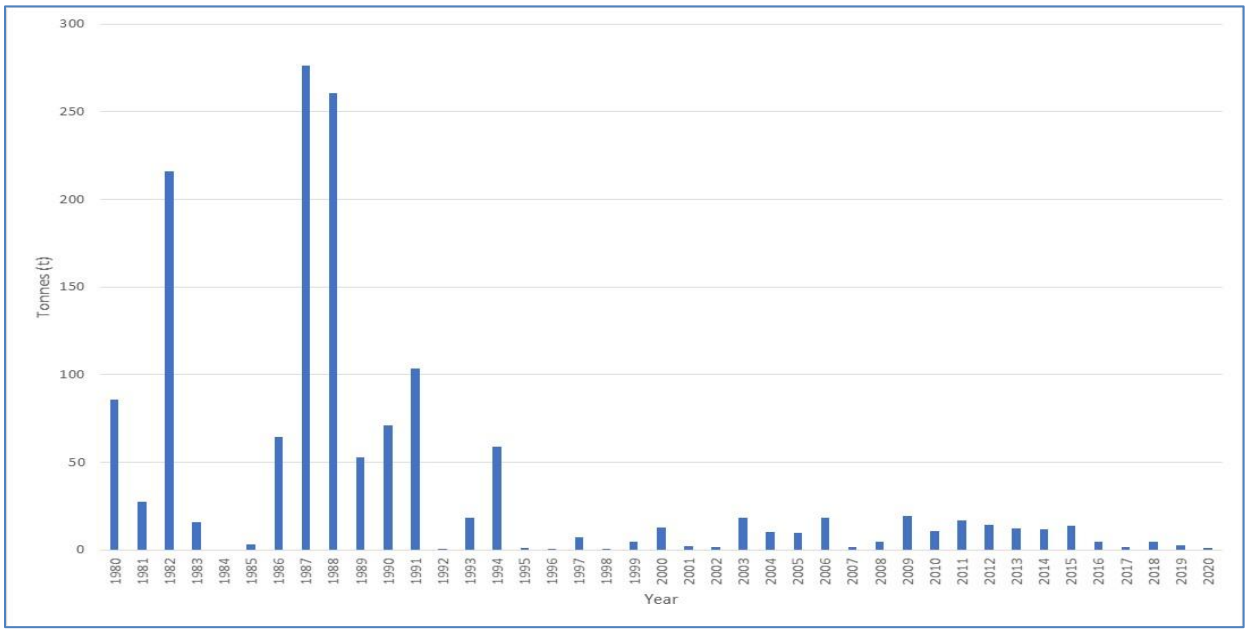

Table 1. History of Management Actions in the Geoduck Fishery, 1976 to 2021/22.

Timeline	Management decisions
1976	Commercial dive fishery began for Geoduck Clams
1979	Licences were limited and coastwide harvest quotas were set for conservation
1981	The Geoduck and Horse Clam license holders of B.C., Canada founded the Underwater Harvesters Association (UHA)
1981	Licence limitation reduced the fleet to 55
1987	Landings peaked at 5,735 tonnes
1989	A management program with individual vessel quotas (IQ or IVQ) for Geoducks initiated, with area licensing and a three-year area rotation period established where each area was fished every third year at a harvest rate no greater than 3% of the original biomass (except Area 24 which was fished annually)
Early 1990's	Research studies to investigate biological aspects of Geoduck populations initiated in selected sites in the Strait of Georgia and the WCVI
1992	"P" licences issued for processing Geoducks at sea for use in the north coast and the WCVI
	The earliest transect survey designed to measure density was conducted in B.C.
1993	Geoduck brood stock from Marina Island first collected and juvenile seed Geoducks have been successfully produced at four licensed hatcheries in B.C.
1994	Shift in area selection with more licences assigned to the north coast areas
1995	Five deep-water Geoduck areas were selected as experimental sites and placed under tenure with the Province of B.C. for aquaculture
	Pilot project for combining harvest log data with validations undertaken in Inside Waters of the South Coast (program undertaken to increase the accuracy of harvest log data and reduce the duplication in catch data reporting)
	Coastwide closure for sportfishing for Geoducks (removed April 1, 1996 for Areas 11-29)
	The UHA has undertaken an experimental Geoduck "enhancement" program which involves seeding several sites in the Strait of Georgia

1996	Pilot project for combining harvest log data with validations expanded to all areas of the coast
	Water quality and biotoxin monitoring commenced in April
1998	Provision deducted quota above the allowed 200 lbs. transfer amount from quotas in the following years as a disincentive to incurring excessive overages (provision no longer in place in 1999)
1999	Four pilot Marine Protected Areas (MPAs) proposed for Pacific Region: Endeavour Ridge Hydrothermal Vents (2003), Bowie Seamount, Race Rocks and Gabriola Passage
2000	Quotas for north coast areas updated with new results from surveys conducted in 1999
	New boundaries for some Geoduck Management Areas (GMA's) (more changes in 2001)
2001	Funding received from the UHA to increase Geoduck enforcement
2002	All GMA's on WCVI fished annually at a harvest rate no greater than 1% of the original biomass
	On-grounds monitor required to accompany the WCVI fleet on every fishing day
2003	Five year (2003 to 2007) Joint Project Agreement (JPA) between the UHA and Fisheries and Oceans Canada, which details the working relationship between the Department and the UHA
	Endeavour Hydrothermal Vents MPA established
	Directed harvest for Horse Clam with quota set for Area 14 and 24
2004	Latitude and longitude of harvest location required for validation and harvest logbook
	Additional experimental work undertaken to develop nursery system technology
	Information on Geoduck beds collected through bed questionnaires
	FAN Seafoods began harvesting cultured Geoduck
	Directed Horse Clam fishery in Area 24 deemed not feasible. Area 14 directed Horse Clam fishery continues.
2007	First harvest of enhanced Geoduck occurred as part of the south coast inside waters area quota and IVQ's
	Quota options calculated as 1.2% to 1.8% (WCVI and the rest of the coast) of the range of current biomass estimates of each bed
	Fully implemented management of the fishery on a bed basis in all licence areas

2008	Maximum of 500 pounds quota transfer allowed (increased from 200 lb.)
	Five year (2008 to 2012) JPA between the UHA and Fisheries and Oceans Canada, which details the working relationship between the Department and the UHA
	Licence stacking maximum raised to five licences eligibilities per vessel (increased from three, in order to align all dive fishery programs)
	DFO and the UHA recommend commercial harvester to ensure openings prior to harvesting and translated this information onto their product cage tags (Geoduck bed and subbed codes)
	Bowie Seamount MPA established in April
	A new version of the validation & harvest logbook was created to include the key questions from the bed questionnaire used in prior years
2009	Recommended use of Variation Order Numbers on cage tags as a further check on the status of an area opening
2010	Canada now responsible for aquaculture licences. Begin developing new Geoduck Aquaculture plan.
2011	PICFI acquired three Geoduck licences. 2 of 3 were fished in 2011; the third had already been fished.
2012	Quota Block Transfer Pilot initiated. Two more Geoduck licences were acquired by PICFI. Increasing challenges with PSP. Fishery was extended and completed Jan 10/2013
2013	One quota block was acquired by the ATP
2014	Fishery extended, complete on Jan 10, 2015
2015	Fishery extended, complete on Jan 31, 2016
	Geoduck “enhancement” program discontinued & “enhancement” no longer permitted. Harvesting will continue to occur on planted sites within the commercial TAC.
2016/17	Fishery operated for 14 months to initiate a new season start date of March 1. The ATP acquired one more quota block. Millar Channel CMP initiated, large portion of quota now under sanitary closure due to WWTP.
	New sampling protocol for Geoduck biotoxin monitoring.
2017	Hecate Strait / Queen Charlotte Sound Glass Sponge Reefs MPA established in February
2017/18	Quota Block Transfer Program made indeterminate.
	Shift in licence year; March 1 to February 28

2019/20	Additional closures within Gwaii Haanas
2020/21	Drop in quota due to large closures in Gwaii Haanas reducing overall biomass available for harvest.
2021/22	Further drop in quota to balance out loss of available biomass in Gwaii Haanas and decrease in available quota due to Sea Otter predation in future rotations.
2022/23	Further drop in quota to balance out loss of available biomass in Gwaii Haanas and decrease in available quota due to Sea Otter predation across all three rotations.

APPENDIX 2: STOCK ASSESSMENT RESULTS

Geoduck resources in the Pacific Region are assessed and managed on a bed-by-bed basis. There are approximately 5,200 Geoduck beds (or sub-beds) identified on the BC Coast. Populations can be summarily defined on a broader scale, using Pacific Fisheries Management Areas ("Area") and commercial Geoduck regions. For definition of these areas, see the Internet at: http://www.pac.dfo-mpo.gc.ca/fm-gp/maps-cartes/areas-secteurs/index-eng.htm

The total area of documented Geoduck beds in B.C. is currently estimated at 22,356 hectares (ha), of which 15,459 ha is currently considered available to the fishery. Beds that are not available to the fishery (not harvestable) include those in parks, contamination closures, research closures, beds affected by Sea Otters, beds allocated to aquaculture or beds that are below the stock index of 0.4 point (Table 1). There was a significant drop since 2019/20 in available harvest area due to the implementation of additional closures within Gwaii Haanas National Marine Conservation Area.

Table 1. Geoduck Bed Area (Ha) by Licence Area and Status

Quota Area	Bed Area (Ha)			
	Total*	**Closed****	**Otters*****	**Available**
Gulf	8,975	1,259	95	7,621
North	7,167	601	637	5,929
WCVI	6,214	1,668	2,636	1,910
Totals	**22,356**	**3,529**	**3,368**	**15,459**

* All Bed Area documented by fishing events or surveys.

** Closed for Park, contaminated, research, aquaculture or below the stock index of 0.4

*** Unharvestable or limited harvest due to sea otter predation.

Available biomass (Table 2) is estimated as the product of bed area, Geoduck density and the mean Geoduck weight on each available bed. Bed area is estimated using harvest locations, substrate and dive survey data, feedback from On-Grounds Monitors, harvesters feedback at meetings and logbook questionnaires. Density is estimated by dive surveys. Mean weight is estimated from landings data. The harvest rate multiplied by the biomass yields harvest options.

Table 2: Stock Assessment Results Used for Calculating Harvest Options. Based on management decision rules, the biomass estimate used for calculating the maximum harvest option on a bed is limited to: 1) the mean biomass estimate, if the bed has been surveyed or 2) the half-way point between the lower 95 and the mean biomass estimates for beds that were not surveyed.

Table 2: Stock Assessment Results used for calculating Harvest Options.

Quota Area	Statistical Area	Available Bed Area (Ha)	Density (geoducks/m^2)*		Current Biomass Estimates (lbs)	
			Average	Range	Lower 95%	Maximum
N	1	193.81	0.53	0.20 - 1.12	647,061	1,814,165
N	2	1,879.93	1.50	0.05 - 5.77	38,712,112	69,839,444
N	3	185.41	1.82	0.31 - 4.31	3,761,841	7,507,385
N	4	665.70	3.09	0.44 - 8.81	29,655,614	48,472,053
N	5	735.30	2.86	0.24 - 6.24	31,330,680	47,948,312
N	6	1,224.67	2.46	0.14 - 12.04	35,760,402	69,114,052
N	7	605.14	2.04	0.09 - 10.42	12,509,845	27,184,445
N	8	155.01	2.29	0.64 - 6.64	4,161,373	8,545,368
N	9	96.94	0.94	0.25 - 2.76	767,169	1,665,390
N	10	93.86	1.19	0.12 - 2.76	862,207	2,217,561
N	106	93.60	4.74	0.14 - 9.09	7,102,775	10,516,571
Total North		**5,929.4**	**2.11**	**0.05 - 12.04**	**165,271,079**	**294,824,746**
G	12	494.59	0.81	0.11 - 2.69	4,743,635	8,884,399
G	13	597.74	0.16	0.04 - 0.33	1,362,141	2,175,126
G	14	3,659.58	0.15	0.04 - 0.58	9,757,551	13,468,961
G	15	889.26	0.16	0.07 - 0.54	1,121,425	2,331,480
G	16	661.81	0.39	0.13 - 1.06	3,379,751	5,097,158
G	17	518.34	0.25	0.09 - 1.67	1,640,967	2,533,667
G	18	131.10	0.60	0.13 - 1.54	1,155,869	1,712,012
G	19	509.94	0.14	0.13 - 0.18	520,493	1,264,740
G	29	158.18	0.23	0.13 - 0.85	341,003	620,961
Total Gulf		**7,620.6**	**0.23**	**0.04-2.69**	**24,022,834**	**38,088,505**
W	20	298.55	0.32	0.32 - 0.32	0	820,089
W	23	395.66	0.88	0.26 - 2.02	4,093,659	7,267,988
W	24	1,173.52	1.22	0.25 - 3.57	22,162,874	30,480,283
W	25	3.17	1.33	0.44 - 1.60	30,780	79,796
W	26	24.30	0.59	0.31 - 0.75	156,441	234,065
W	27	0.00	na	na	na	na
W	124	14.09	0.99	0.99 - 0.99	0	0
Total WCVI		**1,909.3**	**0.98**	**0.25 - 3.57**	**26,443,753**	**38,882,221**
Coastal Total		**15,459.2**			**215,737,667**	**371,795,471**

* Density is calculated using estimated densities for both surveyed and unsurveyed beds weighted by bed area.

APPENDIX 3: GEODUCK AND HORSE CLAM FIRST NATIONS HARVEST PLAN

1. OVERVIEW

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

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

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

2. OPEN TIMES AND AREAS

First Nations harvest for FSC purposes is open year round if authorized by a communal licence or harvest document (under treaty) and not closed for sanitary or biotoxin (e.g., paralytic shellfish poisoning (PSP) or red tide) contamination.

3. CANADIAN SHELLFISH SANITATION PROGRAM (CSSP)

3.1. General Information on Closures under the CSSP

Closures may be implemented on short notice in the event of changes to contamination status, including sanitary and biotoxin events. Licence holders, vessel masters, and harvesters are reminded that:

- It remains the responsibility of the licence holders and harvesters to ensure that an area is not closed for harvest due to sanitary or biotoxin contamination. Fishing in a closed area is an offence under the *Fisheries Act*. Consumption of product harvested from within a closed area poses a serious health risk.
- Prior to commencement of each day's fishing, the licence holder must take care to confirm that an area is open for harvesting either through the DFO website at:

http://www.pac.dfo-mpo.gc.ca/fm-gp/contamination/index-eng.html or the toll-free information line at 1-866-431-3474, or by contacting a local DFO office directly. Contact information is available in Appendix 15.

3.1.1. Sanitary Contamination Closures

Shellfish may not be harvested from closed contaminated areas except by special permit licence under the *Management of Contaminated Fisheries Regulations (*MCFR*)*. Currently there is not an approved depuration process for oysters. There are both seasonal and permanent sanitary contamination closures. Descriptions and maps of contaminated closures may be found at the following DFO website: www.pac.dfo-mpo.gc.ca/fm-gp/contamination/biotox/index-eng.html

A copy of this list may also be obtained from the resource managers (see Contacts, Appendix 15). Sanitary closures are amended annually in May and November, and may also be amended in-season. Consequently, harvesters are advised to check the internet, prior to harvesting in an area, to ensure that they have the most recent contamination closure information.

Permanent bivalve harvesting closures are in place for Canadian fisheries waters of the Pacific Ocean within:

a.) 300 m radius around industrial, municipal and sewage treatment plant outfall discharges;
b.) 125 m radius of any marina, ferry wharf, any floating living accommodation facility (other than a floating living accommodation described in subsection (3)) or finfish net pen described in subsection (4);
c.) 25 m radius of any floating living accommodation facility located within a shellfish aquaculture tenure where a zero-discharge waste management plan is a condition of the Provincial aquaculture licence and is approved by the Regional Interdepartmental Committee.
d.) Zero (0) metres of any finfish net pen within an aquaculture tenure where an Integrated Multi-trophic Aquaculture Management Plan approved by the Regional Interdepartmental Committee is in operation.

3.1.2. Biotoxin Contamination Closures

Shellfish may not be harvested from closed areas except by special permit licence issued under the *Management of Contaminated Fisheries Regulations*. Shellfish may not be harvested for consumption from any area closed due to biotoxin contamination. Descriptions of biotoxin closures may be found at the following DFO internet site: http://www.pac.dfo-mpo.gc.ca/fm-gp/contamination/index-eng.html

Areas will be opened and fished according to protocols required by the Biotoxin Monitoring Program, approved by the Canadian Food Inspection Agency (CFIA).

Three consecutive samples containing acceptable levels of biotoxin must be received in order for CFIA to lift a harvest restriction in an area. CFIA will make recommendation to lift the biotoxin (Paralytic Shellfish Poison (PSP)/red tide, Domoic Acid Poisoning) (ASP) or Diarrhetic Shellfish

Poisoning (DSP) prohibition and a harvest site can then be considered by DFO for Aboriginal, commercial or recreational harvesting. The resource manager will prepare the documentation necessary for an area opening for approval by the Regional Director General. For further details on the CSSP, see the internet at: https://www.inspection.gc.ca/food/food-specific-requirements-and-guidance/fish/canadian-shellfish-sanitation-program/eng/1527251566006/1527251566942?chap=0

3.2. Requirements for Legal Sourcing and Harvest of Bivalve Shellfish

The safety of consumers is a top priority for the Government of Canada. The reputation of Canada's food supply is a responsibility shared by all parties, including industry and federal and provincial governments.

As partners for delivery of the Canadian Shellfish Sanitation Program (CSSP), Fisheries and Oceans Canada (DFO) and the Canadian Food Inspection Agency (CFIA) collaborate to prevent illegal harvesting and selling of bivalve shellfish, including suspected laundering of illegal products through legitimate aquaculture businesses. DFO also remains committed to meeting conservation objectives for bivalves as well as supporting priority for Food, Social and Ceremonial fisheries. Any harvest occurring in conflict with established management measures and controls has the potential of negatively impacting the conservation of bivalve populations.

DFO will investigate reports of illegal harvesting violations and will take appropriate enforcement actions, including prosecution. Furthermore, DFO may consider more restrictive management approaches if needed to protect public health. Harvest only from open and approved areas and check our website before heading out for the latest information (www.dfo-mpo.gc.ca/CheckBeforeYouHarvest).

If you are aware of illegal bivalve harvest activities and/or are aware of violations, please call the DFO Observe, Record and Report (ORR) phone line at 1-800-465-4336.

3.3. Human Waste Containment Regulations

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

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

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

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

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

3.4. Harvesting Bivalves in the Vicinity of Wastewater Treatment Plants

Concerns have been raised regarding bivalve shellfish harvested in the vicinity of wastewater treatment plants. Increased controls were implemented in 2009 to prevent shellfish harvest in areas where a trigger event at a wastewater treatment plant may potentially cause contamination.

Conditional Management Plans are being developed at some of the priority wastewater treatment plants to manage harvest activities in the vicinity of the wastewater treatment plants.

DFO will be consulting with shellfish harvesters in areas where Conditional Management Plans must be developed.

For further information, contact DFO.PAC.CSSP-PCAM.PAC.MPO@dfo-mpo.gc.ca

4. CLOSURES

Closures to the fishery may be in place for a variety of reasons: parks, marine reserves, research, navigation, or sanitary and marine biotoxin contamination.

4.1. Harvesting on Aquaculture Tenures

Licensed aquaculture facilities are considered private property. Under the *Fisheries Act*, fishing within an aquaculture facility already under federal licence (*Pacific Aquaculture Regulations* aquaculture licence) is prohibited unless otherwise permitted by the occupant holding the licence. The Department recommends that harvesters familiarize themselves with the location of aquaculture tenures in fishing areas and that permission be sought from the aquaculturist for access. All tenures must be clearly marked. Subtidal Geoduck tenures require marking on the sea floor, normally consisting of sinking ground line and concrete blocks.

5. LICENSING

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

Additional information on communal licences, are available at: www.pac.dfo-mpo.gc.ca/abor-autoc/index-eng.html

6. CONTROL AND MONITORING OF FIRST NATIONS FISHING ACTIVITIES

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

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

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

6.1. Treaty Fisheries

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

Nisga'a Domestic Fishing

The Harvest agreement for domestic (FSC) purposes under the Nisga'a Final Agreement (Treaty) came into effect on May 11, 2000. The Nisga'a territory is located within the Nass River valley on the northwest coast of B.C. More information on the Treaty and the Nisga'a annual fishing plan can be found at: https://www.rcaanc-cirnac.gc.ca/eng/1100100030588/1542730442128

Tsawwassen Domestic Fishing

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

Maa-nulth Domestic Fishing

The Maa-nulth First Nations fishery for domestic (FSC) purposes under the Maa-nulth First Nations Final Agreement (Treaty) came into effect on April 1, 2011. The Maa-nulth First Nations comprise five individual First Nations; Huu-ay-aht First Nations, Ka:'yu:'k't'h'/Che:k'tles7et'h' First

Nations, Toquaht Nation, Uchucklesaht Tribe and the Yuułuʔiłʔatḥ First Nation on the west coast of Vancouver Island. More information on the Treaty can be found at: https://www.rcaanc-cirnac.gc.ca/eng/1100100030588/1542730442128

Tla'amin Domestic Fishing

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

6.2. Five Nations Right-Based Fishery

Five Nuu-chah-nulth First Nations located on the west coast of Vancouver Island - Ahousaht, Ehattesaht, Hesquiaht, Mowachaht/Muchalaht, and Tla-o-qui-aht (the Five Nations) – have aboriginal rights to fish for any species, with the exception of Geoduck, within their Fishing Territories and to sell that fish. The Department has developed a 2021/22 Five Nations Multi-species Fishery Management Plan (FMP). 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. Feedback provided by the Five Nations during consultations was considered and incorporated into the 2021/22 FMP by DFO where possible.

The implementation of the Five Nations' right-based sale fishery continues to be an ongoing process. The 2021/22 FMP was developed to implement the right-based multi-species fishery to accommodate the Five Nations' Aboriginal rights consistent with the British Columbia Supreme Court's 2018 decision. On April 19, 2021, the British Columbia Court of Appeal released its decision in relation to the appeal brought forward by the Five Nations. As a result, the Department announced a number of in-season changes via fishery notice. Further changes will be announced by fishery notice and/or in the 2022/23 FMP which will be available in the spring of 2022

APPENDIX 4: GEODUCK AND HORSE CLAM RECREATIONAL HARVEST PLAN

1. INTRODUCTION

1.1. Tidal Waters Sport Fishing Licence

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

Tidal Waters Sport Fishing Licences may be purchased for a 1 day, 3 day, or 5 day period, or as an annual licence, covering the period April 1 to March 31 the following year. The annual licence fee is not pro-rated for annual licences purchased mid-season. Fees depend on licence duration, age (senior, adult, juvenile) and residency status. Licences for juveniles (ages 15 and under) are free. Concessionary fees are not otherwise available.

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

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

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

A list of Independent Access Providers is available at:

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

1.1.1. E-licences and Paper licences

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

Please consider these licensing requirements before a fishing trip:

- For all recreational tidal waters sport fishers that do not have an electronic copy of their licence on their mobile device, they must still have a paper copy of their licence with proof of licence purchase to show to a fishery officer;
- For users of the FishingBC App, or on any electronic device, a pdf copy of their licence on the device is acceptable and must be immediately presented to a fishery officer. Please note catch recording requirements below;
- For all fishers retaining Chinook, Halibut, or Lingcod, with an e-licence and catch details in the FishingBC App or in their mobile device, fishers must immediately record catch for these three species to either:
    - a paper copy of their licence; or

- their National Recreational Licensing System account (where internet access for your mobile device is available). It can be helpful to immediately take a screenshot of the catch records when there is internet access should you subsequently move out of cell range.

- Licence and catch records must be immediately available for inspection upon request of a fishery officer.

1.1.2. Supporting Sustainable Fisheries - Catch Reporting

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

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

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

The internet Recreational Effort and Catch (iREC) reporting program is an online program that has been collecting effort and catch information from Tidal Waters Sport Fishing licence holders since 2012. As of April 2020, all licences are selected for one month of iREC reporting program or the internet Annual Recreational Catch (iARC) program (see below). Licence holders are advised at time of licence purchase which program their licence has been selected for. The iREC website, a unique iREC access id and reporting deadline are printed on each licence and licence holders with a valid email address provided to the National Recreational Licencing system receive emails reminding them to complete their iREC reports. Providing complete and accurate information to the iREC or iARC reporting program when selected is a condition of licence (i.e. mandatory requirement).

The responses to the iREC reporting program are self-reported without direct data verification. Although the program design protects against certain biases, response data and resulting estimates are still subject to a variety of biases. In some cases, estimates may be bias-corrected based on comparison of iREC and creel estimates. The estimates are subject to revision based on review of the response data, consideration of alternative analytical methods and data from other sources.

The iREC reporting program is one of the sources that may be used in developing DFO official catch and effort estimates. The iREC reporting program methodology was peer reviewed and published by the Canadian Science Advisory Secretariat (CSAS) in 2015. This program provides

monthly estimates of effort for 6 fishing methods and catch for over 80 species of sport caught finfish and invertebrates in all Pacific Fishery Management Areas based on responses by Tidal Waters Sport Fishing Licence holders. The recreational fishing methods covered by the iREC reporting program include boat-based angling, angling from shore, shellfish trapping from boat and shore, beach collecting, and diving. iREC estimates are used for methods and species not covered by the marine creel surveys, which cover only boat-based angling, and for months and areas not covered by marine creel surveys.

More information about the iREC reporting program is available at:

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

1.2. On-line Regulations

The regulations for recreational fishing are summarized online in the BC Sport Fishing Guide, which lists open and closed times, catch limits, size limits (where applicable) and open/closed areas.

When required, fishery notices are issued to advise of changes to the regulations which are kept up-to-date in the BC Sport Fishing Guide.

The old printed BC Sport Fishing Guide booklet is no longer being produced/distributed, both to reduce costs and in recognition that the online guide does a better job at reporting in-season changes, which was not possible with the printed guide. The local fishery office may also be contacted to obtain regulatory information for an area of interest.

The BC Sport Fishing Guide of recreational fishing limits, openings and closures is available at:

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

To view or sign-up to receive fishery notice notifications by email is available at:

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

Local DFO fishery office contacts are available at:

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

or call 604-666-0384 or email info@dfo-mpo.gc.ca

1.2.1. Using mobile devices and the FishingBC App

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

The DFO Recreational Fishing in British Columbia website is the official site for regulatory information in the event of a discrepancy with the FishingBC App.

The FishingBC App may be downloaded at:

https://www.fishingbcapp.ca/

The DFO Recreational Fishing in British Columbia website is available at:

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

2. OPEN TIMES AND AREAS

Recreational harvest of Geoduck and Horse Clam can occur in those areas and at those times where there are no closures (see Section 4).

3. CANADIAN SHELLFISH SANITATION PROGRAM (CSSP)

3.1. General Information on Closures under the CSSP

Closures may be implemented on short notice in the event of changes to contamination status, including sanitary and biotoxin events. Licence holders, vessel masters, and harvesters are reminded that:

- It remains the responsibility of the licence holders and harvesters to ensure that an area is not closed for harvest due to sanitary or biotoxin contamination. Fishing in a closed area is an offence under the *Fisheries Act*. Consumption of product harvested from within a closed area poses a serious health risk.
- Prior to commencement of each day's fishing, the licence holder must take care to confirm that an area is open for harvesting either through the DFO website at: http://www.pac.dfo-mpo.gc.ca/fm-gp/contamination/index-eng.html or the toll-free information line at 1-866-431-3474, or by contacting a local DFO office directly. Contact information is available in Appendix 15.

3.1.1. Sanitary Contamination Closures

Shellfish may not be harvested from closed contaminated areas except by special permit licence under the *Management of Contaminated Fisheries Regulations (MCFR)*. Currently there is not an approved depuration process for oysters. There are both seasonal and permanent sanitary contamination closures. Descriptions and maps of contaminated closures may be found at the following DFO website: www.pac.dfo-mpo.gc.ca/fm-gp/contamination/biotox/index-eng.html

A copy of this list may also be obtained from the resource managers (see Contacts, Appendix 15). Sanitary closures are amended annually in May and November, and may also be amended in-season. Consequently, harvesters are advised to check the internet, prior to harvesting in an area, to ensure that they have the most recent contamination closure information.

Permanent bivalve harvesting closures are in place for Canadian fisheries waters of the Pacific Ocean within:

a.) 300 m radius around industrial, municipal and sewage treatment plant outfall discharges;
b.) 125 m radius of any marina, ferry wharf, any floating living accommodation facility (other than a floating living accommodation described in subsection (3)) or finfish net pen described in subsection (4);
c.) 25 m radius of any floating living accommodation facility located within a shellfish aquaculture tenure where a zero-discharge waste management plan is a condition of the Provincial aquaculture licence and is approved by the Regional Interdepartmental Committee.
d.) Zero (0) metres of any finfish net pen within an aquaculture tenure where an Integrated Multi-trophic Aquaculture Management Plan approved by the Regional Interdepartmental Committee is in operation.

3.1.2. Biotoxin Contamination Closures

Shellfish may not be harvested from closed areas except by special permit licence issued under the *Management of Contaminated Fisheries Regulations*. Shellfish may not be harvested for consumption from any area closed due to biotoxin contamination. Descriptions of biotoxin closures may be found at the following DFO internet site: http://www.pac.dfo-mpo.gc.ca/fm-gp/contamination/index-eng.html

Areas will be opened and fished according to protocols required by the Biotoxin Monitoring Program, approved by the Canadian Food Inspection Agency (CFIA).

Three consecutive samples containing acceptable levels of biotoxin must be received in order for CFIA to lift a harvest restriction in an area. CFIA will make recommendation to lift the biotoxin (Paralytic Shellfish Poison (PSP)/red tide, Domoic Acid Poisoning) (ASP) or Diarrhetic Shellfish Poisoning (DSP) prohibition and a harvest site can then be considered by DFO for First Nations, commercial or recreational harvesting. The resource manager will prepare the documentation necessary for an area opening for approval by the Regional Director General. For further details on the CSSP, see the internet at: https://www.inspection.gc.ca/food/food-specific-requirements-and-guidance/fish/canadian-shellfish-sanitation-program/eng/1527251566006/1527251566942?chap=0

3.2. Requirements for Legal Sourcing and Harvest of Bivalve Shellfish

The safety of consumers is a top priority for the Government of Canada. The reputation of Canada's food supply is a responsibility shared by all parties, including industry and federal and provincial governments.

As partners for delivery of the Canadian Shellfish Sanitation Program (CSSP), Fisheries and Oceans Canada (DFO) and the Canadian Food Inspection Agency (CFIA) collaborate to prevent illegal harvesting and selling of bivalve shellfish, including suspected laundering of illegal products through legitimate aquaculture businesses. DFO also remains committed to meeting conservation objectives for bivalves as well as supporting priority for Food, Social and

Ceremonial fisheries. Any harvest occurring in conflict with established management measures and controls has the potential of negatively impacting the conservation of bivalve populations.

DFO will investigate reports of illegal harvesting violations and will take appropriate enforcement actions, including prosecution. Furthermore, DFO may consider more restrictive management approaches if needed to protect public health. Harvest only from open and approved areas and check our website before heading out for the latest information (www.dfo-mpo.gc.ca/CheckBeforeYouHarvest).

If you are aware of illegal bivalve harvest activities and/or are aware of violations, please call the DFO Observe, Record and Report (ORR) phone line at 1-800-465-4336.

3.3. Human Waste Containment Regulations

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

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

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

3.4. Harvesting Bivalves in the Vicinity of Wastewater Treatment Plants

Concerns have been raised regarding bivalve shellfish harvested in the vicinity of wastewater treatment plants. Increased controls were implemented in 2009 to prevent shellfish harvest in areas where a trigger event at a wastewater treatment plant may potentially cause contamination.

Conditional Management Plans are being developed at some of the priority wastewater treatment plants to manage harvest activities in the vicinity of the wastewater treatment plants.

DFO will be consulting with shellfish harvesters in areas where Conditional Management Plans must be developed.

For further information, contact DFO.PAC.CSSP-PCAM.PAC.MPO@dfo-mpo.gc.ca

4. CLOSURES

Closures to the fishery may be in place for a variety of reasons: parks, marine reserves, research, navigation, or sanitary and marine biotoxin contamination.

4.1. Harvesting on Aquaculture Tenures

Licensed aquaculture facilities are considered private property. Under the *Fisheries Act*, fishing within an aquaculture facility already under federal licence (*Pacific Aquaculture Regulations* aquaculture licence) is prohibited unless otherwise permitted by the occupant holding the licence. The Department recommends that harvesters familiarize themselves with the location of aquaculture tenures in fishing areas and that permission be sought from the aquaculturist for access. All tenures must be clearly marked. Subtidal Geoduck tenures require marking on the sea floor, normally consisting of sinking ground line and concrete blocks.

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

5.1. Gear

Geoduck and Horse Clam may be harvested by handpicking. Commercial gear ("stingers") cannot be used for recreational harvest.

5.2. Daily Limits

Geoduck: The daily limit for geoduck is three (3) per day.

Horse Clam: The daily limit for horse clam is six (6) per day.

5.3. Possession Limits

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

5.4. Size Limit

There is no size limit for the recreational Geoduck or Horse Clam fishery.

APPENDIX 5: GEODUCK AND HORSE CLAM AQUACULTURE HARVEST PLAN

1. INTRODUCTION

There has been interest in Geoduck aquaculture in British Columbia since the early 1990s. Since that time, industry stakeholders and Government have invested millions of dollars in developing and refining Geoduck hatchery, nursery and culture methods in B.C.

Opportunities to enter into this industry were initially provided in a phased approach. Three interim policy documents were developed with B.C. in 2006, outlining the conditions within which Geoduck aquaculture could occur on both existing shellfish farms and how new applications were to be accepted and assessed.

Since then, the Department undertook an extensive process to develop a new policy to guide the expansion of Geoduck aquaculture opportunities throughout B.C., consistent with the mandates of both governments. In early 2017, Fisheries and Oceans Canada (DFO) finalized the Integrated Geoduck Management Framework (IGMF) (http://www.pac.dfo-mpo.gc.ca/aquaculture/management-gestion/geoduck-panope/index-eng.html). Geoduck aquaculture, as outlined in the IGMF, represents an opportunity to diversify the economies of coastal and Indigenous communities in B.C. while maintaining the economic prosperity and long-term sustainability of the wild Geoduck fishery. In developing the IGMF, DFO considered input from consultations with First Nations, industry, stakeholders and the Province of B.C. as well as scientific advice on potential disease, genetic and ecological risks associated with the expansion of Geoduck aquaculture.

DFO will now consider Geoduck aquaculture applications on a coastwide basis. Application details are provided on the Province of B.C.'s Front Counter website. Sixty-five (65) tenures are currently licenced under the Pacific Aquaculture Regulations (PAR) for Geoduck aquaculture. This totals approximately 1,306 hectares. This includes tenures licenced for intertidal, subtidal, deepwater suspended or any combination of the three types. Of the 65 tenures, 20 are currently authorized to harvest Geoduck.

Historically, shellfish aquaculture licences were issued by the Province of BC while the regulatory responsibility of shellfish aquaculture, including geoduck, switched to DFO in December 2010. Aquaculture licence holders may be actively culturing geoduck with intentions to apply for an approved geoduck harvest plan while others may be licenced for geoduck species but not actively engaged in culture at this time. Until licence holders report sales associated with an approved geoduck harvest plan, it difficult to determine the exact number of tenures engaged in geoduck culture.

For more information: http://www.dfo-mpo.gc.ca/aquaculture/index-eng.htm

1.1. Regulatory Regime

In December 2010 PAR came into effect, giving DFO the authority to govern the management and regulation of aquaculture activities at marine finfish, shellfish, freshwater/land-based and

enhancement facilities. The Province of B.C. continues to have authority over land tenures and workplace safety related to aquaculture in B.C. New applications, amendments and related referrals are coordinated through Front Counter BC. More information is available on the B.C. government's website: http://www.frontcounterbc.gov.bc.ca/. DFO approves and issues aquaculture licences.

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

Within the B.C. 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 requirements. Contact information for staff with responsibilities related to aquaculture management within DFO can be found in the Departmental Contacts section of this plan.

1.2. Integrated Management of Aquaculture Plans

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

IMAPs complement Integrated Fisheries Management Plans (IFMP) and the two are reviewed periodically to ensure consistency of management approaches.

1.3. Aquaculture Management Advisory Committees

Aquaculture Management Advisory Committee (AMAC) meetings engage the aquaculture industry, First Nations, and other stakeholders in development of IMAPs and 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.

2. LICENSING

2.1. Broodstock Collection

The collection of broodstock for enhancement and aquaculture purposes is facilitated through a Collection Licence and an Introductions and Transfers Licence from the Introductions and

Transfers Committee. Requests for access are reviewed according to the Access to Wild Aquatic Resources for Aquaculture Purposes Policy. Under this policy, it is estimated that up to 0.1% of the commercial total allowable catch, may be allocated for aquaculture purposes such as broodstock collection. It is anticipated that up to 2,805 lbs of Geoduck may be collected as broodstock. Only licenced hatcheries are eligible to apply for broodstock collection licences. A specific Geoduck hatchery protocol is outlined in the IGMF.

Contact the Introductions and Transfers Committee at itc@dfo-mpo.gc.ca

2.2. One-Time Commercial Harvest Opportunity (Pre-Seed Harvest)

There may be one time commercial harvest opportunities as outlined in the IGMF and supported by the Policy for Access to Wild Aquatic Resources as it Applies to Aquaculture (2004). The purpose of the one time harvest is to "facilitate access to a new lease and reduce conflict in communities when there is significant stock of high value on a lease area, and where a number of commercial fish harvesters may be displaced, as a condition to recommending its approval of a lease site, DFO or the province may require that a specified species be harvested from the lease prior to its occupation". These opportunities are offered prior to a DFO aquaculture licence being issued, where the application area is located in areas with a history of high or medium use by the wild Geoduck fishery. Any authorized one time commercial harvest opportunity is expected to be in addition to the TAC and IVQ allocated for the current season. When an aquaculture application has been approved, but prior being issued an aquaculture licence, commercial G and FG-licence holders will be able to apply for supplemental conditions of licence that will permit this activity. A selection process, and harvest amount and schedule will be developed in consultation with the Underwater Harvesters Association.

For further information on the one time commercial harvest opportunities, please contact a resource manager (see Contacts, Appendix 15).

3. CLOSURES

3.1. Contamination Closures

The Canadian Shellfish Sanitation Program is a federal food safety program jointly administered by the Canadian Food Inspection Agency, Environment and Climate Change Canada and DFO. The goal of the program is to protect Canadians from the health risks associated with the consumption of contaminated bivalve molluscan shellfish (for example, mussels, oysters and clams). There are two types of contamination closures that may affect bivalve harvest: biotoxin closures (i.e. Paralytic Shellfish Poisoning) and sanitary closures. Unless harvest for aquaculture purposes is authorized by a licence issued under the Management of Contaminated Fisheries Regulations, both types of closures apply to any collection of broodstock. See the following webpage for more information: https://www.pac.dfo-mpo.gc.ca/fm-gp/contamination/index-eng.html

It is important to note that a recent change to requirements for biotoxin monitoring of geoduck clam may impact aquaculture licence holders as mussel monitoring stations are no longer deemed suitable. Biotoxin monitoring for each shellfish aquaculture facility may need to be managed under an alternative service delivery agreement, where all new requests for program expansion must be cost neutral.

3.2. 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 harvesters familiarize themselves with the location of aquaculture tenures in fishing areas and that permission be sought from the aquaculturist for access. As per the conditions of licence, All sub-tidal and intertidal boundaries shall be clearly marked in a manner which: (a) only uses markers at the corners of the licensed area; and (b) shall not include the use of lines or ropes.

4. CONTROL AND MONITORING OF AQUACULTURE FISHING ACTIVITIES

PAR Shellfish aquaculture licences for Geoduck are issued with conditions of licence that define the culture species and the licensed area, management and environmental compliance measures, record keeping and reporting. Geoduck aquaculture licenses require site marking, (intertidal and subtidal), approval of a harvest plan, pre-harvest notification, site specific tags to each container of harvested Geoduck, and the completed landing logbook form for each landing.

For more information, Shellfish Aquaculture Licence conditions are available at: http://www.pac.dfo-mpo.gc.ca/aquaculture/licence-permis/docs/licence-cond-permis-shell-coq/index-eng.html

APPENDIX 6: GEODUCK AND HORSE CLAM COMMERCIAL HARVEST PLAN

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1. MANAGEMENT HIGHLIGHTS AND CHANGES FOR 2022/23

- **Licence Year:** The 2022/23 fishery will run from May 1, 2022 to April 15, 2023. As a result of the Covid pandemic the 2020/21 season was delayed and was shifted to have a 12 month fishery. To shift the fishery back to an April 1 start, this season will be shortened by two weeks and the following season will be shortened by two weeks.

- **Total Allowable Catch (TAC) (changed):** The coast-wide Geoduck TAC is 2,811,000 lbs. (1,275 tonnes). 6,000 lbs. of the TAC is allocated for biological samples; additional small harvests are authorized for biotoxin monitoring and broodstock collection. The commercial TAC of 2,805,000 lbs. provides for 550 quota blocks of 5,100 lbs. This is a decrease of 55,000 lbs or 100 lbs off each quota block. The quota decrease is due to the implementation of a number of large closures in Gwaii Haanas as well as impacts from Sea otters. Both factors have reduced the overall harvestable biomass. In addition, there may be a limited supplemental harvest opportunity of Geoduck on areas tenured for aquaculture conducted through amended licence conditions. (See Section 5)

- **Areas to be fished Annually (unchanged)**: The WCVI remains an annual fishery. Geoduck Management Areas (GMAs) 16D01, 17B03, 8A and 19C from the inside fishery will continue to be fished annually.

- **Quota Blocks Transferability**: The Department approved a pilot in 2012, to allow quota transfers between vessels. This program continued indeterminately as of the 2017/18 season. Transfers will be allowed permanently and temporarily in blocks of quota which equal 1/550 or approx 0.182% of the Coastwide Commercial TAC. (See Section 5.4)

- **Transfer of Quota between Regions (unchanged):** To account for unforeseen circumstances, a maximum of 5 quota blocks (25,500 lbs.) may be transferred between quota regions. The TAC for the region/area will not exceed the maximum harvest option for the regions or any area within the region. (See Section 5.9.4)

- **Implementation of Upper Stock Reference USR (NEW):** To comply with DFO's "Fishery Decision-Making Framework Incorporating the Precautionary Approach", the USR for the Geoduck stock will be defined as the total coastwide current biomass being equal to 50% of total coastwide unfished biomass. (see Section 5.9)

- **Bed-by-Bed Management:** All areas will continue to be managed using bed-by-bed quotas. On-Ground Monitors (OGM) will be present on the North Coast and the West Coast of Vancouver Island (WCVI) during the six months of heaviest effort, and will, with the full support of the Department, request that harvesters move when bed quotas are achieved. Non-compliance with the OGMs' request will result in a fishery closure pending resolution of the problem. Bed quotas for the Inside Waters of Vancouver Island (Gulf) and WCVI during times where an OGM is not present are monitored by the service provider and Dockside Observers; an OGM is not required for fishing in the Inside Waters. The "fallback" quota protocol implemented in 2008 remains in effect. (See Section 5.9)

- **Horse Clams:** A limited directed fishery for Horse Clams will be allowed annually on Comox Bar (GMA 14B03) for 20,500 pounds. Divers are requested to provide comment on other Horse Clam populations on Harvest Logs. Reporting by species is requested. (See Section 6)
- **Season Extensions**: Ongoing high biotoxin levels and/or poor weather has made it difficult in some seasons for vessels to complete their Individual Vessel Quota (IVQ) by the end of the season. At the request of the Underwater Harvesters Association (UHA), the Department may allow an extension for 15 days into the next season under some basic conditions. (See Section 5.8)

2. LICENSING

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 the licence expiry date of the next calendar year, the licence eligibility will cease to exist and DFO will be unable to consider any licence issuance requests in the future.

2.2. Licence Category

A category G or FG licence is required to commercially harvest Geoduck and Horse Clam by dive.

2.3. Licence Fees

Currently the annual licence application fee for G licences is calculated as follows:

- The **product** of $X multiplied by the number of tonnes of Geoduck authorised to be taken under the licence.
- That **product**, minus 40 percent of that **product,** or $X, whichever is less.

Please note that the link below contains the most up to date $ fee amount. Licence fees to participate in supplemental harvest opportunities (eg. pre-seed harvest prior to licencing of an aquaculture tenure) will be calculated using the formula noted above.

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

The commercial (Category G) licence renewal fee may be found on the following link:

https://www.pac.dfo-mpo.gc.ca/fm-gp/licence-permis/index-eng.html

There is no annual licence fee for communal commercial licences (FG).

2.4. Licence Application and Issuance

Licence renewal and payment of fees are mandatory, on an annual basis, prior to the expiry date in order to maintain eligibility in the future. Licence eligibility will cease if not renewed annually.

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 holder(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.

2.5. Licence Documents

Geoduck licence documents are valid from the date of issue until April 30 of the following calendar year.

Replacements for lost or destroyed licence documents may be obtained by reprinting the licence document through the NOLS.

2.6. Designation of Harvesters to Fish a Communal Commercial Licence

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

First Nation licence holders interested in obtaining an example template to use to designate their fish harvesters may contact a DFO resource manager or Pacific Fishery Licencing Unit (PFLU) office (see Contacts in Appendix 15).

2.7. Supplemental Harvest Opportunities

Issuance of the current season Geoduck licence must be completed, as noted above, prior to requesting any supplemental harvest amendment. Eligible vessels (see Section 5.6) may submit a 'Request for Amendment – Geoduck Supplemental Harvest" and obtain amended licence conditions to participate.

2.8. Fisher Identification Number (FIN)

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

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

For further information, please contact a PFLU or a resource manager (see Contacts, Appendix 15).

2.9. Quota block limits

A vessel may hold a maximum of 50 quota blocks (9.1% of the Coastwide commercial TAC). These may all be for the same region or may be for a combination of regions.

2.10. Area Management

The coast is divided into three regions, the North Coast, WCVI, and Inside Waters (Gulf). Historically licences have been designated a region (North Coast, WCVI or Inside Waters). Since 2012 each quota block has been designated to a region and a licence is able to fish in multiple regions relative to its quota blocks.

The coast-wide distribution of the 550 quota blocks will be as follows:

- Inside Waters (Gulf), portions of Areas 12 through 19, and 29: 65 quota blocks or 11.8% of the Coastwide commercial TAC
- WCVI, portions of Areas 20, 23, 24, 25, 26, and 27, and related offshore areas: 74 quota blocks or 13.5% of the Coastwide commercial TAC.

- North Coast, portions of Areas 1 through 10, and related offshore areas: 411 quota blocks or 74.7% of the Coastwide commercial TAC.

2.11. Vessel Replacement

Geoduck vessel applications are accepted at any time. The owner of a Geoduck licensed vessel may make an application to replace the current vessel with the following rules:

- Geoduck and Horse Clam licence eligibilities do not become married to other vessel-based licence eligibilities and may be separated.
- Geoduck and Horse Clam licence eligibilities may be placed either permanently or temporarily (where applicable) on any Canadian commercially registered fishing vessel that does not exceed the overall length (OAL) of the vessel that held the licence eligibility as of 1989 plus 50%. This is subject to Departmental policies governing the placement of other vessel-based licence eligibilities also held on the vessel being replaced. The receiving vessel may exceed the Overall Vessel Length (OVL) as long as the vessel holds another vessel based licence eligibility and remains eligible for that licence while the Geoduck licence is on the vessel. Where the receiving vessel holds a schedule II licence eligibility, the Schedule II eligibility must be relinquished.
- Where a Schedule II licence eligibility is relinquished, in conjunction with a Geoduck licence eligibility vessel replacement, and the overall length of the receiving vessel is greater than the OVL of the Geoduck licence eligibility, then the OVL of the Geoduck licence eligibility will be amended to the OAL of the receiving vessel. The OVL amendment shall not exceed the Maximum Vessel Length (MVL) of the Geoduck licence eligibility.
- Where the receiving vessel does not already hold a vessel based licence eligibility, the Schedule II privileges associated with the Geoduck and Horse Clam eligibility must be relinquished.
- Applications to place a Geoduck licence on a vessel that holds one or more Geoduck licences where Schedule II privileges have been relinquished must be reviewed by a Lead Agent and the resource manager on an individual basis.
- Owners of vessels that currently hold both a Geoduck and Horse Clam and a Schedule II licence eligibility may apply to place the Schedule II licence eligibility on a vessel that does not exceed the OAL of the original (1989) Geoduck and Horse Clam licensed vessel. Such applications should be made within a reasonable time frame. Where this occurs, the OVL of the remaining Geoduck licence eligibility will be amended to the OAL of the vessel that holds the eligibility and the MVL will be adjusted accordingly. This is consistent with the commitment made by the Department in the Geoduck Fishery - 1989 Enterprise Allocation document.
- For further information on the revised vessel replacement rules, please contact a PFLU or any of the Geoduck and Horse Clam resource managers (see Contacts, Appendix 15).

2.12. Licences to Collect Geoduck Samples in a Biotoxin Closed Area

Under the *Management of Contaminated Fisheries Regulations*, a licence is required for sampling of Geoduck from a PSP closed area. For further information, contact the Canadian Food Inspection Agency (CFIA) Shellfish Operations Specialist in Burnaby at (604) 666-3737, Archipelago Marine Research or a resource manager (see Contacts, Appendix 15).

The collection of Geoduck for biotoxin monitoring samples is conducted by contractors to CFIA and authorized through scientific licence. The UHA, working under the authority of the CFIAs scientific licence, collect Geoduck samples for the purposes of opening areas for harvest.

2.13. Collection of Geoduck for Broodstock

The collection of broodstock for aquaculture purposes is facilitated through an access licence and an introductions and transfers licence from the Introductions and Transfers Committee. Requests for access are reviewed according to the Access to Wild Aquatic Resources for Aquaculture Purposes Policy. Under this policy, it is estimated that up to 0.1% of the commercial total allowable catch, could be allocated for aquaculture purposes such as broodstock collection. Only licenced hatcheries are eligible to apply for broodstock access licences. See Appendix 5.

2.14. Vessels Using a Packer

There are specific licence conditions for packer vessels to transport Geoducks. All vessels with a valid vessel-based licence or a transporting licence (Category D) licence are issued licence conditions to transport Geoducks and are subject to those conditions. For additional information regarding these conditions, contact the PFLU.

3. CANADIAN SHELLFISH SANITATION PROGRAM (CSSP)

3.1. General Information on Closures under the CSSP

Closures may be implemented on short notice in the event of changes to contamination status, including sanitary and biotoxin events. Licence holders, vessel masters, and harvesters are reminded that:

- It remains the responsibility of the licence holders and harvesters to ensure that an area is not closed for harvest due to sanitary or biotoxin contamination. Fishing in a closed area is an offence under the *Fisheries Act*. Consumption of product harvested from within a closed area poses a serious health risk.
- Prior to commencement of each day's fishing, the licence holder must take care to confirm that an area is open for harvesting either through the DFO website at: http://www.pac.dfo-mpo.gc.ca/fm-gp/contamination/index-eng.html or the toll-free information line at 1-866-431-3474, or by contacting a local DFO office directly. Contact information is available in Appendix 15.

3.1.1. Sanitary Contamination Closures

Shellfish may not be harvested from closed contaminated areas except by special permit licence under the *Management of Contaminated Fisheries Regulations (*MCFR*)*. Currently there is not an approved depuration process for Geoduck. There are both seasonal and permanent sanitary contamination closures. Descriptions and maps of contaminated closures may be found at the following DFO website: www.pac.dfo-mpo.gc.ca/fm-gp/contamination/biotox/index-eng.html

A copy of this list may also be obtained from the resource managers (see Contacts, Appendix 15). Sanitary closures are amended annually in May and November, and may also be amended in-season. Consequently, harvesters are advised to check the internet, prior to harvesting in an area, to ensure that they have the most recent contamination closure information.

Permanent bivalve harvesting closures are in place for Canadian fisheries waters of the Pacific Ocean within:

a.) 300 m radius around industrial, municipal and sewage treatment plant outfall discharges;
b.) 125 m radius of any marina, ferry wharf, any floating living accommodation facility (other than a floating living accommodation described in subsection (3)) or finfish net pen described in subsection (4);
c.) 25 m radius of any floating living accommodation facility located within a shellfish aquaculture tenure where a zero-discharge waste management plan is a condition of the Provincial aquaculture licence and is approved by the Regional Interdepartmental Committee.
d.) Zero (0) metres of any finfish net pen within an aquaculture tenure where an Integrated Multi-trophic Aquaculture Management Plan approved by the Regional Interdepartmental Committee is in operation.

3.1.2. Biotoxin Contamination Closures

Shellfish may not be harvested from closed areas except by special permit licence issued under the *Management of Contaminated Fisheries Regulations*. Shellfish may not be harvested for consumption from any area closed due to biotoxin contamination. Descriptions of biotoxin closures may be found at the following DFO internet site: http://www.pac.dfo-mpo.gc.ca/fm-gp/contamination/index-eng.html

Areas will be opened and fished according to protocols required by the Biotoxin Monitoring Program, approved by the Canadian Food Inspection Agency (CFIA).

Three consecutive samples containing acceptable levels of biotoxin must be received in order to lift a harvest restriction in an area. CFIA will make recommendation to lift the biotoxin (Paralytic Shellfish Poison (PSP)/red tide, Domoic Acid Poisoning) (ASP) or Diarrhetic Shellfish Poisoning (DSP) prohibition and a harvest site can then be considered by DFO for First Nations, commercial or recreational harvesting. The resource manager will prepare the documentation

necessary for an area opening for approval by the Regional Director General. For further details on the CSSP, see the internet at:

https://www.inspection.gc.ca/food/food-specific-requirements-and-guidance/fish/canadian-shellfish-sanitation-program/eng/1527251566006/1527251566942?chap=0

3.2. Requirements for Legal Sourcing and Harvest of Bivalve Shellfish

The safety of consumers is a top priority for the Government of Canada. The reputation of Canada's food supply is a responsibility shared by all parties, including industry and federal and provincial governments.

As partners for delivery of the Canadian Shellfish Sanitation Program (CSSP), Fisheries and Oceans Canada (DFO) and the Canadian Food Inspection Agency (CFIA) collaborate to prevent illegal harvesting and selling of bivalve shellfish, including suspected laundering of illegal products through legitimate aquaculture businesses. DFO also remains committed to meeting conservation objectives for bivalves as well as supporting priority for Food, Social and Ceremonial fisheries. Any harvest occurring in conflict with established management measures and controls has the potential of negatively impacting the conservation of bivalve populations.

DFO will investigate reports of illegal harvesting violations and will take appropriate enforcement actions, including prosecution. Furthermore, DFO may consider more restrictive management approaches if needed to protect public health. Commercial growers and harvesters are reminded that they are required, by law, to follow specific record-keeping and tagging requirements. Records of shellfish movement through the growing cycle and to the point of distribution provide evidence to support public health, regulatory decisions and closure recommendations.

Commercial harvesters and aquaculture operators are required to:

- Understand and abide by the conditions of licence;
- Keep complete, clear and legible records and be able to produce them to a DFO fishery officer when requested;
- Ensure bivalve product destined for market sale is appropriately tagged with complete and accurate harvest information and is processed by an operator licenced by the Canadian Food Inspection Agency to process shellfish;
- Harvest only from open and approved areas and check our website before heading out for the latest information (www.dfo-mpo.gc.ca/CheckBeforeYouHarvest).

If you are aware of illegal bivalve harvest activities and/or are aware of violations, please call the DFO Observe, Record and Report (ORR) phone line at 1-800-465-4336.

More information on the policies and criteria for harvesting shellfish can be found in the CSSP manual. See also Fishery Notice FN1142 (2019): https://notices.dfo-mpo.gc.ca/fns-sap/index-eng.cfm?pg=view_notice&DOC_ID=227228&ID=all

3.3. Human Waste Containment Regulations

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

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

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

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

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

3.4. Harvesting Bivalves in the Vicinity of Wastewater Treatment Plants

Concerns have been raised regarding bivalve shellfish harvested in the vicinity of wastewater treatment plants. Increased controls were implemented in 2009 to prevent shellfish harvest in areas where a trigger event at a wastewater treatment plant may potentially cause contamination.

Conditional Management Plans are being developed at some of the priority wastewater treatment plants to manage harvest activities in the vicinity of the wastewater treatment plants.

DFO will be consulting with shellfish harvesters in areas where Conditional Management Plans must be developed.

For further information, contact DFO.PAC.CSSP-PCAM.PAC.MPO@dfo-mpo.gc.ca

4. CLOSURES

Closures to the fishery may be in place for a variety of reasons, including but not limited to: First Nations and recreational access, parks, marine reserves, research, navigation, or sanitary and marine biotoxin contamination.

4.1. Harvesting on Aquaculture Tenures

Licensed aquaculture facilities are considered private property. Under the *Fisheries Act*, fishing within an aquaculture facility already under federal licence (*Pacific Aquaculture Regulations* aquaculture licence) is prohibited unless otherwise permitted by the occupant holding the licence. The Department recommends that harvesters familiarize themselves with the location of aquaculture tenures in fishing areas and that permission be sought from the aquaculturist for access. All tenures must be clearly marked. All sub-tidal and intertidal boundaries shall be clearly marked in a manner which: (a) only uses markers at the corners of the licensed area; and (b) shall not include the use of lines or ropes.

4.2. Seasonal Area Herring Closures for Commercial Geoduck and Horse Clam Fisheries

The following are seasonal closures to protect Herring spawn and Herring spawning grounds. Any area with observed Herring spawn may be closed as required. Fish harvesters will be notified of closures by the service provider or fishery notices. For further information call a resource manager (see Contacts, Appendix 15).

4.2.1. South Coast

Open times in the fishery will be scheduled to prevent conflict with Herring fisheries and Herring spawning activity in the South Coast.

- Area 12: portions normally close March 1 to April 30
- Area 13: portions normally close February 15 to April 15
- Area 14: portions normally close February 15 to April 15
- Area 15: portions normally close February 15 to April 15
- Area 16: typically no closures
- Area 17: portions normally close March 1 to April 30
- Area 18: portions normally close March 1 to April 30
- Area 19: portions normally close March 1 to April 30
- Area 29: typically no closures
- Area 23: portions normally close February 24 to April 15
- Area 24: portions normally close February 24 to April 15
- Area 25: portions normally close February 24 to April 15
- Area 26: portions close as required February 24 to April 15

- Area 27: portions normally close February 24 to April 15

4.2.2. North Coast

Open times in the fishery will be scheduled to prevent conflict with Herring fisheries and Herring spawning activity in the North Coast. Fish harvesters will be notified of closures by the North Coast OGM, service provider or Geoduck resource manager.

4.3. Permanent Area Closures for Commercial Geoduck and Horse Clam Fisheries

All harvesting of Geoducks and Horse Clams shall be conducted from bottom deeper than 10 feet below chart datum (i.e. deeper than 10 feet at the lowest tides). No harvesting of Geoduck and Horse Clams shall take place in eelgrass beds.

No person shall fish for, take, catch, or have in possession Geoduck and Horse Clams from the following areas.

4.3.1. Area 2

4.3.1.1. 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)]

4.3.1.2. 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)]

4.3.1.3. 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)]

4.3.1.4. 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)]

4.3.1.5. 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)]

4.3.1.6. 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]

4.3.1.7. 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]

4.3.1.8. 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]

4.3.1.9. 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]

4.3.1.10. 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)]

4.3.1.11. 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)]

4.3.1.12. 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)]

4.3.1.13. 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)]

4.3.1.14. 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)]

4.3.1.15. 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)]

4.3.2. Area 13

4.3.2.1. Discovery Passage: Subareas 13-3, 13-4 and 13-5 and a portion of Subarea 13-6. Those waters of Discovery Passage bounded on the north by a straight line drawn true west from North Bluff on Quadra Island, across Seymour Narrows to 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 and Research Closure)

4.3.2.2. S.W. Marina Island. A portion of Subarea 13-15 east of a line located at 125 degrees 03.900 minutes west longitude to the line located at 125 degrees 03.400 minutes west longitude and north of a line located at 50 degrees 2.850 minutes north latitude to the line located at 50 degrees 03.300 minutes north latitude (Research Closure).

4.3.3. Area 13, 14, 15

4.3.3.1. Mitlenatch Island: All waters within 1.0 nautical miles of Mitlenatch Island in Subareas, 13-1, 15-3, 14-13, and 15-2. (Park)

4.3.4. Area 17

4.3.4.1. Hammond Bay: Subarea 17-21 inside a line from Neck Point to Lagoon Head. (Research Closure)

4.3.4.2. Gabriola Site: A portion of Subarea 17-16, including Percy Anchorage and False Narrows, bounded inside a line from a marker near the entrance to Descanso Bay to Duke Point, thence to Purvis Point, along the northern shore of Mudge Island to the most southeasterly point on Mudge Island, thence north-easterly to a marker on Gabriola Island, thence in a westerly direction along the south shore of Gabriola Island to the point of commencement. (Research Closure)

4.3.5. Area 23

4.3.5.1. 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)

4.3.5.2. Bamfield Marine Station Research Area Closure: Those waters of 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)

4.3.6. Area 24

4.3.6.1. Portions of Subareas 24-6 and 24-7: The east coast of Dunlap Island, from the most northerly point of Dunlap Island to Robert Point on Meares Island, then following the Meares Island shore southerly to a point true east of the most southerly point of Dunlap Island, then a straight line to the most southerly point of Dunlap Island. (Research Closure)

4.3.6.2. Ritchie Bay: A portion of Subarea 24-7 from Robert Point on Meares Island, thence following the shore easterly to the most northern headland of Ritchie Bay, thence in a straight line to Robert Point. (Research Closure)

4.3.6.3. Ahous Bay Whale Sanctuary: A portion of Subarea 24-6, inside of a straight line from Ahous Point on Vargas Island, thence northerly to a point at 126 degrees 01.849 minutes west longitude, 49 degrees 11.137 minutes north latitude, thence due east to Vargas Island.

4.3.6.4. 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)

4.3.7. Area 26

4.3.7.1. Checleset Bay Fishery Closure Area- Ecological Reserve: Those portions of Areas 26 and 126 enclosed by a line drawn from a point on the Brooks Peninsula (at 127 degrees 49.58 minutes west longitude., 50 degrees 05.18 minutes north latitude), thence due south to the 50 degrees parallel, thence due east to Alert Point on Lookout Island, thence northeasterly to a point on Vancouver Island near McLean Island (at 127 degrees 25.03 minutes west longitude, 50 degrees 02.1 minutes north latitude), thence northwesterly along the shore of Vancouver Island to Malksope Point (at 127 degrees 28.95 minutes west longitude, 50 degrees 05.53 minutes north latitude), thence due west to a point midchannel on the southeast end of Gay Passage (at 127 degrees 30.1 minutes west longitude, 50 degrees 05.53 minutes north latitude), thence midchannel through Gay Passage to a point midchannel on the northwest end of Gay Passage (at 127 degrees 31.8 minutes west longitude, 50 degrees 06.7 minutes north latitude.), thence northwesterly to the shore of Vancouver Island, just west of Theodore Point (at 127 degrees 32.8 west longitude, 50 degrees 07.7 minutes north latitude), thence westerly along the Vancouver Island shore to an unnamed point on the east side of Nasparti Inlet (at 127 degrees 38.6 minutes west longitude, 50 degrees 08.75 minutes north latitude), thence westerly across Nasparti Inlet to an unnamed point on Vancouver Island (at 127 degrees 39.9 minutes west longitude, 50 degrees 08.7 minutes north latitude), thence along the Vancouver Island shore to the point of commencement.) (Provincial Ecological Reserve - sea otters and habitat)

4.3.8. Area 28

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

4.3.8.2. 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)

4.3.8.3. Point Atkinson Reef: That portion of Subarea 28-6 bounded by a line commencing at the southwest entrance to Starboat Cove thence seaward in a southwest direction for 85 metres, thence westerly following the shoreline for 100 metres, thence in a north east direction to a point on land. (Marine Reserve)

5. GEODUCK MANAGEMENT MEASURES

5.1. Species

Geoduck (Panopea generosa)

5.2. Gear

Hand-held, manually operated water nozzles guided and controlled from underwater by a diver. Each water nozzle shall have a maximum inside diameter of 5/8 inch (1.59 cm).

5.3. Total Allowable Catch

Total allowable catch (TAC) is determined by multiplying available biomass estimates by the appropriate harvest rate, see Section 5.9. Available biomass does not include areas in closures for Parks, marine reserves, sanitary contamination, research etc. As well it does not include areas that have been tenured for aquaculture. For the 2022/23 season the overall TAC has been dropped as a results of a decrease in available biomass due to closures put in place within Gwaii Haanas National Park Reserve as well as impacts of Sea Otter predation in future rotations.

5.4. Vessel Quotas

The Department approved, in 2012, quota block transfers between vessels. Transfers were allowed permanently, as well as temporarily, in blocks of quota which equal 1/550 of the coast-wide commercial TAC. The merits and feasibility of the quota transfers were reviewed through 2015. A third party review of the program was completed and the Department surveyed all licence holders in 2015 and an internal economic review was completed in 2016. All respondents were in favor of continuing the program as a permanent part of the Geoduck fishery. Future changes to the program may be considered but the quota transfer system will continue as an indeterminate program.

The quota per vessel will be determined by the number of quota blocks multiplied by 1/550 of the Coast wide commercial TAC which is 2,805,000 lb. For 2022/23 each quota block equals 5,100 lb.

5.4.1. Transferring Quota Blocks

The following guidelines for the permanent or temporary transfer of Geoduck quota blocks will be in effect.

- Upon application, licence holders will be permitted to make temporary and permanent transfers of Geoduck quota blocks. Applications are to be submitted through NOLS. For more information contact the UHA or a resource manager, see contacts Appendix 15.
- The current licence must be issued for both vessels prior to any quota block transfer.
- Request for permanent transfer must be received between the start of the fishery May 1, to February 24, of the same season in order to be processed prior to the end of the fishing season. Temporary transfers can be applied for at any time during the season.
- Quota that has already been caught or deemed "fished" cannot be transferred.
- The minimum quantity of quota that can be transferred is one quota block. A quota block is defined as 1/550 or approx 0.182% of the Annual Coastwide commercial TAC.
- In order to transfer quota the vessel providing the quota must either a) be not actively fishing or b) have a minimum of one quota block in addition to the quota block(s) being transferred.
- Temporary transfers are only valid for the current fishing season.

Link to the Temporary Transfer Application:
http://www.pac.dfo-mpo.gc.ca/fm-gp/licence-permis/forms/2017/realloc-temp-geoduck-panope-eng.html

Link to the Permanent Transfer Application:
http://www.pac.dfo-mpo.gc.ca/fm-gp/licence-permis/forms/2017/realloc-perm-geoduck-panope-eng.html

5.5. Geoduck Experimental Enhancement

In the mid 1990's, the industry began experimenting with enhancement projects, planting hatchery produced seed at sites that had been depleted by heavy fishing pressure in the early years of the commercial fishery. The interest supported both research and development of culture techniques and provided potential mitigation for the loss of productive beds to the fishery through allocation to aquaculture, sanitary closures, etc.

The Province of BC agreed to hold approximately 296 hectares (ha) at 18 sites as map reserves until 2015 for that work to continue. DFO approved 13 of those sites (104 ha).

In 2015, BC did not renew the map reserve status on these sites and seeding is no longer permitted for the purpose of enhancement.

However, sites that were previously seeded for the purpose of enhancement will be available for harvest opportunities from the Inside Waters (Gulf) for this season. This harvest opportunity is included in the allocated quota for the Inside Waters and will be available for G or FG licensed vessels with quota blocks allocated to the Inside Waters. Any Horse Clams within the enhancement sites will be harvested at the same time as the Geoducks.

Quota had been allocated to enhancement sites in 2018/19, however no harvest occurred on these sites. The enhancement sites were not scheduled to be harvested in 2019/20 or 2020/2021. For the 2021/22 season 1,000 lbs has been allocated to be harvested off enhancement sites. For 2022/23 season no quota has been allocated from enhancement sites.

5.6. Geoduck Aquaculture (Pre-seed Harvest)

There may be supplemental harvest opportunities under the DFO Policy for Access to Wild Aquatic Resources as it Applies to Aquaculture (2004). See Appendix 5.

5.7. Fishing Areas and Openings

5.7.1. Growing Water Surveys (Environment and Climate Change Canada)

Growing water surveys and classification are in place for the planned commercial fishing areas; see the internet for more information:

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

Closures may be implemented on short notice in the event of changes to contamination status and/or following the Spring (April) and Fall (October) Pacific Region Interdepartmental Shellfish Classification (PRISC) meetings. Harvesters should always check before leaving for the fishing grounds.

5.7.2. Biotoxin Monitoring (Canadian Food Inspection Agency)

Geoduck Management Areas (GMAs) will be opened and fished according to protocols required by the Biotoxin Monitoring Program, approved by the CFIA. For further detail on the CSSP, see the internet at:

https://inspection.gc.ca/preventive-controls/fish/cssp/eng/1563470078092/1563470123546

5.7.3. Open Times (Fisheries & Oceans Canada)

A GMA is a defined portion of Pacific fisheries waters. Areas and Subareas, as described in the *Pacific Fishery Management Area Regulations*, are referenced in describing GMAs. Each GMA has a name (i.e. QCF06 Poole Inlet), and may be assigned a quota.

- GMAs will be opened as biotoxin monitoring permits. Subsequent openings, as requested by the UHA, will be conducted as biotoxin monitoring permits. (See Section 4 Closures)
- The UHA, on behalf of owners of Geoduck licensed vessels, will request area openings in consultation with DFO. The Department requires a minimum of 48 hours' notice from the

association (exclusive of weekends and holidays) to open a new GMA. Decisions to open and/or move the fishery will be relayed to the fishing grounds by the service provider (the OGM in some areas).

- Vessel masters must hail to the service provider prior to commencing fishing (see Section 7.1). Vessel masters are responsible for checking an area is open prior to commencing fishing.
- Any alteration to the prescribed fishing plan will be discussed through the Area Committee and the UHA. Any deviations from the fishing plan, not so discussed, will result in closure of the fishing area and/or the fishery until the matter is resolved.

5.8. Licence Amendment to Extend Season

Persistent high PSP levels and/or poor weather has made it difficult, in some seasons, for vessels to complete their quota by the end of the season. At the request of the UHA, the Department may allow an extension for 15 days into the next season understanding that:

- Owners of Geoduck licensed vessels with quota remaining must apply through NOLS for amended conditions that will permit harvesting into the next season. Allow ten business days.
- The UHA will ensure that all PSP testing and required monitoring is in place for the duration of the extension.
- The extra costs of monitoring the extension will be funded through regular UHA programs.
- All conditions of licence for the boats remaining fishing will be met.
- The subsequent licence area fishery will be delayed for all licence holders until the OGM is in place and/or the areas are opened.
- The subsequent fishery may open earlier than the end of the 15 day extension if the previous fishery has been completed.

Owners of Geoduck licensed vessels who have quota remaining in the current season's fishery will be diligent in continuing to fish as soon as weather and/or biotoxin levels permit.

5.9. Bed by Bed Management

5.9.1. Allocation of Bed Quotas

The estimates of bed area, Geoduck densities (used in current biomass calculations), harvest records, and harvest options available are discussed pre-season with each Area Committee. If bed-quota advice from the Area Committees falls within the range of options provided by DFO Science, the committee-recommended quota is assigned.

In some cases, the quota assigned may not be as high as recommended by the Area Committees. These beds may be recorded and considered for future survey or assessment.

Biomass estimates, Appendix 2, are calculated on a by-Geoduck-bed basis using one of three methods, depending on the information available for each bed. If a bed was surveyed then biomass is estimated from survey density for the specific bed. For un-surveyed beds, biomass is

estimated using density surveys and Density Categories (DC) from harvesters' advice and comments when comments are available, or using Regional Densities (RD) from surveys when density comments are not available (Bureau et al. 2012). Bed quotas are assigned through one of following methods.

5.9.1.1. Surveyed Beds

Where survey density information is available, an estimate of current biomass ($B_{current}$) is used to establish a harvest option. DFO Science provides a range of biomass estimates and a range of harvest options based on a fixed harvest rate (Section 5.9.2). The lower 95% confidence interval and mean harvest options are calculated. Recommendations for quotas from the Area Committees are considered up to a maximum of the mean harvest option on surveyed beds.

5.9.1.2. Unsurveyed Beds

For un-surveyed beds, estimates of current biomass are extrapolated from the Regional Density or from bed DC where available. The bed may be harvested to a maximum of the average of the lower 95% confidence interval and the mean harvest option. Fish harvesters may advise that a bed does not exist, the bed area or density is overestimated (or underestimated), or recommend lower/zero quotas based on quality or other factors.

5.9.1.3. Actions under the Precautionary Approach

Harvest Control Rules (HCR) compliant with the Precautionary Approach (PA) (See IFMP Section 2.1.7) have been developed for the Geoduck Fishery.

The Limit Reference Point used in the BC Geoduck fishery was defined by Zhang and Hand (2007) as current biomass being equal to 40% of unfished biomass and was initially applied at the by-bed spatial scale. The Limit Reference Point for the BC Geoduck Fishery is now applied at the coastwide spatial scale, because Geoducks form a single genetic stock in BC, and the LRP is now defined as coastwide current biomass being equal to 40% of coastwide unfished biomass (DFO 2021b). Details of methods used to estimate unfished biomass were provided in Bureau (2017).

The Upper Stock Reference (USR) is the point at which harvest rates would be decreased to ensure the Limit Reference Point is not reached on a coastwide basis. The USR for the Geoduck stock will be defined as the total coastwide current biomass being equal to 50% of total coastwide unfished biomass.

The removal reference, i.e., (maximum allowable harvest rate for the stock as a whole) for the BC Geoduck stock was defined as 1.8% of the coastwide current Geoduck biomass estimate (DFO 2021a).

The coastwide Stock Index, defined as the ratio of coastwide current biomass to coastwide unfished biomass is estimated yearly and compared to the LRP and USR to determine stock status under the Precautionary Approach.

5.9.2. Harvest Rate

Zhang and Hand (2006, 2007) modelled the impact of a range of harvest rates on Geoduck population levels for various regions of the BC coast. Regional harvest rates, projected to have a 90% probability of keeping the stock at or above 50% unfished biomass over a 50 year time horizon, were recommended to be applied to estimates of current biomass. The annual exploitation rates, by region, are: 1.6% for Haida Gwaii, 1.8% for Prince Rupert, Central Coast and Inside Waters and 1.2% for WCVI.

5.9.3. Fishing Assigned Bed Quotas

The service provider, through the OGM on the North Coast and the West Coast for the six months of highest effort, will notify the Geoduck vessel crews of the allocated quota in each Geoduck bed to be fished. In the absence of detailed bed maps, harvesters must obtain the bed number and the allocated bed quota from the OGM or service provider. Harvesters are expected to harvest up to the allocated bed quotas and to follow the harvest instructions of the OGM or service provider. **It is recognized that some beds will have small quotas to be taken and additional effort will be required to harvest these small bed quotas**.

For the Inside Waters, where there is no OGM or WCVI during the times without an OGM, the service provider will distribute dive harvest charts, and Geoduck bed maps are available for fish harvesters to determine the bed numbers and bed quotas and to record their daily harvest locations. The Department requests that harvesters attempt to distribute their effort and harvest throughout the entire GMA and throughout beds as it is drawn on the map to determine whether the bed boundaries are drawn correctly. Little information is gained when fish harvesters harvest all of the catch from one position. The service provider will distribute regular updates on fishing activity and remaining bed quotas to the fish harvesters.

5.9.4. Changing Assigned Quotas In-season

Changes to assigned quotas may occur in-season following consultation with the resource manager. A decision to harvest more than the assigned quota will be based on advice from the OGM, the Area Committees, and DFO Science.

5.9.4.1. Fallback Beds

For a variety of reasons (impact by Sea Otters, remote location, quality, exposure,), the advice from the Area Committees may be to set the quota below the options available from DFO Science (following the management decision rules outlined above), or to zero.

‘Fallback’ is the amount of quota available for harvest over the allocated quota (to a maximum of the mean harvest option). For example if science advised the maximum harvest option on a bed was 1,000 lbs. but only 700 lbs. was allocated there would be 300 lbs. of fallback available. The overall seasons harvest will not exceed the allocated commercial TAC.

Following consultation in-season with the resource manager, and if conditions are appropriate, the bed may be fished within the options originally provided by DFO Science, again described as 'Fallback'.

- Fallback quota **may** be available up to the mean option for surveyed beds and the average of the lower 95% confidence interval and the mean option for unsurveyed beds.
- Fallback quota **must** be fished from a new location within the bed. A new harvest site within the bed is defined as one outside the radius of a hose length away from any known (current season) fishing locations. An average hose-length is defined as 250 feet. Harvest at any new site will be restricted to 20 cages for Inside Waters, 30 cages for WCVI, and 40 cages for North Coast. The harvest of fallback quota will not be permitted from any recent (current season) harvest sites.
- Prior to fishing any fallback from beds with allocated quota it is requested that all beds with allocated quota within the open GMA are fished or attempted to be fished to the allocated quota first. Beds with no allocated quota, and not closed for any reason, i.e. in a closure, beds with a stock index below 0.4 etc., can be fished at any time following the rules above.

5.9.4.2. Unfishable Quotas

It may be difficult or impossible to achieve the quota at some beds for a variety of reasons (e.g., weather and sea states, Geoduck may not be showing, bed biomass may have been overestimated, sea otters). It is requested that fish harvesters attempt to fish the bed on different occasions or try different portions of the bed as indicated. If it is not possible to harvest the quota from a given bed, the OGM or service provider will consult with divers and resource managers and document the reasons. There are several options to resolve the situation which are, in order of preference:

a.) Fish another bed in the same GMA that is deemed to have fallback quota available. Fish the beds to which a fallback quota was applied (see above).

b.) Scout for new beds in the same GMA, same subarea. Finding new beds may offset the losses that result from reduced bed areas, densities, and resulting biomass estimates. Whenever possible, scout for new beds within the same GMA. To distribute effort on a new bed, the following protocol is applied:

   i.) Inside Waters: 1,000 lb. or 20 cages per hose length limit; an average hose-length is defined as 250 feet. The diver (boat) will move outside the radius of his hose length after the harvesting limit is reached.

   ii.) West Coast: 1,500 lb. or 30 cages per hose length limit; an average hose-length is defined as 250 feet. The OGM will direct the diver (boat) to move outside the radius of his hose length after the harvesting limit is reached.

   iii.) North Coast: 2,000 lb. or 40 cages per hose length limit; an average hose-length is defined as 250 feet. The OGM will direct the diver (boat) to move outside the radius of his hose length after the harvesting limit is reached.

c.) Move the unharvested quota to another GMA that is deemed to have harvestable quota available. Fish the other GMA to a higher quota, using fallback options.

d.) If none of the above options is reasonable, the fish harvesters may not be able to achieve the GMA quota, area quota and ultimately the IVQ.
e.) If there are disputes, the area will be closed, and only reopened after successful resolution of the issue.

5.9.4.3. Disruptions Due to Unforeseen Issues (PSP, Sanitary Closures, Other)

The Department may, at its discretion and upon request from the UHA, transfer quotas in-season between GMAs not included in this IFMP to mitigate access problems and/or harvest delays resulting from unforeseen circumstances, for example extended PSP closures, inseason sanitary closures or other reasons. The Department may also, at its discretion and upon request from the UHA, transfer quotas in-season between quota regions for the same reasons. Quota transfers will take place within the annual harvest rate for a region/area and will not exceed the recommended harvest option for the area to which the quota will be transferred. Considering quota transfers between regions, the maximum allowable transfer is five (5) quota blocks or 26,000 lbs. In-season quota adjustments will not result in an increase in the annual commercial TAC.

Industry is advised that quota adjustments and in-season transfers to address the unforeseen circumstance must be made through written request by the UHA to the lead manager for the fishery (see Contacts, Appendix 15).

The Department will deal with the impact on implementation of the fishing plan by implementing the following protocols:

- Fishing the open areas at a higher rate and implementing a "payback" system over the next several years. In this scenario, the annual harvest rate will be violated in some areas in the short term, but in the subsequent rotation, this additional harvest is "paid back" by foregoing the harvest or a portion of harvest assigned to that year. This is, in effect, a temporary longer-term rotation and the annual harvest rate is adhered to over the rotational cycles.
- Fishing areas in other rotations and implementing a "payback" system over the next several years. In this scenario, product is "borrowed" from areas not included in the current rotation, and paid back in the appropriate year. This strategy entails a trade of quota between rotational harvest areas. Biotoxin Monitoring Programs must be in place prior to implementing the change to the management plan.

5.9.5. Role of the On-Grounds Monitors (OGM)

The OGM (see Section 7) has the responsibility to request that vessels move when a bed quota has been achieved:

- in order to assess and harvest all Geoduck beds with allocated quota;
- to fish in all documented beds with allocated quota - large and small, shallow and deep, regardless of the market quality of the clams;
- to fish in and record comment from all of the documented bed area.

All vessels are expected to participate in the harvest of the marginal, less popular and/or less productive beds. Vessels are expected to comply with the OGM's request. The Department will close an area if there are problems with compliance.

5.9.6. Bed Questionnaires

To improve the data used in the population assessment and modelling process, and to provide quotas that are more reflective of Area Committee advice, the Department is continuing to request the voluntary submission of information on Geoduck beds. A Validation & Harvest Logbook has been created to include the key questions from the Bed Questionnaire used prior to 2008. Vessel Masters and divers can complete the Harvest Log dive information and Bed Questionnaire information all on one page. See Appendix 7.

Geoduck Bed Questionnaires are used in all areas of the coast to collect and improve bed information that is used to calculate bed quotas. Divers should complete the questions along with their dive harvest information, and submit them to the OGM or Observer (Dockside Validator). The OGM does not alter the information provided on the beds; however data, such as the GMA, the bed number and the coordinates of the fishing location, must be checked for accuracy for the information to be useful. The combined log and questionnaire is forwarded to the service provider for data entry.

If there are large variations between the information supplied on the Bed Questionnaire portion of the logbook and Stock Assessment's information, the beds in question will be prioritized for an assessment (biomass) survey in future years.

5.10. Inside Waters

5.10.1. Designated Landing Ports

Harvesters must land their catch at one of the following designated landing ports: Campbell River, Heriot Bay, Lund, Westview, Cowichan Bay, Sidney, Port Hardy, Port McNeill, Comox, Deep Bay, French Creek, Nanaimo or Ladysmith. Madeira Park and Halfmoon Bay may be used as a landing port if prior arrangements have been made with the service provider to ensure that an Observer and scale are available.

5.10.2. Inside Waters Openings and Quotas

The 2022/23 Geoduck quota for the Inside Waters is 331,500 lb. (and an additional 1,000 lb. for biological samples). This has been subdivided and assigned to the GMAs shown in Table 1. A total of sixty-five (65) quota blocks has been be assigned to these areas. **Harvest in eelgrass beds is not permitted.** Harvest at depths less than 10 feet below chart datum is not permitted.

To ensure the orderly progression and appropriate harvests on all beds, harvesters and licence holders are advised that DFO may require GMA's to be completed prior to opening any other GMA's.

Table 1: Geoduck Management Areas and Quotas - Inside Waters

GMA	Name	Description	2022/23 Quota (lb)[1]
12A01	Northern Island	Subarea 12-11 and a portion of Subarea 12-16	35,555
12A02	Walker Group	Subareas 12-10 and 12-13	0
12B01a	East side Vansittart Island	Portion of Subarea 12-12	4,500
12B01b	West side Vansittart Island	Portion of Subarea 12-12	6,000
12B02	Northern Goletas Channel	Subarea 12-15	34,446
12B03a	Southern Goletas Channel	Portion of Subarea 12-16	37,900
14B01*	Comox Bar	Portions of Subareas 14-7, 14-9 and 14-10	105,578
14C01*	Comox Can Buoy to North Baynes Sound	Portion of Subarea 14-11	1,000
14C02*	North Baynes Sound	Subarea 14-15	3,600
14C03*	South Baynes Sound	Portion of Subarea 14-8	0
17A01**	Icarus Point/Lantzville Shore	Subarea 17-18	8,550
17A02**	Nanoose Bay to Blunden Point	Subarea 17-19	5,000
17A03**	Nanoose Bay	Subarea 17-20	0
17B01	North Gabriola Island to Neck Point	Subareas 17-10, 17-12, 17-13, 17-14, 17-15 and a portion of Subarea 17-16	35,850
17B02**	Pylades Channel	Portion of Subareas 17-4 and 17-16, Subarea 17-17	750
17B03**	Boat Harbour to Chemainus	Portions of Subareas 17-4, 17-5 and 17-6	5,600
17B04**	Southern portion of Area 17	Subareas 17-1, 17-2, 17-3, portions of Subareas 17-4, 17-5 and 17-6, and Subarea 17-8 and 17-9	3,471
16D01	Thormanby Island	Portions of Subareas 16-1 and 16-2	17,500
18A	Boatswain Bank	Portion of Subarea 18-7	6,500

19C	Sydney and Cordova Channel	Subareas 19-3, 19-4, 19-5, 19-6	6,700
29	Outside Valdes Island	Portion of Subarea 29-5	13,000
	Enhancement Sites		0
Subtotal (lb.)			**331,500**
Biological Samples (lb.)			**1,000**
Total Allowable Catch (lb.)			**332,500**

[1] GMA's with '0' quota allocated may be fished under the fallback protocol (see 5.9.4.1)

* GMAs closed between February 15 and April 15 for seasonal Herring closure.
** GMA closed between March 1 and April 30 for seasonal Herring closure.
- Other GMAs may close if Herring spawn is observed in the area. See section 4.2.

See Section 4 for Closures within these areas, Appendix 9 for complete GMA descriptions and Appendix 11 for maps.

5.11. West Coast of Vancouver Island

5.11.1. Designated Landing Ports

Harvesters must land their catch at one of the following designated ports: Sooke, Port Alberni, Ucluelet, Tofino, Zeballos, Fair Harbour, Gold River or Tahsis.

5.11.2. West Coast Openings and Quotas

The 2022/23 Geoduck quota for the WCVI is 377,400 pounds (and an additional 1,000 pounds for biological samples). This has been subdivided and assigned to the GMAs shown in Table 2 below. A total of seventy-four (74) quota blocks has been designated to these areas. **Harvest in eelgrass beds is not permitted.** Harvest at depths less than 10 feet below chart datum is not permitted.

West Coast openings will occur under the following schedule, as determined through consultation with the UHA:

- Specific GMAs (highlighted with [2]) must be fished between November 15 and March 31.
- As soon as Area 23 biotoxin sampling permits, this area will open and the quota completed before moving.

Table 2: Geoduck Management Areas and Quotas - West Coast Vancouver Island

GMA	Name	Description	2022/23 Quota (lb.)[1]

20A	Sooke	Subareas 20-4, 20-5 and 20-6	0
23A01	Maggie River	Portions of Subareas 23-10 and 23-11	17,608
23A02	Macoah Pass	Portions of Subareas 23-10 and 23-11	2,587
23B	Toquart Bay & Pipestem Inlet	Portion of Subarea 23-10	0
23C	Mayne Bay, Stopper, Bryant & Curwen Islands	Subarea 23-9 and a portion of Subarea 23-10	4,009
23D01	Pinkerton Islands	Portion of Subarea 23-8	1,236
23D02	Canoe Island to Useless Inlet	Portions of Subareas 23-4, 23-6, 23-7 and 23-8	12,619
23E01	Trevor Channel to Alberni Inlet	Subarea 23-3 and a portion of Subarea 23-4	0
23E02	Chain Group	Portion of Subarea 23-4, Subarea 23-5 and portions of Subareas 23-6 and 23-7	7,007
24A02a	Yarksis	Portion of Subarea 24-8	26,402
24A02b	East Side Father Charles Channel	Portion of Subarea 24-8	1,500
24A03	Tonquin/Wickaninnish	Portion of Subarea 24-8	0
24A04	Epper/Dunlap	Portions of Subareas 24-6 and 24-7	41,283
24A05	Lemmens Inlet	Subarea 24-9	5,000
24A06a	Yellow Bank	Portion of Subarea 24-7	38,749
24A06b	East Maurus Channel	Portion of Subarea 24-6	7,000
24A06c	Elbow Bank North	Portion of Subarea 24-6	14,000
24A06d	Elbow Bank South	Portion of Subarea 24-6	14,200
24B01a	Bartlett Island	Portion of Subarea 24-6	89,000
24B01b	Blunden Island	Portion of Subarea 24-6	10,488
24B02a	Coomes Bank	Portion of Subarea 24-6	0
24B02b	Calmus Pass	Portion of Subarea 24-6	4,000
24B03*	Millar Channel[2]	Portions of Subareas 24-4 and 24-6	56,500

24B04*	Russell Channel[2]	Portion of Subarea 24-6	0
24C01*	Sydney Inlet	Subarea 24-2	4,262
24C02	Exposed	Subarea 24-1, a portion of Subarea 24-8, Subarea 124-3	0
24D01a	Fortune Channel	Subareas 24-10 and 24-12	0
24D01b	Shelter Inlet	Subareas 24-3, a portion of Subarea 24-4, Subareas 24-13 and 24-14	3,767
24D01c	McKay Island	Portion of Subarea 24-4, Subarea 24-5	1,183
24D02	Indian Island	Portion of Subarea 24-11	0
25A	Esperanza	Subareas 25-9, 25-10, 25-11, 25-12 and a portion of Subarea 25-13	0
25B	Nuchatlitz	Portion of Subarea 25-13, Subarea 25-14	
25C	Rosa Harbour	Portion of Subarea 25-13	
25D	Nootka	Subareas 25-3 to 25-8, Subarea 25-15	0
26A	North Inlets	Portions of Subareas 26-7, 26-8, 26-9 and 26-10	0
26B	Mission Group	Portions of Subareas 26-1, 26-6 and 26-7	15,000
26C	Central Kyuquot Inlets	Portions of Subareas 26-1, 26-2 and 26-6	0
26D01	SW Union Island	Portions of Subareas 26-1, 26-2 and 26-6	0
26D02	Amai & Cachalot Inlets	Portions of Subareas 26-2 and 26-3	0
26D03	North of Rugged Point	Portions of Subareas 26-1 and 26-2	0
26D04	South of Rugged Point	Portion of Subarea 26-1	0
26F	Inlets - exploratory	Portion of Subarea 26-2, and Subareas 26-4 and 26-5	0
Subtotal (lb.)			**377,400**
Biological Samples (lb.)			**1,000**
Total Allowable Catch (lb.)			**378,400**

[1] GMA's with '0' quota allocated may be fished under the fallback protocol (see 5.9.4.1)

[2] Indicates these GMA's must be fished between November 15 and March 31 unless there is a required seasonal closure for Herring.

* GMAs closed between February 24 and April 15 for seasonal Herring closure.
- Other GMAs may close if Herring spawn is observed in the area. See section 4.2.

See Section 4 for Closures within these areas, Appendix 9 for complete GMA descriptions and Appendix 12 for maps.

The OGM (see Section 7) or service provider will request that fish harvesters move from a Geoduck bed or GMA when the quota has been reached on that bed or in that GMA. Details of Sea Otter raft locations and predation should be documented on the Bed Questionnaire section of the logbook and by the OGM.

5.12. North Coast

5.12.1. Designated Landing Ports

Harvesters must land their catch at one of the following designated ports: Bella Bella, Queen Charlotte City, Masset, Sandspit, Prince Rupert, Port Edward or Port Hardy.

5.12.2. North Coast Openings and Quotas

The 2022/23 Geoduck quota, for the North Coast area is 2,096,100 pounds (and an additional 4,000 pounds for biological samples). This has been subdivided and assigned to the GMAs shown in Table 3 below. A total of four hundred and eleven (411) quota blocks has been designated to these areas. Areas will be opened upon request as biotoxin sampling permits. **Harvest in eelgrass beds is not permitted.** Harvest at depths less than 10 feet below chart datum is not permitted.

To ensure the orderly progression and appropriate harvests on all beds, harvesters and licence holders are advised that DFO may require GMA's to be completed prior to opening any other GMA's.

Table 3: Geoduck Management Areas and Quotas – North Coast

North Coast Quota

GMA	Name	Description	Quota (lb.)
CCA01	McMullin Group	Portion of Subarea 7-18	5,295
CCA02	Stryker Island	Portion of Subareas 7-18 and 7-23	24,359
CCA03	Tribal Group	Portion of Subarea 7-18	48,797
CCA04	Admiral Group	Portion of Subarea 7-18	12,060

CCA05	Prince Group	Portion of Subarea 7-25	15,235
CCA06a	Latta Island	Portion of Subarea 7-25	28,930
CCA06b	Hunter Channel	Portion of Subareas 7-17, 7-18, 7-25	5,535
CCA07a	McNaughton Group North	Portion of Subarea 7-25	15,793
CCA07b	McNaughton Group - Kinsmen	Portion of Subarea 7-25	20,481
CCA07c	McNaughton Group South	Portion of Subarea 7-25	14,155
CCA07ex	Superstition Point Experimental Area	Portion of Subarea 7-25	0
CCA08	Simmonds Group	Portion of Subarea 7-25	22,950
CCA09	Goose Island North	Portion of Subarea 7-25	0
CCA10	Goose Island South	Portion of Subarea 7-25	0
CCA11	Spider Island	Portion of Subarea 7-27	37,842
CCA12a	Typhoon Island	Portion of Subarea 7-27	0
CCA12b	South Edna Island	Portion of Subarea 7-27	0
CCA12c	Triquet Island	Portion of Subarea 7-27	0
CCA13	Spider Anchorage (Ronald)	Portion of Subarea 7-27	24,957
CCA14	Serpent Group	Portion of Subarea 7-27	11,257
CCA15a	Kittyhawk Group North	Portion of Subarea 7-28	41,096
CCA15b	Kittyhawk Group South	Portion of Subareas 7-27, 7-28	27,803
CCB01	Mathieson Channel	Portion of Subarea 7-9	36,538
CCB02	Moss Passage	Portion of Subarea 7-3, Subarea 7-4, a portion of Subarea 7-9	68,498
CCB03	Ivory Island	Portion of Subarea 7-9	31,584
CCB04	Berry Inlet	Subarea 7-8, a portion of Subarea 7-12	45,363
CCB05a	Seaforth Channel West	Portion of Subarea 7-12 and portion of 7-21	57,263
CCB05b	Seaforth Channel East	Portion of Subareas 7-12, 7-17, Subarea 7-22, a portion of Subarea 7-23	24,898

CCB06	St. John Harbour	Portion of Subarea 7-32	1,448
CCB07	Cape Mark (Bowling Alley)	Portion of Subarea 7-32	8,648
CCB08	Godfrey Rock	Portion of Subareas 7-1, 7-32	7,411
CCB09	Princess Alice Island	Subarea 7-20	0
CCB10	Thompson Bay	Portion of Subarea 7-21	0
CCB11	Houghton Islands	Subarea 7-19	9,385
CCB12	Joassa Channel/Raymond Passage	Portion of Subarea 7-23, Subarea 7-24	23,514
CCC01	Nalau Passage	Portion of Subarea 8-2, Subarea 8-4	67,687
CCC02	Stirling Island West	Subarea 7-26, a portion of Subarea 7-27	24,174
CCC03	Choked Passage	Portion of Subareas 8-1, 8-2	88,696
CCC04	South Hakai Passage	Portion of Subarea 8-2, Subarea 8-3,	35,756
CCC05	Fitz Hugh Sound	Subarea 8-16, Subarea 9-12	6,780
CCC06	Rivers Inlet	Portion of Subarea 9-1, Subareas 9-2, 9-3, 9-4, 9-11	18,404
CCC07	Calvert Island North	Portion of Subarea 9-1	3,470
CCC08	Calvert Island South (Grief Bay)	Portion of Subarea 9-1, Subareas 10-1, 10-2	9,938
CCC09	Smith Inlet North	Portion of Subareas 10-3, 10-4	7,704
CCC10	Smith Inlet South	Portion of Subareas 10-3, 10-4	11,553
CCD01a	Rennison Island	Portion of Subarea 6-11 , Portion of 6-10	24,493
CCD01b	West Laredo Channel (north of Baker Point)	Portion of Subarea 6-11,	31,622
CCD01c	West Laredo Channel (south of Baker Point)	Portion of Subarea 6-14	43,755
CCD02	East Laredo Channel	Portion of Subarea 6-14	26,665
CCD03	Laredo Inlet	Portion of Subareas 6-16, 6-19	123,768
CCD04	Kitasu Bay	Subarea 6-18	119,904

CCD05	Larkin Point	Portion of Subarea 6-16	18,158
CCD06	Laredo Channel	Subarea 6-15, a portion of Subarea 6-16	19,150
CCD07	East Aristazabal Island South	Portion of Subareas 6-13, 6-17	74,006
CCD08	Rudolf Bay	Portion of Subarea 6-17	3,434
CCD09a	West Higgins Passage (a)	Portion of Subareas 6-16, 6-17	7,411
CCD09b	West Higgins Passage (b)	Portion of Subareas 6-16, 6-17	30,950
CCD10	SW Price Island (Day Point)	Portion of Subareas 7-1, 7-2, 7-31	26,140
CCD11	West Price Island	Portion of Subarea 7-31	25,006
CCD12	Milbanke Sound South	Portion of Subarea 7-3	10,941
CCD13	Milbanke Sound North (East Higgins)	Portion of Subarea 7-3	38,194
PRA09a	Clifford Bay South (a)	Portion of 6-13	45,649
PRA09b	Clifford Bay South (b)	Portion of 6-13	46,418
PRA10	Arriaga Islands	Portion of 6-13	77,977
PRA11	Weeteeam Bay West	Portion of Subarea 6-13	17,244
PRA12	Weeteeam Bay Mid	Portion of Subarea 6-13	13,183
PRA14	Moore Islands	Portion of 106	86,067
PRD01	Freeman Pass	Subarea 5-12	51,000
PRD02	Shakes Islands	Portion of Subarea 5-10	40,000
PRG01	Conel Island	Portion of Subarea 4-1	87,210
PRG02b	Baron Island North	Portion of Subarea 4-1	62,497
Subtotal (lb.)			**2,096,100**
Biological Samples (lb.)			**4,000**
Total Allocated Quota (lb.)			**2,100,100**

[1] GMA's with '0' quota allocated may be fished under the fallback protocol (see 5.9.4.1)

- GMAs may close if Herring spawn is observed in the area. See section 4.2.

See Section 4 for Closures within these areas, Appendix 9 for complete GMA descriptions and Appendix 13 for maps.

The OGM (see Section 7) will request that fish harvesters move from a Geoduck bed or GMA when the quota has been reached on that bed or in that GMA. Details of Sea Otter raft locations and predation should be documented on the Bed Questionnaire section of the logbook and by the OGM.

6. HORSE CLAM MANAGEMENT MEASURES

6.1. Species

Horse Clam (Tresus capax and T. nuttallii)

6.2. Gear

Hand-held, manually operated water nozzles guided and controlled from underwater by a diver. Each water nozzle shall have a maximum inside diameter of 5/8 inch (1.59 cm).

6.3. Fishing Season

The harvest of horse clam is closed January 1 to December 31 by regulation and is opened concurrently with the Geoduck fishery. The open times and areas for horse clam will be the same as those for Geoduck. (See Section 4 Closures)

6.4. Harvest Log Information

Divers are requested to provide comments on their harvest logs about Horse Clam populations. This information will be collated by Science and may be used to develop stock surveys and to provide advice on different harvesting opportunities.

The Department is requesting that Horse Clam landings be reported by species: *Tresus nuttallii* or *Tresus capax* by filling a separate harvest log page for each species (indicate species harvested on each page). This information will be used in combination with ongoing stock survey data to provide direction on future fisheries. Descriptions of the two species are available upon request. Contact a resource manager.

6.5. Inside Waters

Horse Clam harvests will be permitted only in those areas opened for Geoduck. **Harvest in eelgrass beds is not permitted.** Harvest at depths less than 10 feet below chart datum is not permitted. Landings of Horse Clams may not exceed the following:

Area 12	1 tonne	2,205 lb.
Area 13	1 tonne	2,205 lb.
Area 14, other than 14B03 Comox Bar	1 tonne	2,205 lb.
Area 15	1 tonne	2,205 lb.

Area 16	1 tonne	2,205 lb.
Area 17	1 tonne	2,205 lb.
Area 18	1 tonne	2,205 lb.
Area 19	1 tonne	2,205 lb.
Area 29	1 tonne	2,205 lb.

The incidental harvest of Horse Clams while fishing for Geoduck is limited as described above and is to be recorded and will be tracked. Divers must ensure that any incidental harvest of Geoduck while harvesting Horse Clams is restricted to that allowed within IVQ or the quota overage allowance as described in Section 7.2.6. The survey-based commercial TAC for Inside Waters is:

Geoduck Management Area 14B03 Comox Bar	10 tonne	20,500 lb.

All Horse Clam landings must be validated, following the protocol in this IFMP. Designated landing ports are the same as for Geoduck.

6.6. West Coast of Vancouver Island

Horse Clam harvests will be permitted only in those areas opened for Geoduck. **Harvest in eelgrass beds is not permitted.** Harvest at depths less than 10 feet below chart datum is not permitted. Landings of Horse Clams may not exceed the following:

Area 20	1 tonne	2,205 lb.
Area 23	1 tonne	2,205 lb.
Area 24	5 tonne	11,025 lb.
Area 25	1 tonne	2,205 lb.
Area 26	1 tonne	2,205 lb.
Area 27	0.5 tonne	1,100 lb.

The incidental harvest of Horse Clam while fishing for Geoduck is limited as described above, and is to be recorded as part of the IVQ.

All Horse Clam landings must be validated, following the protocol in this IFMP. Designated landing ports are the same as for Geoduck.

6.7. North Coast

The Horse Clam fishery will open concurrently with the Geoduck fishery. **Harvest in eelgrass beds is not permitted.** Harvest at depths less than 10 feet below chart datum is not permitted. The Department will monitor the fishery through the OGM, and may impose in-season closures if harvests occur in eelgrass beds or if harvest levels exceed acceptable levels.

All Horse Clam landings must be validated, following the protocol in this IFMP. Designated landing ports are the same as for Geoduck.

7. CONTROL AND MONITORING OF COMMERCIAL FISHING ACTIVITIES

Control and monitoring of the commercial fishery is achieved largely through the Catch Validation Program (Dockside Monitoring Program, DMP). Commercial fish harvesters, through the UHA, contract with a third party to validate all landings of Geoduck at the first point of landing. The individuals who carry out this duty are called dockside validators, and are designated Observers by DFO. The validated weights are used to track harvests to ensure that IVQs and bed quotas have not been exceeded. Geoduck which arrive at fish plants must be accompanied by a tag upon which is recorded the vessel name, vessel registration number (VRN), "G" or "FG" tab number, and the date and location of harvest.

Vessels are required to notify the service provider prior to engaging in fishing, and prior to landing clams. Each vessel must also carry and fill out a "Geoduck Validation & Harvest Logbook" with details of harvest activity.

The service provider contracts vessel-based OGMs, to provide the following services: co-ordinating sampling for the Marine Biotoxin Monitoring Program, communicating with dockside Observers, writing Incident Reports, advising operators of open and closed times and fishing locations, monitoring effort, co-ordinating fishing activity to avoid excessive harvesting in specific Geoduck beds, observing product transfers to packer vessels, checking dive harvest information for completeness, recording information about the characteristics of Geoduck beds as relayed by divers, and recording other observations about the prosecution of the Geoduck and Horse Clam fishery and about Sea Otter impacts. The OGMs are present during every opening in the North Coast and for the majority of WCVI area openings. Starting in 2022/23 the WCVI OGM will focus their time for the busiest six month period. Industry has chosen to pilot the use of a Vessel Monitoring System (VMS) for all vessels on the South coast. This began in 2021/22 for the Gulf Fleet and 2022/23 for the WCVI fleet.

The service provider, including the OGM, and the area resource managers, will work with the lead resource manager to ensure each Geoduck bed is fished to the recommended quota, and will direct the fleet as to fishing location and quantity. It is the OGM's responsibility to monitor effort within both Geoduck beds and management areas on a daily basis, manage fishing activity to avoid excessive harvesting in specific Geoduck areas, and to report excess harvesting to the resource managers.

The OGM has the responsibility to request that vessels move when a bed quota has been taken. Vessels are expected to comply with the OGM's request. The Department will close an area immediately if there are problems with compliance.

The Department has been notified by the UHA that the service provider contracted by the UHA for the purpose of notification, catch validation, fishery monitoring and catch reporting, biological sampling, and data submission is Archipelago Marine Research Ltd of Victoria. The service provider can be reached at (250) 383-4535.

7.1. Notification Procedure

The following are responsibilities of notification for the master of a "G" or "FG" licensed vessel, as detailed in the conditions of licence of the Geoduck and Horse Clam licence. Where feasible, at least 24 hours' notice will be given.

7.1.1. Notification by a Harvest Vessel

Prior to fishing Geoduck and Horse Clam, upon cancellation of a fishing trip, after fishing, and prior to delivering, the master of the vessel must notify the service provider of the following information:

- Vessel name and VRN.
- GMA in which fishing will take, or has taken, place.
- Date and time of arrival on, or departure from, the fishing grounds.
- Date and time of landing, landing port and location at the port.

Notification may be completed through the service provider (250) 383-4535, or through the service provider's representatives (OGM or Dockside Observer). For telephone numbers of Observers, contact the service provider.

7.1.2. Notification by a Packer Vessel

If Geoduck or Horse Clam have been transhipped to a packer vessel for delivery to a landing port, then the master of the packer vessel must notify an Observer with the same details as above.

7.2. Catch Validation

7.2.1. Validation & Harvest Logbooks

Prior to validation of shellfish no person shall; smash the shells or slit the membranes of the shellfish to drain the water, or dump, throw overboard or otherwise discard shellfish that have been harvested and retained in accordance with the *Fisheries Act* and the regulations made thereunder.

The vessel master must be in possession of a DFO approved Validation & Harvest Logbook assigned to the vessel's Geoduck licence. The Validation & Harvest Logbook must be on board the licensed vessel while fishing for Geoduck or while Geoduck are on board.

The Validation & Harvest Logbook and the Bed Questionnaire are combined into one form (see example of logbook in Appendix 7). The "Geoduck and Horse Clam Validation & Harvest Logbook" issued by the UHA is approved for both form and content by the Shellfish Data Unit. Logbooks are available by calling (250) 245-1037 or (250) 752-7205. Any alternatives to the Harvest Logbook must be approved by the Shellfish Data Unit prior to use.

At each landing and validation, the vessel master will provide the Observer with the completed harvest section of the Validation & Harvest Logbook.

The vessel master is responsible for providing specific fishing location information in the form of latitude and longitude of dive location in the Validation & Harvest Logbook. For the Inside Waters area only, fishing location information must also be provided on copies of maps that will be available from the Service Provider.

The Validation & Harvest Logbook assigned to each Geoduck licence on the fishing vessel shall remain aboard the vessel at all times during the harvest of Geoduck and Horse Clam.

The vessel master, on request of a fishery officer, fishery guardian, or Observer must produce the Validation & Harvest Logbook.

7.2.2. Standard Geoduck and Horse Clam Cages

All Geoduck and Horse Clam shall be packed in cages with a maximum weight (while empty), of five pounds per cage. The cages and cage dividers shall be clean and fabricated from approved material. The weight of the cage and any dividers (or liners) must be deducted from validation weights.

7.2.3. Tagging of Geoduck and Horse Clam Cages

All Geoduck and Horse Clam delivered to packers or to designated landing ports shall be in cages that are tagged. The tags must be waterproof on which the following information shall be written with water resistant ink (see Appendix 8):

- Vessel name and Vessel Registration Number (VRN)
- Geoduck licence number (G or FG Tab)
- Harvest date
- Geoduck Management Area (GMA), i.e. 24D01c
- Pacific Fishery Management Area and Subarea, i.e. 24-4
- Location of catch (bed code(s) where possible), i.e. 24-4-1(1)
- Common name of the product, i.e. "Geoduck Clam" or "Horse Clam"

To increase traceability of product, it is highly recommended that fish harvesters use bed code as an identifier for the harvested product. Examples of cage tags are given in Appendix 8. In addition, transcribing the Variation Order Number from the fishery notice that announces the opening onto the cage tag will provide harvesters and plant operators with additional verification that product is coming out of areas that have been opened by CFIA and DFO. **Contact the**

resource manager or Archipelago Marine Research for examples of how new cage tags may be printed.

These tags are meant to accompany the product to the point of sale or consumption, both in Canada and abroad.

7.2.4. Landings of Geoduck and Horse Clam

All Geoduck and Horse Clam or portions of Geoduck and Horse Clam removed from the substrate of the ocean floor must be retained and validated, upon landing, by an Observer.

At the point of off-loading, the catch must be weighed by a DFO certified Observer with a government certified scale. The net weight must be entered with a maximum deduction of five pounds per cage for cage weight. The weight of any cage dividers (or liners) must also be deducted. The Validation & Harvest Logbook must remain with the licensed vessel, with copies accompanying the product to its destination.

If the catch cannot be weighed, due to extenuating circumstances, either a coast-wide average net weight of 50 pounds per cage or a calculated vessel average cage weight, determined by a fishery manager, may be used and entered on the Validation & Harvest Logbook.

In exceptional circumstances, such as a vessel or packer sinking, the average cage weight will be assigned by the Observer or by a resource manager.

In the event that the plant weights are higher than dock weights, the greater of the two shall be used.

Prior to fishing, the vessel master must confirm the remaining vessel quota from the Validation & Harvest Logbook.

7.2.5. Landing Catch Transhipped to a Packer Vessel

When Geoduck and Horse Clam have been transhipped to a packer vessel for delivery to a landing port, the master of the packer vessel shall ensure the following requirements are met:

- All Geoduck and Horse Clam transhipped from the catcher vessel must be validated at landing by an Observer.
- All Geoduck and Horse Clam must be weighed, and this weight recorded in the Geoduck and Horse Clam Validation & Harvest Logbook at the time of transhipment.
- Prior to validation of shellfish no person shall, smash the shells or slit the membranes of the shellfish to drain the waters, or dump, throw overboard or otherwise discard shellfish that have been harvested and retained in accordance with the Fisheries Act and the regulations made thereunder.
- If the catch cannot be weighed, due to extenuating circumstances, a coast-wide average net weight of 50 pounds per cage may be used and entered on the Validation & Harvest Logbook.
- The packer vessel master shall provide the Observer with a hard copy of the Validation & Harvest Logbook prior to each validation.

- The packer vessel master 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.

7.2.6. Quota Transfer to Avoid Small Overages

Quota overage allowances may be reviewed in-season.

Small quantities of Geoduck that exceed the licence's annual quota, to a maximum of 500 pounds, can be transferred to another Geoduck licence provided the conditions below are fulfilled. If all of these conditions are not met, Observers will not transfer the overage to another licence. **Harvest of Geoduck over the IVQ, after the transfers to avoid small overages, may be subject to prosecution and seizure of the overage.**

Transfers between licences at some time after the landing event may be performed solely at the discretion of the fishery manager and the service provider. Validation errors that may occur at the time of the overage transfer will be corrected.

7.2.6.1. Conditions for Quota Transfer to Avoid Small Overages

In the following explanation, the Geoduck licence which has exceeded its quota is called licence "A" and the licence to which quota is transferred is called licence "B."

- Transfer of quota to a second licence on the same vessel - If two or more licences designated to the same licence area are assigned to the same vessel then a quota overage from one licence may be transferred to the Geoduck licence that has quota remaining. An overage to the last Geoduck licence quota on the same vessel may be transferred to another vessel's Geoduck licence in accordance with conditions below.
- Maximum allowable transfer of quotas between licences on different vessels - In the event of a quota overage on Geoduck licence "A," a maximum of 500 pounds of Geoduck may be transferred to another vessel's Geoduck licence (licence "B"). Both licences must have quota designated to the same area. Only one transfer of quota overage is allowed. The quota overage cannot be divided between a number of licences.
- Remaining quota on second licence - The amount transferred cannot exceed the remaining quota of Geoduck licence "B."

7.2.6.2. Documentation

Both vessel masters must make their intentions to transfer or receive quota overage clear to the Observer. This is easily accomplished in situations where the vessel operators interact with the Observer at the point of landing.

In the event of a packer landing, instructions from the on-grounds monitor, a note signed by both vessel masters, or the transfer request form provided with the Validation & Harvest Logbook are required to advise the Observer that there is a mutual agreement to transfer. The master of the packer vessel should not be obligated to forward a verbal transfer request from the fishing vessel operators to the Observer as the message may be forgotten or misinterpreted.

If, on the last day of fishing, a vessel has an overage for which no transfer has been arranged, the service provider will attempt to facilitate a transfer at a later date.

7.2.7. Lost, seized or destroyed product

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

- The weight of product lost from the deck of the catcher vessel and/or packer vessel during transport will be applied to both the catcher vessel's individual vessel quota and the applicable area quota.
- The weight of product spoiled or wasted because of weather-related delays will also be applied to both the catcher vessel's individual vessel quota and the applicable area quota.
- The Department, in consultation with the service provider, will use the estimated packer or ground weight and appropriate water loss calculation for the harvest site to determine an estimated dock weight.

Situations requiring use of this protocol will be reviewed with the UHA and service provider.

7.3. Catch and Fishing Data

It is the responsibility of the vessel owner for the provision and maintenance of an accurate record, a "log" of daily harvest operations. This log must be completed and a copy submitted to the Shellfish Data Unit in both hard copy (paper) and electronic form in an approved format as defined by DFO Marine Ecosystem and Aquaculture Division. The Validation & Harvest Logbook supplied by the service provider under contract to the UHA is an approved format harvest log.

The following section describes the requirements for the harvest information section of the Validation & Harvest Logbook, (see Appendix 7 for an example of the log).

7.3.1. Harvest Information

The vessel master, prior to each landing and validation, must complete the harvest section (Section C) of the Validation & Harvest Logbook. The following detailed harvest information must be completed for each diver for each dive made during a fishing day:

- Dive number.
- Dive site reference.
- Area, Subarea, and bed code.
- Harvest date.
- Latitude and longitude of harvest location. More than one line in the harvest section of the Validation & Harvest Logbook may be used for this purpose.
- Diver name.
- Duration of dive.
- Minimum and maximum depth of dive.
- The number of pieces harvested for each dive
- The number of cages harvested for each dive.

A total piece count for each validation page must also be completed.

To improve the data used in the population assessment and modelling process, and to provide quotas that are more reflective of Area Committee advice, the Department is requesting the voluntary submission of information on Geoduck beds. The Validation & Harvest Logbook includes the key Bed Questionnaire questions (Section 5.9.6).

7.3.2. Fishing Location Information (Charts and GIS data)

7.3.2.1. Inside Waters Management Area

The vessel master is responsible for reporting latitude and longitude position for each dive on the Validation & Harvest Log. In addition, the vessel master is responsible for the provision of a chart record of the locations fished. This harvest chart must be marked directly with the vessel name, the VRN, the licence number and validation ID numbers. Each harvest site must be clearly marked on the chart with a dive site reference (such as a letter designation) or dive numbers, validation ID numbers and dates that fishing activity occurred at each site. The chart provision may be provided electronically.

7.3.2.2. WCVI Management Area

The vessel master is responsible for reporting latitude and longitude position for each dive on the Validation & Harvest Log.

7.3.2.3. North Coast Management Area

The vessel master is responsible for reporting latitude and longitude position for each dive on the Validation & Harvest Log.

7.3.3. Validation & Harvest Logbooks

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

Shellfish Data Unit

Fisheries and Oceans Canada

Pacific Biological Station

3190 Hammond Bay Road

Nanaimo, BC V9T 6N7

Phone: (250) 756-7022

Email: PACSDU@dfo-mpo.gc.ca

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

Fisheries and Oceans Canada wishes to remind commercial fish harvesters that Validation & Harvest Logbooks 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.

7.3.4. Submission and Release of Validation & Harvest Log Data

The vessel owner of record, as reported to the PFLU, is responsible to ensure that the vessel master has completed and submitted a copy of the harvest log data. The Department can only release harvest log data to the reported vessel owner, and only upon written request.

7.3.5. Nil Report for Validation & Harvest Log

In the event that a licence is issued but not fished, the vessel owner 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 Validation & Harvest Logbook identifying the vessel, licence tab number, and the year with "Nil" entered in the body of the log and signed by the vessel owner constitutes a Nil Report.

7.3.6. Confidentiality of Harvest Data

Harvest data, including fishing location data supplied through latitude and longitude co-ordinates or chart records, collected under the harvest logbooks for shellfish fisheries programs, are collected for use by DFO in the proper assessment, management, and control of the fisheries. Upon receipt by DFO of harvest log data and/or fishing location information, supplied by the fish harvesters in accordance with conditions of licence, Section 20(1) (b) of the *Access to Information Act* prevents DFO from disclosing to a third party, records containing financial, commercial, scientific or technical information that is confidential information. Further, Section 20(1) (c) of the Act prevents DFO 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 licence eligibility holder.

7.3.7. Fish Slip Requirements

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

Fisheries and Oceans Canada

Fisheries and Aquaculture Management Branch, FM Data Unit

Suite 200-401 Burrard Street

Vancouver B.C. V6C 3S4

Phone (604) 666-2716 for more information.

Fish slips may be downloaded and printed or may also be ordered from the printer at user cost at:

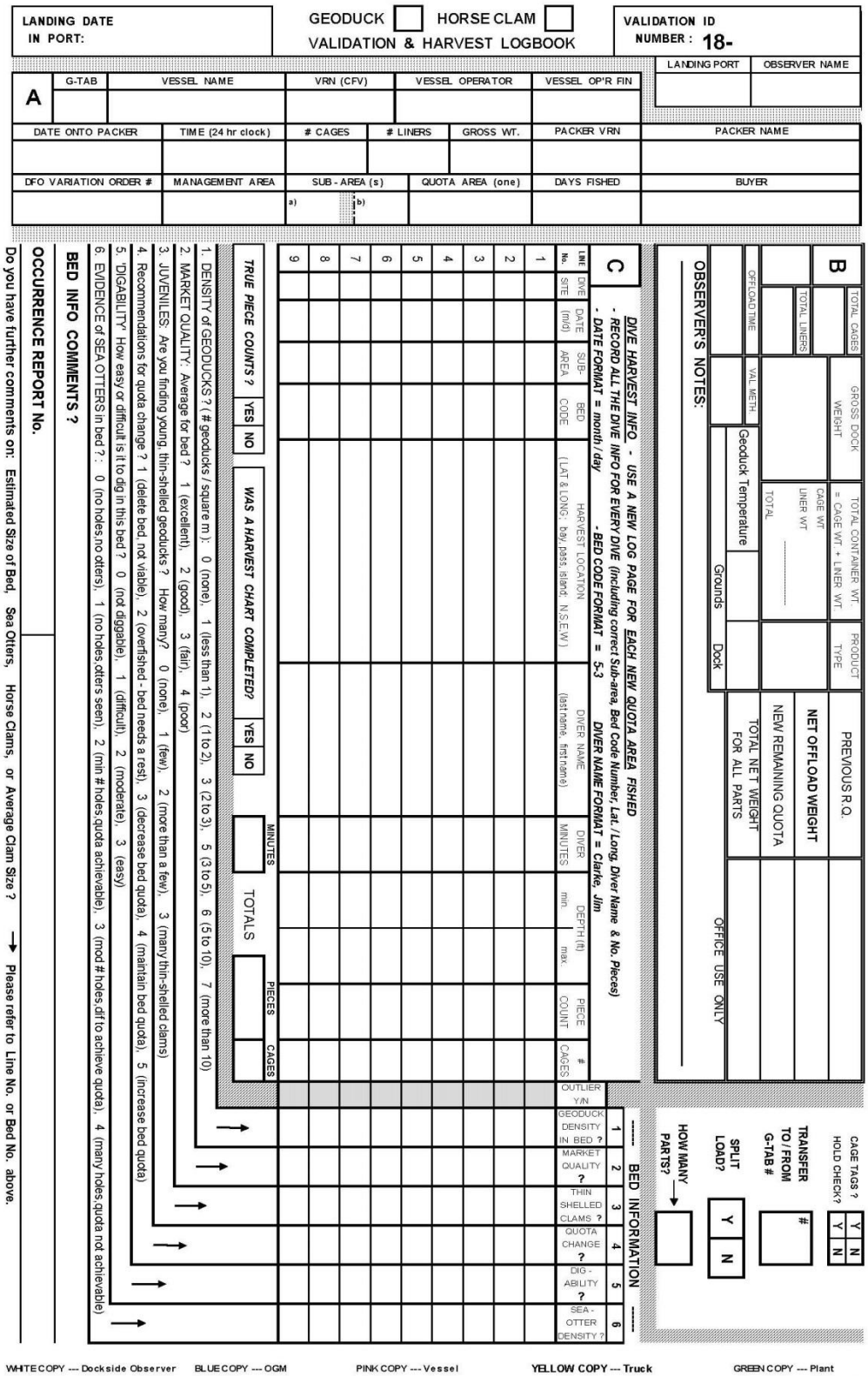
http://dfo-mpo.gc.ca/fisheries-peches/sdc-cps/fishslips-carnets/index-eng.html

8. GENERAL INFORMATION

8.1. Sales of Geoduck and Horse Clam

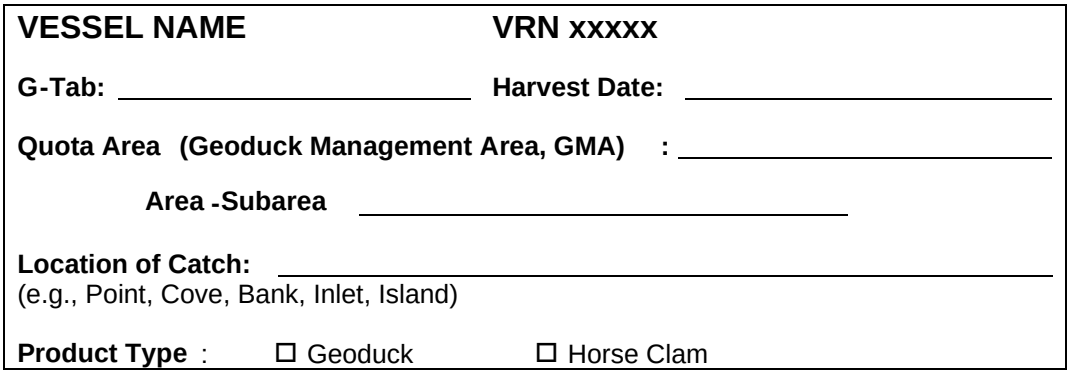
Geoduck and Horse Clams harvested under this licence shall be sold only to persons holding a Fish Receiver Licence issued pursuant to the *Fish and Seafood Licensing Regulation* (British Columbia). All Geoduck and Horse Clam harvested for the purpose of sale shall be processed through a federally registered plant.

APPENDIX 7: EXAMPLE OF GEODUCK AND HORSE CLAM VALIDATION & HARVEST LOGBOOK

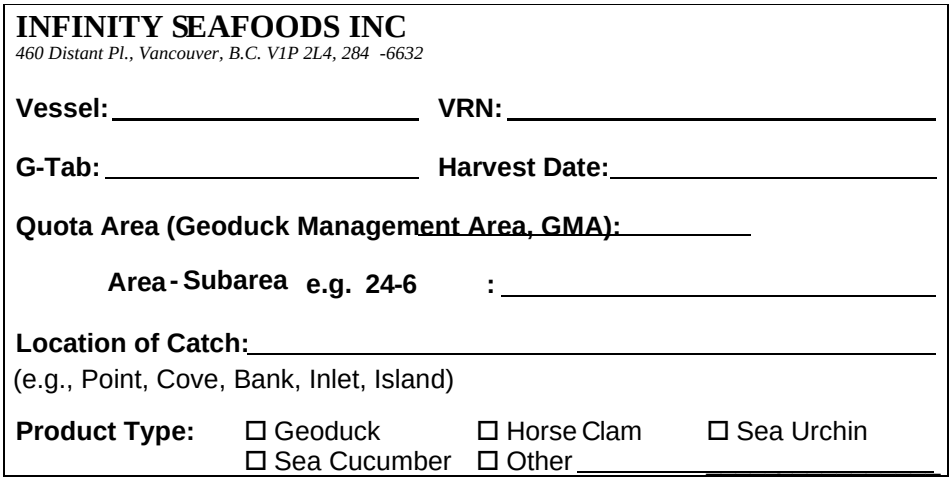


APPENDIX 8: EXAMPLES OF SHELLFISH CAGE TAGS

To increase traceability of product, it is highly recommended that fish harvesters include Area and Subarea as an identifier for the harvested product. In addition, transcribing the Variation Order Number from the fishery notice that announces the opening onto the cage tag will provide harvesters and plant operators with additional verification that product is coming out of areas that have been opened by CFIA and DFO. **Contact the resource manager or Archipelago Marine Research for examples of how new cage tags may be printed**.



Example of a shellfish cage tag for a specific vessel



Example of a generic shellfish cage tag supplied by processor

The cage tags must be waterproof and provide the following information written in water resistant ink:

a.) Vessel name and Vessel Registration Number (VRN)
b.) Geoduck licence number (G or FG Tab)
c.) Harvest date
d.) Geoduck Management Area (GMA), e.g. 24D01c
e.) Pacific Fishery Management Area and Subarea, e.g. 24-4
f.) Location of catch (bed code(s) where possible), e.g. 24-4-1(1)
g.) Common name of the product, i.e. “geoduck clam” or “horse clam”
h.) Processor

APPENDIX 9: GEODUCK AND HORSE CLAM MANAGEMENT AREA (GMA) DESCRIPTIONS

Harvesters must ensure there is no harvest within a sanitary closure. A copy of the complete list of sanitary closures may be obtained from the resource managers (see the Contacts section in the IFMP) or on the internet. Sanitary closures are amended annually in April and November, and may also be amended in-season. Harvesters are advised to check the Internet, prior to fishing in an area, to ensure that they have the most recent contamination closure information. See:

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

1. INSIDE WATERS (GULF) QUOTA REGION

NOTE: Harvest from enhancement sites may occur from Subareas 14-5, 14-7, 14-10, 15-2, 15-3, 16-19, 16-21, 17-10 or 17-18.

1.1. AREA 12

GMA 12A01, Northern Island: 1. Subarea 12-11
2. That portion of Subarea 12-16 north of a line from the Doyle Island light due west to a Pt. south of the Noble Islets light, thence to Boxer Pt. on Nigei Island.

GMA 12A02, Walker Group: Subarea 12-13.

GMA 12B01a, East Vansittart Island: A portion of Subarea 12-12:
1. east of a line drawn from Vansittart Island at 50°55.241'N, 127°47.950'W, due north to the Subarea 12-12 boundary and
2. southeast of a line drawn from Vansittart Island at 50°54.605'N, 127°48.417'W, to Pivot Pt. on Hope Island at 50°54.360'N, 127°50.164'W.

GMA 12B01b, West Vansittart Island: A portion of Subarea 12-12:
1. west of a line drawn from Vansittart Island at 50°55.241'N, 127°47.950'W, due north to the Subarea 12-12 boundary and
2. northwest of a line drawn from Vansittart Island at 50°54.605'N, 127°48.417'W, to Pivot Pt. on Hope Island at 50°54.360'N, 127°50.164'W.

GMA 12B02, Northern Goletas Channel: Subarea 12-15.

GMA 12B03a, Southern Goletas Channel: 1. That portion of Subarea 12-16 south of a line from the Doyle Island light due west to a Pt. south of the Noble Islets light at 50°48.369'N, 127°35.195'W, thence to Boxer Pt. on Nigei Island;
2. That portion of Subarea 12-16 west of a line drawn from the junction of the boundaries of Subareas 12-9, 12-10, 12-11 and 12-16 southwest to a Pt. due east of Duval Pt. at 50°45.654'N, 127°28.419'W, then west to Duval Pt..

1.2. AREA 14

GMA 14B01, Comox Bar: 1. That portion of Subarea 14-7 within 1.0 nautical miles of the eastern shore of Denman Island;
2. That portion of Subarea 14-9 south of a line from the East Cardinal Buoy at 49°41.52'N,

124°49.72’W to the P54 buoy at 49°38.75’N, 124°51.5’W excluding waters within 0.5 nautical mile of Hornby Island;
3. That portion of Subarea 14-10 excluding the waters within 0.5 nautical mile radius of Phipps Pt. on Hornby Island.

GMA 14C01, Comox Can Buoy to North Baynes Sound.: A portion of Subarea 14-11 south of a line drawn from the P52 buoy at 49°39.31’N, 124°51.89’W, thence to the northern end of White Spit and southwest to a point on the Vancouver Island shore the foot of Argyle Road at 49°36.88’N, 124°54.18’W.

GMA 14C02, North Baynes Sound: Subarea 14-15.

GMA 14C03, South Baynes Sound: Subarea 14-8, except that portion east of a line running from the eastern end of Mapleguard Pt. in Deep Bay at 49°28.081’N, 124°43.600’W northwesterly to Denman Island north of Repulse Pt. at 49°29.369’N, 124°45.391’W.

Note: Baynes Sound is under a Special Management Plan which may limit times of harvest.

1.3. AREA 16

GMA 16D01, Thormanby Island, Mainland: Portions of Subareas 16-1 and 16-2 within 2.0 nautical miles of North and South Thormanby Islands, except in Welcome Passage where the boundary is mid-passage between North and South Thormanby Islands and the mainland shore.

1.4. Area 17

GMA 17A01, Icarus Pt./Lantzville Shore: Subarea 17-18.

GMA 17A02, Nanoose Bay to Blunden Pt.: Subarea 17-19.

GMA 17A03, Nanoose Bay: Subarea 17-20.

GMA 17B01, North Gabriola Island to Neck Pt.: Subareas 17-10, 17-12, 17-13, 17-14, 17-15 and 17-16.

GMA17B02, Pylades Channel: 1. That portion of Subarea 17-4 northeast of a line from the midpoint of a line drawn between Reynolds Pt. and the most northwesterly point of Link Island drawn to Danger Reefs thence west to Blackberry Pt. on Valdes Island;
2. Subarea 17-17.

GMA 17B03, Boat Harbour to Chemainus: Those portions of Subareas 17-4, 17-5 and 17-6 southwest of a line from the midpoint of a line drawn between Reynolds Pt. and the most northwesterly point of Link Island, then to Danger Reefs, then to Bare Pt. near Chemainus Bay.

GMA 17B04, South portion of Area 17: 1. Subareas 17-1, 17-2, 17-3;
2. Portions of 17-4, 17-5 and 17-6 east of a line drawn from Danger Reefs south to Bare Pt. near Chemainus Bay and south of a line drawn from Danger Reefs to Blackberry Pt. on Valdes Island;
3. Subareas 17-8 and 17-9..

1.5. Area 18

GMA 18A, Boatswains Bank: A portion of Subarea 18-7 bounded by a line from Cherry Point to Cape Keppel, thence to Moses Point, thence to Hatch Point and along the shoreline to Cherry Point.

1.6. Area 19

GMA 19C, Sydney and Cordova Channel: Subareas 19-5, 19-6.

1.7. Area 29

GMA 29, Outside Valdes Island: That portion of Subarea 29-5 north of a line running due east from Dionisio Pt.

2. WEST COAST VANCOUVER ISLAND QUOTA REGION

2.1. AREA 20

GMA 20A, Sooke: Statistical Areas 20-4, 20-5 and 20-6.

2.2. AREA 23

GMA 23A01, Maggie River: Those portions of Subarea 23-10:
- southerly of a line across Toquart Bay from Harris Pt. on Vancouver Island to 49°01.76'N, 125°21.48'W;
- westerly of a line from a point on the line across Toquart Bay approximately 300m offshore at 49°01.11'N, 125°21.30'W to a point offshore from west Larkins Island, 48°59.59'N, 125°21.96'W, then westerly of line drawn approximately parallel to the north west shore of Macoah Pssage from this poing to the subarea boundary line at 48°57.2'N, 125°25.06'W.

GMA 23A02, Macoah Pass: Those portions of Subarea 23-10:
- southeast of a line in Macoah Passage running from 48°59.59'N, 125°21.96'W to 48°57.2'N, 125°25.06'W, and
- northwest of a line running from a point offshore from west Larkins Island, then to the easternmost point of Island 49 in the David Island group, and then to light on southern Forbes Island.

GMA 23B, Toquart Bay/Pipestem Inlet: A portion of Subarea 23-10 north and easterly of a line across Toquart Bay from 49°0.89'N, 125°19.2'W to 49°01.76'N, 125°21.48'W.

GMA 23C, Mayne Bay: 1. Subarea 23-9, excluding an portion inside the Pacific Rim National Park Reserve (Broken Group), see Chart 3671;
2. A portion of Subarea 23-10 southerly of a line across Toquart Bay from 49°0.89'N, 125°19.2'W to 49°01.76'N, 125°21.48'W and easterly of a line from a point on the line across Toquart Bay approximately 300m offshore at 49°01.11'N, 125°21.30'W, southernly to a point offshore from west Larkins Island, then to the easternmost point of Island 49 in the David Island group, and then to light on southern Forbes Island.

GMA 23D01, Pinkerto n Islands: A portion of Subarea 23-8:
- north of the northern boundary of the Broken Islands Closure and
- west of a line drawn due south from Vancouver Island northeast of Canoe Island at 48°57.425'N, 125°15.679'W.

GMA 23D02, Canoe Island to Useless Inlet: 1. Portions of Subarea 23-4 and 23-6 west of a line drawn from Baeria Rocks to Hornby Rocks (at 48°48.792'N, 125°17.694'W) and north of a

line from Baeria Rocks easterly to Seddall Island at 48°57.744'N, 125°03.995'W. Excluding the Pacific Rim National Park Reserve (Broken Group Islands Closure) see chart 3671.
2. A portion of Subarea 23-8 north of the northern boundary of the Pacific Rim National Park Reserve (Broken Group Islands Closure) see chart 3671 and east of a line drawn due south from 48°57.425'N, 125°15.679'W.

GMA 23E01, Trevor Channel to Alberni Inlet: A portion of Subarea 23-4 east of a line from Seddall Island at 48°57.744'N, 125°03.995'W to Crosse Pt. on Tsartus Island. Excluding that portion of Subarea 23-4 included in the Bamfield Study Area (see the maps in Appendix 12).

GMA 23E02, Chain Group: 1. Portions of Subareas 23-4, 23-6 and 23-7 east of a line drawn from Baeria Rocks to Hornby Rocks at 48°48.792'N, 125°17.694'W, south of a line from Baeria Rocks easterly to Seddall Island at 48°57.744'N, 125°03.995'W, North of a line from Whittlestone Pt at 48°48.469'N, 125°11.137'W due west to the 23-7 subarea boundary line, excluding portions of these Subareas included in the Bamfield Study Area (see the maps in Appendix 12), and
2. Subarea 23-5.

2.3. AREA 24

GMA 24A02a, Yarksis: A portion of Subarea 24-8:
1. South of a line Rassier Pt. on Vargas Island to Schindler Pt. on Meares Island
2. West of a line between Moser Pt. on Vargas Island to northwest of Kakawis at 49°11.4'N, 125°55'W.

GMA 24A02b, East side Father Charles Channel: A portion of Subarea 24-8:
1. East of a line near Kakawis at 49°11.4'N,125°55'W to Moser Pt. and
2. North and West of a line from Moser Pt. on Vargas Island to the western most point of Wickaninnish Island, thence easterly along the shore of Wickaninnish Island to the beacon on the northeast shore of Wickaninnish Island, thence to a mid-channel buoy (Y3), thence due east to Esowista Peninsula, thence north along the shore to Grice Pt., thence to Schindler Pt., thence to Rassier Pt..

GMA 24A03, Tonquin/Wickaninnish: A portion of Subarea 24-8 (Templar Channel):
1. South of a line from the beacon on the east shore of Wickaninnish Island, thence northeast to a mid-channel buoy (Y3), thence due east to Esowista Peninsula; and
2. East of a line from the western most Pt. of Wickaninnish Island, thence due south to the southern boundary of Subarea 24-8.

GMA 24A04, Epper Pass/Dunlap Island: That portion of Subarea 24-6:

1. East of line from Vancouver Island at 49°13.6'N, 125°58.1'W southeast to the western most point of Morphee Island.

2. North of a line from the southern most point of Morfee Island due west to the western most point on Dunlap Island, thence southeast along the shore of Dunlap Island to the southernmost Pt. of Dunlap Island, thence due east to Meares Island, thence northerly along the shore of Meares Island to Roberts Pt., thence to the eastern most Pt. on Kraan Head thence to the Pt. of commencement;
3. Subarea 24-7 excluding that portion southerly or inside of a line from Kraan Head, thence northeast to the northernmost point of Saranac Island, southerly along the shore of Saranac

Island to southernmost point, thence southeast to the unnamed point on Meares Island on the northern shore of Ritchie Bay, thence southwest along the shore of Ritchie Bay to Robert Pt., thence back to the point of commencement at Kraan Head.

GMA 24A05, Lemmens Inlet: Subarea 24-9 excluding a portion south of a line from a 49°07.2'N, 125°49.0'W, thence to an unnamed islet in the McBey Islets at 49°07.4'N, 125°49.1'W, thence easterly to a an unnamed islet in the McBey islets at 49°07.4'N, 125°48.6'W, thence to a point on the shore of Vancouver Island at 49°07.2'N, 125°48.3'W.

GMA 24A06a, Yellow Bank : A portion of 24-7 inside a line drawn from:
- eastern most Pt. of Kraan Head northeast to the Northern most point of Saranac Island
- thence to the southernmost point of Saranac Island,
- thence to Meares Island on the northern shore of Ritchie Bay at 49 degrees, 14.18'N, 125 degrees, 53.99'W,
- thence along the shoreline to 49 degrees, 13.92'N, 125 degrees, 53.87'W
- thence to Robert Pt.
- thence to the point of commencement at the eastern most point of Kraan Head.

GMA 24A06b, East Maurus Channel: A portion of Subarea 24-6 along the Meares Island shore between Schindler Pt. and a point on Meares Island due east of the southern tip of Dunlap Island at 49 degrees, 12.94'N, 125 degrees, 55.89'W, out to the 20 metre depth contour.

GMA 24A06c, North Elbow Bank: A portion of Subarea 24-6 east of a line commencing at the western most point of Dunlap Island, thence southwest to Vargas Island at 49°12.445'N, 125°57.140'W, thence southeast along the shore of Vargas Island to 49°12.321'N, 125°57.128'W, thence due east to its intersection with the GMA 24A6b boundary, thence north along the western boundary of GMA 24A6b to its intersection with a line between the southern tip of Dunlap Island due east to a Pt. on Meares Island, thence westerly to the southernmost point of Dunlap Island, thence to the point of commencement.

GMA 24A06d, South Elbow Bank: A portion of Subarea 24-6 south of a line from 49°12.321'N, 125°57.128'W, thence due east to its intersection with the GMA 24A6b boundary, thence south along the western boundary of GMA 24A6b to its intersection with a line between Schindler Pt. and Rassier Pt., thence northwesterly along the line between Schindler Pt. and Rassier Pt., thence northwesterly along the shore of Vargas Island to the point of commencement.

GMA 24B01a, Bartlett Island: A portion of Subarea 24-6 south and west of a line commencing at Rafael Pt. and following the shore to the eastern side of Siwash Cove at 49°15.737'N, 126°11.285'W, thence to Monks Islet light, thence southwest through the southeast point of Lawrence Island to the Subarea 124-3 boundary.

GMA 24B01b, Blunden Island: A portion of Subarea 24-6:
- south and east of a line drawn from Monks Islet light southeast through the southeast point of Lawrence Island to the Subarea 124-3 boundary; and
- east of a line drawn from Monks Light due south to a to Vargas Island at 49°13.0'N, 126°01'W.
- west of a line drawn from Ahous Pt. on Vargas island northwest to Vargas Island at 49°11.1'N, 126°01.9'W.

GMA 24B02a, Coomes Bank: A portion of Subarea 24-6 west of a line drawn from a prominent point on Vancouver Island approximately 1/2 nautical mile northwesterly of the western most point of Morfee Island at 49°13.619'N, 125°58.393'W, thence to the western most point on Morfee Island, thence west to a green buoy at 49°13.40'N, 126°0.49'W, thence to Monks Island light, thence northerly to a point immediately south of Chetarpe I.R. at 49°14.56'N, 126°0.67'W.

GMA 24B02b, Calmus Pass: A portion of Subarea 24-6 east and south of a line from an Vargas Island at 49°12.445'N, 125°57.140'W to a green bouy at at 49°13.40'N, 126°0.49'W thence to the western most point on Morphee Island, thence along the shore of Morfee Island to the southernmost point, thence easterly to the western most point on Dunlap Island, thence southwest to an thence to Vargas Island at 49°12.42'N, 125°57.13'W.

GMA 24B03, Millar Channel: Portions of Subarea 24-4 and 24-6:
- south of a line from Clifford Pt. to Flores Island at 49°17.48'N, 126°03.40'W; and
- north of line a prominent point to the south of Chetarpe I.R. at 49°14.66'N, 126°0.78'W bearing 302° true in a northwest direction to 49°15.68'N, 126°3.87'W on Flores Island.

GMA 24B04, Russell Channel: A portion of Subarea 24-6 south of line from a Pt. at 49°15.68'N, 126°3.87 minutes on Flores Island to a point south of Chetarpe I.R. at 49°14.66'N, 126°0.78'W, thence southerly to Monks Islet light, thence westerly to the west side of Siwash Cove on Flores Island at 49°15.737'N, 126°11.285'W.

GMA 24C01, Sydney Inlet: 1. Subarea 24-2.
2. A portion of 24-3 westerly of a line from drawn from Flores Island at 49°23.65'N, 126°13.85'W to Vancouver Island at 49°24.27'N, 126°13.57'W.

GMA 24C02, Exposed: 1. Subareas 24-1;
2. A portion of Subarea 24-8 southerly of a line from Moser Pt. on Vargas Island to the western most point of Wickaninnish Island, thence due south to the southern boundary of Subarea 24-8;
3. Subarea 124-3.

GMA 24D01a, Fortune Channel: Subareas 24-10 and 24-12.

GMA 24D01b, Shelter Inlet: 1. A portion of 24-3 east of a line from drawn from an Flores Island at 49°23.65'N, 126°13.85'W to Vancouver Island at 49°24.27'N, 126°13.57'W.
2. A portion of Subarea 24-4 north of a line drawn from Flores Island at 49°20.991'N, 126°04.912'W to Vancouver Island at 49°20.440'N, 126°03.535'W;
3. Subareas 24-13 and 24-14.

GMA 24D01c, McKay Island: 1. A portion of Subarea 24-4 south of a line drawn from Flores Island at 49°20.991'N, 126°04.912'W to Vancouver Island at 49°20.440'N, 126°03.535'W and north of a line drawn from Clifford Pt. at 49°17.144'N, 126°01.877'W to Flores Island at 49°17.622'N, 126°03.521'W;
2. Subarea 24-5.

GMA 24D02, Indian Island: A portion of Subarea 24-11 excluding waters south of a line from Indian Island at 49°06.963'N, 125°46.890'W thence southwest to a point on the Vancouver Island shore at 49°06.662'N, 125°47.358'W and west of a line from the eastern most point of Indian Island due south to Vancouver Island.

GMA 24D03, Grice Bay: A portion of Subarea 24-11:
- south of a line Indian Island at 49°06.963'N, 125°46.890'W thence due west to the Subarea 24-

9 boundary, and
- west of a line from the eastern most point of Indian Island due south to Vancouver Island.

2.4. Area 25

GMA 25A, Esperanza: 1. Subareas 25-9 to 25-12;
2. A portion of Subarea 25-13 north and west of a line from Ferrer Pt. to a light at Middle Reef, thence to the north tip of Flower Islet, thence to the most westerly point of Centre Island, thence due south to Nootka Island.

GMA 25B, Nuchatlitz: 1. A portion of Subarea 25-13 east of a line from Ferrer Pt. to the southeast most point of a peninsula on Nootka Island at 49°47.922'N, 126°56.431'W;
2. Subarea 25-14.

GMA 25C, Rosa Harbour: A portion of Subarea 25-13:
- bounded on the north and west by a line from Ferrer Pt. to the light at Middle Reef thence to the north tip of Flower Islet thence to most westerly Pt. of Centre Island thence due south to Nootka Island; and
- bounded on the south and east by a line from Ferrer Pt. to the southeast most point of a peninsula on Nootka Island at 49°47.922'N, 126°56.431'W.

GMA 25D, Nootka: Subareas 25-3 to 25-8 and Subarea 25-15.

2.5. Area 26

GMA 26A, North Inlets: 1. Subareas 26-8 and 26-9,
2. That portion of 26-7 north of a line from Malksope Pt. at 50°05.53'N, 127°28.95'W, thence due west to a point midchannel on the southeast end of Gay Passage at 50°05.53'N, 127°30.1'W, thence midchannel through Gay Passage to a point midchannel on the northwest end of Gay Passage at 50°06.7'N, 127°31.8'W, thence northwest to the shore of Vancouver Island, just west of Theodore Pt. at 50°07.7'N, 127°32.8'W.

3. That portion of 26-10 north of a line from the east side of Nasparti Inlet at 50°08.75'N, 127°38.6'W to Vancouver Island at 50°08.7'N, 127°31.8'W.

GMA 26B, Mission Group: 1. That portion of Subarea 26-1 northwest of a line running due south from Amos Island light to the surfline;
2. That portion of Subarea 26-6 southerly of a line from the east side of McLean Island at 50°01.7'N, 127°23.5'W, easterly to Gayward Rock, thence to Amos Island light, thence due south to the common boundary separating Subareas 26-6 and 26-1, and north of line from Unsworth Pt. on Union Island running due east to a point on Vancouver Island;
3. That portion of Subarea 26-7 east of a line running from Lookout Island to the westernmost point of McLean Island.

GMA 26C, Central Kyuquot Inlets: 1. That portion of Subarea 26-1 bounded on the west by a line from the Amos Island light true south to the Subarea boundary and on the east by a line from Racoon Pt. true south to the boundary;
2. That portion of Subarea 26-2 south of a line from the eastern most Pt. of Surprise Island to Hohoae Pt. on Hohoae Island, thence along the southern shore of Hohoae Island to a point on the east side of Hohoae Island at 50°02.032'N, 127°12.811'W, thence southeast to a point on the

Vancouver Island shore at 50°01.404'N, 127°11.762'W and north of a line from Unsworth Pt. on Union Island due east to a point on Vancouver Island;
3. That portion of Subarea 26-6 north and east of a line from a point on the east side of McLean Island at 50°01.7'N, 127°23.5'W, thence to Gayward Rock, thence to the Amos Island light, thence true south to the common boundary between Subareas 26-6 and 26-1.

GMA 26D01, Southwest of Union Island: Those portions of Subareas 26-1, 26-2 and 26-6:
- east of a line running from Racoon Pt. due south to the surfline; and
- westerly of a line running midchannel between Union Island and Whiteley Island between a line running from Unsworth Pt. on Union Island due east to a point on Vancouver Island on the north and a line running between Union Island at 50°0.299'N, 127°14.298'W due east to Vancouver Island at 50°0.312'N, 127°09.096'W on the south,
- thence midchannel in Kyuquot Channel out to the surfline.

GMA 26D02, Amai and Cachalot Inlets: Portions of Subareas 26-2 and 26-3:
- east of a line running midchannel between Union Island and Whiteley Island;
- south of a line running from Unsworth Pt. on Union Island due east to Vancouver Island on the north; and
- north of a line running between Union Island at 50°0.071'N, 127°15.043'W due east to Vancouver Island at 50°0.078'N, 127°11.202'W.

GMA 26D03, North of Rugged Pt.: Portions of Subareas 26-1 and 26-2:
- east of a line drawn midchannel in Kyuquot Channel out to the surfline;
- south of a line running between Union Island at 50°0.071'N, 127°15.043'W due east to Vancouver Island at 50°0.078'N, 127°11.202'W; and
- west of a line drawn southwest 232°from a point near Rugged Pt. at 49°57.773'N, 127°15.097'W out to the boundary.

GMA 26D04, South of Rugged Pt.: A portion of Subarea 26-1 east of a line drawn southwest 232° from a point near Rugged Pt. at 49°57.773'N, 127°15.097'W out to the boundary.

GMA 26F, Inlets Exploratory: 1. Those portions of Subarea 26-2 northeast of a line from the easternmost point of Surprise Island, thence to Hohoae Pt. on Hohoae Island, thence along the southern shore of Hohoae Island to the east side of Hohoae Island at 50°02.032'N, 127°12.811'W, thence southeast to a point on the Vancouver Island shore at 50°01.404'N, 127°11.762'W;
2. Subareas 26-4 and 26-5.

3. NORTH COAST QUOTA REGION

GMA PRA09a, Clifford Bay South (a): That portion of Subarea 6-13 south of a line from the south tip of Babbage Island at 52°35.18'N, 129°09.57'W due west to the surfline, west of a line from southern tip of Babbage Island to a point on the island to the south at 52°35.08'N, 129°09.47'W, north of a line from 52°34.45'N, 129°09.83'W due west to the surfline, north of a line from 52°34.34'N, 129°09.48'W due east to the island opposite, northwest of a line from 52° 34.57'N, 129°09.22'W to 52°34.61'N, 129°09.18'W.

GMA PRA09b, Clifford Bay South (b): 1.That portion of Subarea 6-13 south of a line from 52°34.45'N, 129°09.83'W, due west to the surfline, south of a line from 52°34.34'N, 129°09.48'W, due east to the island opposite, southeast of a line from 52°34.57'N,

129°09.22’W to 52°34.61’N, 129°09.18’W, south of a line from 52°34.72’N, 129°09.01’W, east to Aristazabal Island at 52°34.72’N, 129°08.85’W, and north of a line running 226° true from 52°32.69’N, 129°06.89’W.

2. That portion of Subarea 106-2 east of a line from the boundary of 106-2 at 52°34.44’N, 129°10.03’W to the eastern most islet of the Normansell Islands at 52°33.24’N, 129°10.62’W then back to the boundary line at 52°31.68’N, 129°07.79’W.

GMA PRA10, Arriaga Islands: That portion of Subarea 6-13 south of a line running 226° true from 52°32.69’N, 129°06.89’W, and north of a line running 211° from 52°30.97’N, 129°04.17’W.

GMA PRA11, Weeteeam Bay West: That portion of Subarea 6-13 east of a line running 211° from 52°30.97’N, 129°04.17’W, and west of a line running 195° from 52°31.66’N, 129°01.27’W.

GMA PRA12, Weeteeam Bay Mid: That portion of Subarea 6-13 east of a line running 195° from 52°31.66’N, 129°01.27’W, and west of a line running 226°from 52°28.80’N, 129°0.94’W.

GMA PRA14, Moore Islands: That portion Subarea 106-2 excluding the portion of Subarea 106-2 east of a line from the boundary of 106-2 at 52°34.44’N, 129°10.03’W to the eastern most islet of the Normansell Islands at 52°33.24’N, 129°10.62’W then back to the boundary line at 52°31.68’N, 129°07.79’W.

GMA PRD01, Freeman Pass: Subarea 5-12.

GMA PRD02, Shakes Islands: 1. That portion of Subare 5-11 east of a line from 53° 47.36’N, 130° 33.58’W to 53° 43.619’N, 130° 31.057’W.

2. That portion of Subarea 5-10 north of a line running 223° from the westernmost point of Dolphin Island at 53° 46.00’N, 130° 28.6’W.

GMA PRG01, Connel Island: That portion of Subarea 4-1 south of a line running approximately 225° true from position 54° 28.51’N, 130° 53.716’W (through Hudsons Bay Passage), and that portion north of a line running 222° true from a position on Dunira Island at 54° 26.59’N, 130° 49.32’W, and that portion west of a line running 116° true from the southern tip of Prince Leebo Island.

GMA PRG02b, Baron Island North: That portion of Subarea 4-1 northeast of a line from a point on Baron Island at position 54° 27.12’N, 130° 51.38’W, thence northwest to 54° 29.08’N, 130° 54.63’W.

GMA CCA01, McMullin Group: That portion of Subarea 7-18 west of a line running from the northern tip of Goose Island at 52°0.25’N, 128°25.28’W to the most southeasterly tip of Stryker Island at 52°5.05’N, 128°19.66’W, and south of a line running from a point on the 7-18 subarea boundary line at at 52°5.52’N, 128°24.66’W to 52°3.08’N, 128°21.94 minutes.

GMA CCA02, Stryker Island: 1) That portion of Subarea 7-18 west of a line running from the northern tip of Goose Island at 52°0.25’N, 128°25.28’W to the most southeasterly tip of Stryker Island at 52°5.05’N, 128°19.66’W, and north of a line running from a point on the 7-18 subarea boundary line at at 52°5.52’N, 128°24.66’W to 52°3.08’N, 128°21.94 minutes. 2) That portion of Subarea 7-23 south of a line running through 52°06.88’N.

GMA CCA03, Tribal Group: That portion of Subarea 7-18 east of a line running from the northern tip of Goose Island at 52°0.25'N, 128°25.28'W to the most southeasterly tip of Stryker Island at 52°5.05'N, 128°19.66'W, and west of the meridian passing through 128°17.5'W.

GMA CCA04, Admiral Group: That portion of Subarea 7-18 east of the meridian passing through 128°17.5'W, and west of a line running from the southwestern tip of Campbell Island to the northwestern tip of Dodwell Island.

GMA CCA05, Prince Group: That portion of Subarea 7-25 east of the meridian passing through 128°20min west long., north of the parallel passing through 51°58.9'N, and west of a line running from the southwestern tip of Campbell Island to the northwestern tip of Dodwell Island and from Stubbs Pt. on Dodwell Island southwesterly to the northwestern Pt. of the McNaughton Group at 51°58.6'N, 128°13.9'W.

GMA CCA06a, Latta Island: That portion of Subarea 7-25 east of a line running from Stubbs Pt. on Dodwell Island southwesterly to the northwestern point of the McNaughton Group at 51°58.6'N, 128°13.9'W, north of the parallel passing through 51°57.8'N, and south of a line bearing 101° true from Stubbs Pt. on Dodwell Island to a Pt. on Hunter Island at 51°59.42'N, 128°10.92'W.

GMA CCA06b, Hunter Channel: 1. That portion of Subarea 7-17 south of a line running across Lama Passage at the Napier Pt. light at 52°07.9'N.

2. That portion of Subarea 7-18 and 7-25 east of a line from the southwestern tip of Campbell Island to the northwestern tip of Dodwell Island.

3. That portion of 7-25 north of a line bearing of 101° true from Stubbs Pt. on Dodwell Island east to a point on Hunter Island at 51°59.42'N, 128°10.92'W.

GMA CCA07a, McNaughton Group North: That portion of Subarea 7-25 south of the parallel passing through 51°57.8 'N, west of a line running from the outermost point on the north shore of the entrance to Kinsmen Inlet at 51°56.14'N, 128°11.82'W southerly to the outermost point on the south shore of the entrance to Kinsmen Inlet at 51°55.25'N, 128°11.54'W and east of a line commencing on the eastern shore of the northern island of the McNaughton Group at 51°57.8'N, then following the eastern shore of that island to the southern tip of that island, then true south to the adjacent island, then following westerly along that island to the narrowest point between it and the island directly to the west, then true west to that island, then south and westerly along the shore of that island to the southwesternmost Pt. of that island, then true south to that island directly south of it, then following the shoreline easterly and southerly to the parallel passing through 51°55.65'N to its intersect with the Kinsmen Inlet boundary.

GMA CCA07b, McNaughton Group – Kinsmen: That portion of Subarea 7-25 east of a line running from the outermost point on the north shore of the entrance to Kinsmen Inlet at 51°56.14'N, 128°11.82'W southerly to the outermost point on the south shore of the entrance to Kinsmen Inlet at 51°55.25'N, 128°11.54'W.

GMA CCA07c, McNaughton Group South: That portion of Subarea 7-25 east of a line running from the southernmost point of the McNaughton Group at 51°54.27'N, 128°14.34'W, to 51°53.97'N, 128°14.29'W, west of a line running from the outermost point on the north shore of the entrance to Kinsmen Inlet at 51°56.14'N, 128°11.82'W southerly to the outermost point on the south shore of the entrance to Kinsmen Inlet at 51°55.25'N, 128°11.54'W, and south of the parallel passing through 51°55.65'N to its intersect with the Kinsmen Inlet boundary.

GMA CCA07(experimental), Superstition Pt.: That portion of Subarea 7-25 south of a line from Superstition Pt. on Hunter Island at 51°53.40'N, 128°15.34'W northeasterly to a point at 51°53.98'N, 128°14.31'W.

GMA CCA08, Simmonds Group: That portion of Subarea 7-25 east of the meridian passing through 128°20'N, south of the parallel passing through 51°58.9'N and west of the line from Stubbs Pt. on Dodwell Island to a point on the northern island of the McNaughton Group at 51°58.6'N, 128°13.9'W, then following the eastern shore of that island to the southern tip of that island, then true south to the adjacent island, then following westerly along that island to the narrowest point between it and the island directly to the west, then true west to that island, then south and westerly along the shore of that island to the most southwestern point of that island, then true south to that island directly south of it, and then southerly to the southernmost point of that island at 51°54.27'N, 128°14.34'W, then south to 51°53.97'N, 128°14.29'W on Hunter Island and north of a line running from Superstition Pt. on Hunter Island northeasterly to a point at 51°53.97'N, 128°14.29'W.

GMA CCA09, Goose Island North: That portion of Subarea 7-25 north of the parallel passing through 51°56.6'N and west of the meridian passing through 128°20'W.

GMA CCA10, Goose Island South: That portion of Subarea 7-25 south of the parallel passing through 51°56.6'N and west of the meridian passing through 128°20'W.

GMA CCA11, Spider Island: That portion of Subarea 7-27 north of the parallel passing through 51°50.0'N and west of a line across the narrowest point in Spitfire Channel between Hurricane Island and Hunter Island.

GMA CCA12a, Typhoon Island: That portion of Subarea 7-27 south of the parallel passing through 51°50'N, and north and west of a line commencing at 51°50'N, 128°14.44'W, running south to the northern tip of the most northern island of the Edna Islands, then following the northern shore of north Edna Island to the narrowest point in the channel between north and south Edna Islands, then to south Edna Island, then following the shoreline to 51°49.42'N, 128°15.27'W and running 230° to the subarea boundary.

GMA CCA12b, South Edna Island: That portion of Subarea 7-27 south of the parallel passing through 51°50'N, south and east of a line commencing at 51°50'N, 128°14.44'W, running south to the northern tip of the most northern island of the Edna Islands, then following the northern shore of north Edna Island to the narrowest point in the channel between north and south Edna Islands, then to south Edna Island, then following the shoreline to the point at 51°49.42'N, 128°15.27'W and running 230° to the surfline, and west of a line commencing at 51°50'N, 128°14.0'W, and running due south to northernmost of the Anne Islands at 51°49.73'N, 128°14.0'W, then following the western shore of north Anne Islands to the narrowest point in the channel between north Anne Island and the island due south, then due south to the island and following the shoreline to the southwestern point of this island at 51°49.25'N, 128°13.99'W, then to the northern point of the Lyte Group at 51°49.06'N, 128°14.33'W, then following the northern shore to 51°49.0'N, 128°14.42'W, then westerly to 51°48.94'N, 128°14.73'W on Island "120" of the Lyte Group, then following the northern shore to 51°48.92'N, 128°14.86'W on the western side of Island "120" of the Lyte Group and true west to the subarea boundary.

GMA CCA12c, Triquet Island: That portion of 7-27 south of a line commencing at the southwestern Pt. of the Anne Islands at 51°49.25'N, 128°13.99'W, then running to the northern

point of the Lyte Group at 51°49.06’N, 128°14.33’W, then following the northern shore to 51°49.0’N, 128°14.42’W, then westerly to 51°48.94’N, 128°14.73’W on Island "120" of the Lyte Group, then following the northern shore to 51°48.92’N, 128°14.86’W on the western side of Island "120" of the Lyte Group and true west to the subarea boundary, and west of a series of lines from the southern tip of Island "195" of the Anne Islands at 51°49.21’N, 128°13.92’W to the north shore of Island "135" of the Anne Islands at 51°49.09’N, 128°13.92’W, then following the western shore to the southern tip at 51°48.81’N, 128°13.86’W, and then southeasterly to Island "175" at 51°48.56’N, 128°13.73’W, then following the western shore to the south shore at 51°48.50’N, 128°13.63’W, then due south to the subarea boundary.

GMA CCA13, Spider Anchorage (Ronald): That portion of Subarea 7-27 south of the parallel passing through 51°50’N, and east of a line commencing at 51°50’N, 128°14.0’W, and running due south to northernmost of the Anne Islands at 51°49.73’N, 128°14.0’W, then following the western shore of north Anne Island to the narrowest point in the channel between north Anne Island and the island due south, then due south to the island and following the shoreline to the southwestern point of this island at 51°49.21’N, 128°13.92’W, then to the north shore of Island "135" of the Anne Islands at 51°49.9’N, 128°13.92’W, then following the western shore to the southern tip at 51°48.81’N, 128°13.86’W, and then southeasterly to Island "175" at 51°48.56’N, 128°13.73’W, then following the western shore to the south shore at 51°48.50’N, 128°13.63’W, then due south to the subarea boundary and west of a line running from the southern tip of Hurricane Island to the northern tip of Manley Island, and west of a line running from 51°48.46’N, 128°11.47’W on the southeastern shore of Manley Island true south to the subarea boundary.

GMA CCA14, Serpent Group: That portion of Subarea 7-27 south of a line running from the northeasternmost point of Manley Island to the northwesternmost tip of Camel Island, east of a line running from 51°48.46’N, 128°11.47’W on the southeastern shore of Manley Island true south to the subarea boundary, and west of the meridian passing through 128°9’W.

GMA CCA15a, Kittyhawk Group North: That portion of Subarea 7-28 north of a line running from the southernmost point of Hunter Island at the entrance to Spitfire Channel to a point on the northwestern tip of Clare Island at 51°50.03’N, 128°08.43’W

GMA CCA15b, Kittyhawk Group South: 1) That portion of Subarea 7-28 south of a line running from the southernmost point of Hunter Island at the entrance to Spitfire Channel to a point on the northwestern tip of Clare Island at 51°50.03’N, 128°08.43’W. 2) That portion of Subarea 7-27 east of a line across the narrowest opint in Spitfire Channel between Hurricane Island and Hunter Island, east of a line from the southern tip of Hurricane Island to the northern tip of Manley Island, and north of a line from the most northeasternmost point of Manley Island to the northwestern tip of Camel Island and west of a line from the southeastern tip of Clare Island to the northeastern tip of Camel Island.

GMA CCB01, Mathieson Channel: That portion of Subarea 7-9 north of a line from Schubert Pt. to Lang Pt., and east of the meridian passing through 128°24.11’W.

GMA CCB02, Moss Passage: 1) That portion of Subarea 7-3 east of the meridian passing through 128°30’W. 2) Subarea 7-4. 3) That portion of Subarea 7-9 in Moss Passage west of the meridian passing through 128°24.11’W

GMA CCB03, Ivory Island: That portion of Subarea 7-9 south of a line running from Schubert Pt. on Don Peninsula to Lang Pt. on Lady Douglas Island.

GMA CCB04, Berry Inlet: 1). Subarea 7-8. 2) That portion of Subarea 7-12 north and west of a line running from Fisher Pt. near Berry Inlet southerly to 52°15.26'N, 128°20.87'W, then easterly to 52°15.26'N,128°14.64'W and true north to the subarea boundary.

GMA CCB05a, Seaforth Channel West: That portion of Subarea 7-12 south of a line running from Fisher Pt. near Berry Inlet southerly to 52°15.26'N, 128°20.87'W, then easterly to 52°15.26'N, 128°14.64'W and true north to the subarea boundary, and west of a line running from Idol Pt. true north to the boundary of Berry Inlet. 2) That portion of 7-21 north of line running from 52°12.70'N, 128°23.34'W, then easterly to 52°12.69'N, 128°23.30'W.

GMA CCB05b, Seaforth Channel East: 1) That portion of Subarea 7-12 south of a line running from Fisher Pt. near Berry Inlet southerly to 52°15.26'N, 128°20.87'W, then easterly to 52°15.26'N, 128°14.64'W and true north to the subarea boundary, and east of a line running from Idol Pt. true north to the boundary of Berry Inlet. 2) That portion of Subarea 7-17 north of a line running across Lama Passage at the Napier Pt. light (52°07.9'N). 3) Subarea 7-22. 4) That portion of Subarea 7-23 north of the parallel passing through 52°12.39'N

GMA CCB06, St. John Harbour: That portion of Subarea 7-32 north of the parallel passing through 52°10.7'N

GMA CCB07, Cape Mark (Bowling Alley): That portion of Subarea 7-32 south of the parallel passing through 52°10.7'N and west of a line running southwesterly through a chain of islets from 52°10.17'N, 128°29.92'W, to 52°09.55'N, 128°30.85'W, and then continuing southerly through the chain of islets to where it intersects with the subarea boundary.

GMA CCB08, Godfrey Rock: 1) That portion of Subarea 7-1 east of a line running due south from Cape Mark to 52°06.51'N, 128°32.45'W, then east to where it intersects with the subarea boundary. 2) That portion of Subarea 7-32 east of a line running southwesterly through a chain of islets from 52°10.17'N, 128°29.92'W to 52°09.55'N, 128°30.85'W, and then continuing southerly through the chain of islets to where it intersects with the subarea boundary.

GMA CCB09, Princess Alice Island: Subarea 7-20.

GMA CCB10, Thompson Bay: That portion of 7-21 south of line running from 52°12.70'N, 128°23.34'W, then easterly to 52°12.69'N, 128°23.30'W.

GMA CCB11, Houghton Island: Subarea 7-19.

GMA CCB12, Joassa Channel/Raymond Passage: 1) That portion of Subarea 7-23 south of the parallel passing through 52°12.39'N and north of a line running through 52°06.88'N. 2) Subarea 7-24.

GMA CCC01, Nalau Passage: 1) That portion of Subarea 8-2 north of a line bearing 248°true from Koeye Pt. through Hakai Pass. 2) Subarea 8-4.

GMA CCC02, Sterling Island West: 1) Subarea 7-26. 2) That portion of Subarea 7-27 east of the meridian passing through 128°9'W and east of a line from the southeastern tip of Clare Island to the northeastern tip of Camel Island.

GMA CCC03, Choked Passage: 1) That portion of Subarea 8-1 north and east of a line running from the most northwestern point of Calvert Island west to the meridian passing through

128°10’W, then north to a point on the meridian of 128°10’W due west of Odlum Pt., then to Odlum Pt.. 2) That portion of Subarea 8-2 south and west of a line commencing at the northwesternmost tip of Calvert Island at 51°41.27’N, 128°6’W, and running to the westernmost tip of Rattenbury Island, then to Odlum Pt. on Odlum Island.

GMA CCC04, South Hakai Pass: 1) That portion of Subarea 8-2 north and east of a line commencing at the northwesternmost tip of Calvert Island at 51°41.27’N, 128°6’W, and running to the westernmost tip of Rattenbury Island, then to Odlum Pt. on Odlum Island, and south of a line bearing 248° true from Koeye Pt. through Hakai Pass.

GMA CCC05, Fitzhugh Sound: Subareas 8-16 and 9-12.

GMA CCC06, Rivers Inlet: 1) That portion of Subarea 9-1 east of the meridian passing through 127°50’W 2) Subareas 9-2, 9-3, 9-4, and 9-11.

GMA CCC07, Calvert Island North: That portion of Subarea 9-1 west of the meridian passing through 127°50’W, and north of a line running east from Harold Pt. to 127°50’W

GMA CCC08, Calvert Island South (Grief Bay): 1. That portion of Subarea 9-1 west of the meridian passing through 127°50’W, and south of a line running east from Harold Pt. to 127°50’W. 2) Subareas 10-1 and 10-2.

GMA CCC09, Smith Inlet North: That portion of Subareas 10-3 and 10-4 north of a line bearing westerly from Barb Pt. to its intersection with the western boundary of Subarea 10-3 at 51°18’N.

GMA CCC10, Smith Inlet South: Those portions of Subareas 10-3 and 10-4 south of a line bearing westerly from Barb Pt. to its intersection with the western boundary of Subarea 10-3 at 51°18’N.

GMA CCD01a, Rennison Island: 1) That portion of Subarea 6-11 west of a line running from Ulric Pt. on Aristazabal Island true north to the subarea boundary. 2) That portion of 6-10 South of a line from 52°51.70’N, 129°21.44’W to the point of intersection of the subarea boundary line between 6-10 and 6-11 true north from Ulric Pt. on Aristazabal Island.

GMA CCD01b, West Laredo Channel (North of Baker Pt.): 1) That portion of Subarea 6-11 east of a line running from Ulric Pt. on Aristazabal Island true north to the subarea boundary.

GMA CCD01c, West Laredo Channel (South of Baker Pt.): That portion of Subarea 6-14 west of a line commencing at 52°50’N, 129°10.8’W, and running 148°true.

GMA CCD02, East Laredo Channel: That portion of Subarea 6-14 east of a line commencing at 52°50’N, 129°10.8’W, and running 148°true.

GMA CCD03, Laredo Inlet: 1) That portion of Subarea 6-16 east of a line running from Dallian Pt. to Wingate Pt.. 2) That portion of Subarea 6-19 south of a line running from Waser Pt. true east.

GMA CCD04, Kitasu Bay: Subarea 6-18.

GMA CCD05, Larkin Pt.: That portion of Subarea 6-16 west of a line running from Dallian Pt. to Wingate Pt., east of the meridian passing through 128°51’W, and north of the parallel passing through 52°29.80’N.

GMA CCD06, Laredo Channel: 1) Subarea 6-15. 2) That portion of Subarea 6-16 northwest of a line running from Dallian Pt. on Princess Royal Island to Tildesley Pt. on Aristazabal Island.

GMA CCD07, East Aristazabal Island South: 1) That portion of Subarea 6-13 south and east of a line running 226°from 52°29.3'N, 129° W. 2) That portion of Subarea 6-17 west of the meridian passing through 128°51'W.

GMA CCD08, Rudolf Bay: That portion of Subarea 6-17 east of the meridian passing through 128°51'W, and south of a line bearing true east and west through the light on Jaffrey Rock.

GMA CCD09a, West Higgins Passage (a): Those portions of Subarea 6-16 and 6-17 east of the meridian passing through 128°51'W, north of a line bearing true east and west through the light on Jaffrey Rock, south of the parallel passing through 52°29.80'N, and west and north of a line running from a point at 52°28.76'N, 128°45.56'W on Swindle Island, west to a point on an island at 52°28.78'N, 128°46.10'W, then running southerly around the eastern shoreline to the southwesternmost point, then true south to Island "185", southerly around the eastern shoreline to a southwestern point at 52°28.04'N, 128°46.68'W and thence southwest 225° to the parallel passing true east and west through the light on Jaffrey Rock.

GMA CCD09b, West Higgins Passage (b): Those portions of Subareas 6-16 and 6-17 east of a line running from a Pt. at 52°28.76'N, 128°45.56'W on Swindle island, west to a Pt. on an island at 52°28.78'N, 128°46.10'W, then running southerly around the eastern shoreline to the southwesternmost point, then true south to Island "185", southerly around the eastern shoreline to a southwestern Pt. at 52°28.04'N, 128°46.68'W, and thence southwest 225°to the parallel passing true east and west through the light on Jaffrey Rock.

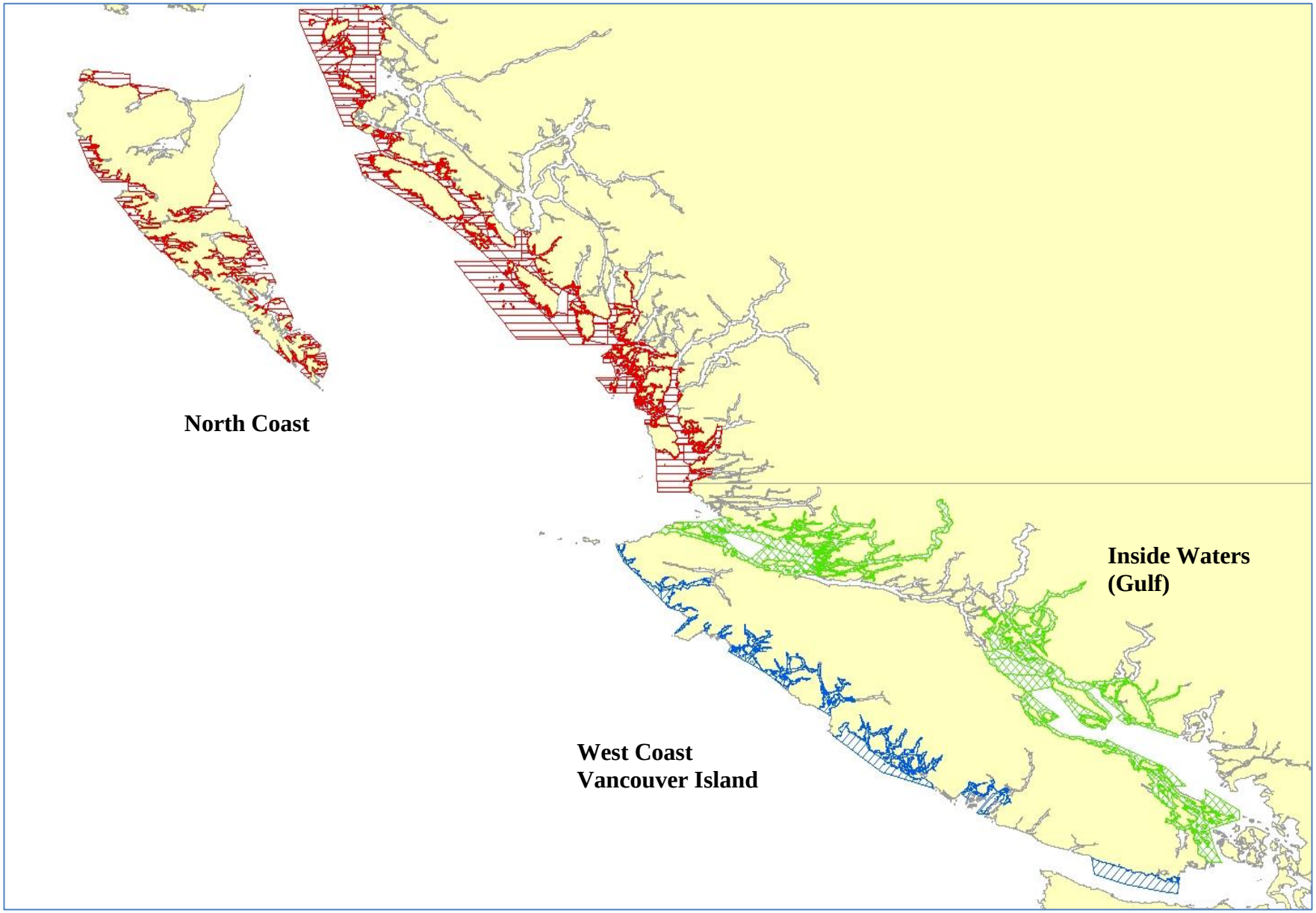
GMA CCD10, Price Island Southwest (Day Pt.): 1) That portion of Subareas 7-1 and 7-2 north of the parallel passing through 52°14.5'N. 2) That portion of Subarea 7-31 south of the parallel passing through 52°19'N.

GMA CCD11, Price Island West: That portion of Subarea 7-31 north of the parallel passing through 52°19'N.

GMA CCD12, Milbanke Sound South: That portion of Subarea 7-3 west of the meridian passing through 128°30'W, and south of a line running from Keith Pt. on Dowager Island true west.

GMA CCD13, Milbanke Sound North (East Higgins): That portion of Subarea 7-3 west of the meridian passing through 128°30'W, and north of a line running from Keith Pt. on Dowager Island true west.

APPENDIX 10: MAP OF QUOTA REGIONS



APPENDIX 11: MAPS OF 2022/23 GEODUCK MANAGEMENT AREAS – INSIDE WATERS

Harvesters are reminded that these maps and the area descriptions in Appendix 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*.

1. Geoduck Management Area Maps

Thick lines represent Geoduck Management Areas. See Appendix 9 Geoduck Management Area Descriptions for complete details.

For more detail on Pacific Fishery Management Areas and Subareas, see the internet at: http://www.pac.dfo-mpo.gc.ca/fm-gp/maps-cartes/areas-secteurs/index-eng.html

2. Closures to Commercial Fisheries

Closures to the commercial fishery may be in place for a variety of reasons: Aboriginal and recreational access, parks, marine reserves, research, navigation, contamination or biotoxins. In addition to the following information on contamination and biotoxin closures, see Appendix 6, Section 4 for information on all other seasonal and permanent closures.

2.1. General Information on Closures under the Canadian Shellfish Sanitation Program

Closures may be implemented on short notice in the event of changes to contamination status, Paralytic Shellfish Poisoning (PSP) or other biotoxin events. Licence holders, vessel masters, and harvester are reminded that:

- It remains the responsibility of the vessel master to ensure that an area is not closed for harvest due to sanitary or biotoxin contamination. Fishing in a closed area is an offence under the *Fisheries Act.* Consumption of product harvested from within a closed area poses a serious health risk.
- Prior to commencement of fishing, the vessel master must take care to confirm that an area is open for harvesting either through the DFO website at: http://www.pac.dfo-mpo.gc.ca/fm-gp/contamination/biotox/index-eng.html or the toll-free information line at 1-866-431-3474, or by contacting a local DFO office directly. Contact information is available in Appendix 15 of the Integrated Fisheries Management Plan.
- In remote areas of the coast, the vessel master often relies on a service provider or on-grounds monitors for transmission of information. However, while On-Grounds Monitors (OGMs) direct and track harvesting by bed for stock assessment purposes, the responsibility and accountability to comply with the *Fisheries Act* and to ensure that the fishing area is open and approved for harvest remains with the vessel master.

- Information may also be available through weekly broadcasts over a commercial or marine radio station ("the weather channel"). In the North Coast, this method is only updated weekly on Tuesdays and it is recommended that the sources listed above be the primary avenue for information.

2.2. Sanitary (Contamination) Closures

Shellfish may not be harvested for direct marketing from closed contaminated areas except by special permit licence under the *Management of Contaminated Fisheries Regulations*. Currently there is not an approved depuration process for Geoduck. There are both seasonal and permanent sanitary contamination closures. Descriptions and maps of contaminated closures may be found at the following DFO site: http://www.pac.dfo-mpo.gc.ca/fm-gp/contamination/biotox/index-eng.html

A copy of this list may also be obtained from the resource managers (see the Contacts section in the IFMP). Sanitary closures are amended annually in April and November, and may also be amended in-season. Consequently, harvesters are advised to check the internet, prior to fishing in an area, to ensure that they have the most recent contamination closure information.

Permanent bivalve harvesting closures are in place for Canadian fisheries waters of the Pacific Ocean within:

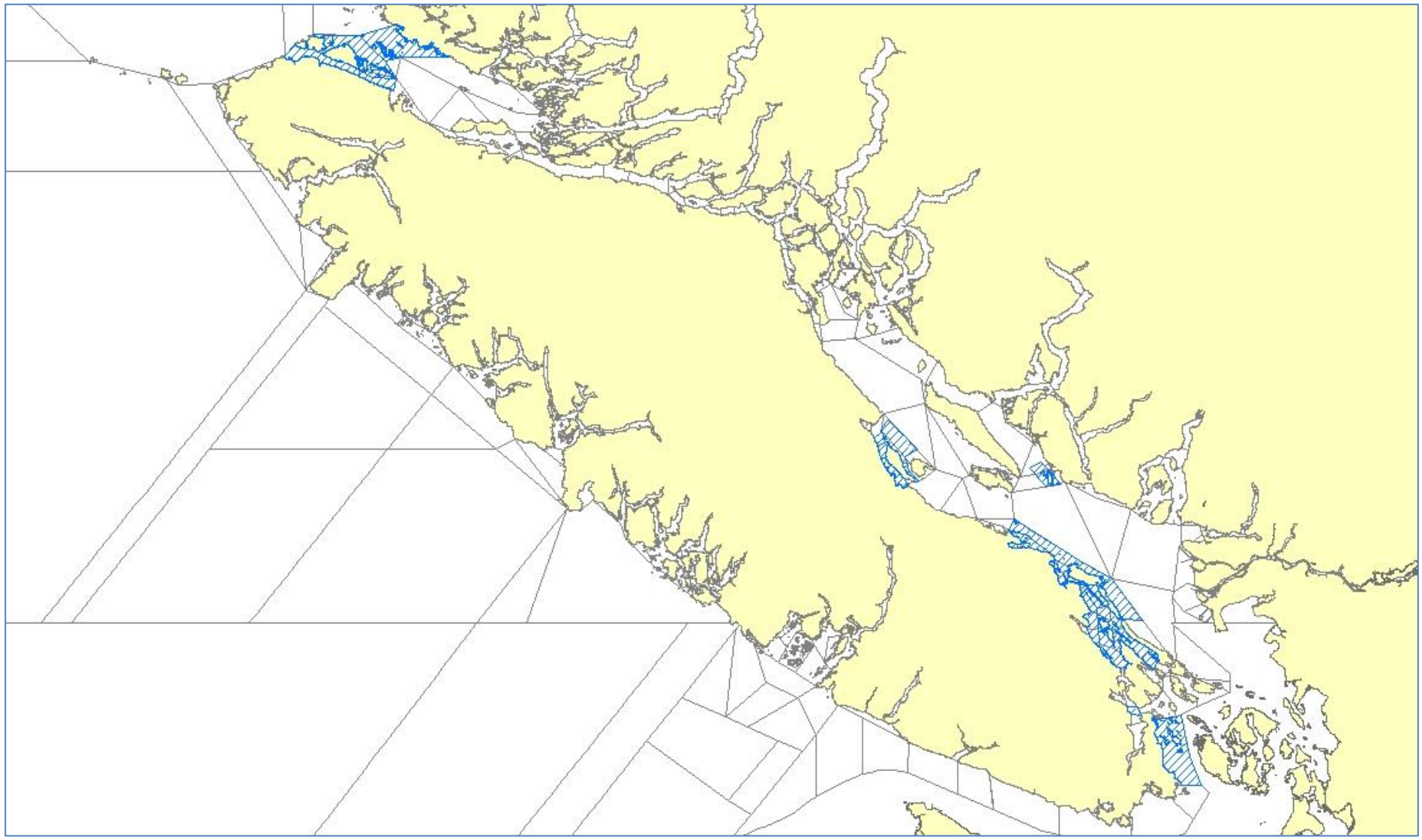
a) 300 m radius around industrial, municipal and sewage treatment plant outfall discharges; **NOTE:** Studies are being done to assess the specific effectiveness of this closure for each outfall. Closures around outfalls may change in-season and will be announced by Fishery Notice.

b) 125 m radius of any marina, ferry wharf, finfish net pen, and, subject to bullet (c), any floating living accommodation facility; and

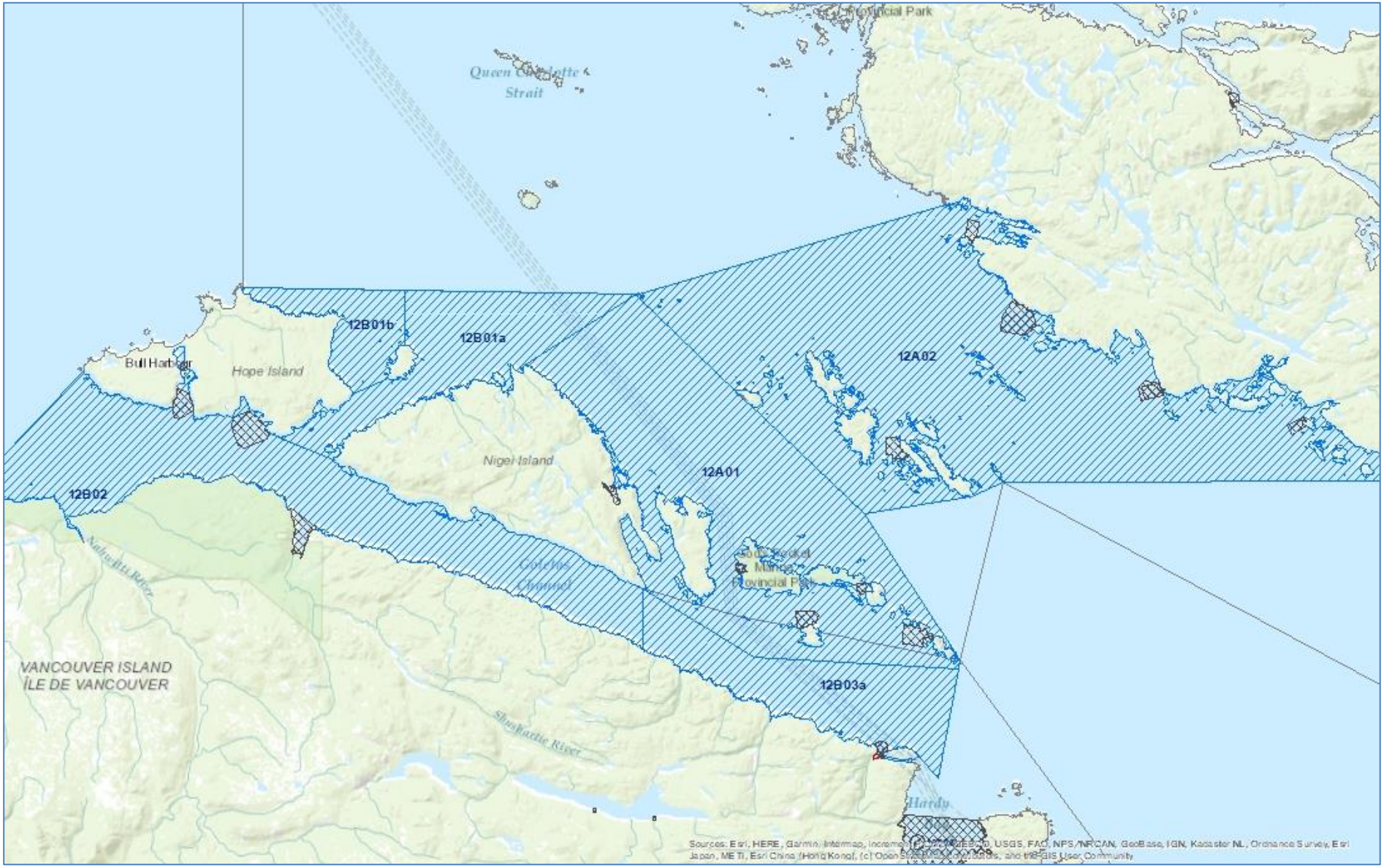
c) 25 m of any floating living accommodation facility located within a shellfish aquaculture tenure where a zero-discharge waste management plan is a condition of the Provincial aquaculture licence and is approved by the Regional Interdepartmental Committee.

2.3. Biotoxin Closures

Shellfish may not be harvested from closed areas except by special permit licence issued under the *Management of Contaminated Fisheries Regulations*. Shellfish may not be harvested for consumption from any area closed due to biotoxin contamination. Descriptions of biotoxin closures may be found at the following Fisheries and Oceans Canada Internet site: http://www.pac.dfo-mpo.gc.ca/fm-gp/contamination/biotox/index-eng.html



2022/23 Inside Waters Geoduck Management Areas
NOTE: Harvest from enhancement sites may occur from Subareas 14-5, 14-7, 14-10, 15-2, 15-3, 16-19, 16-21, 17-10 and 17-18.



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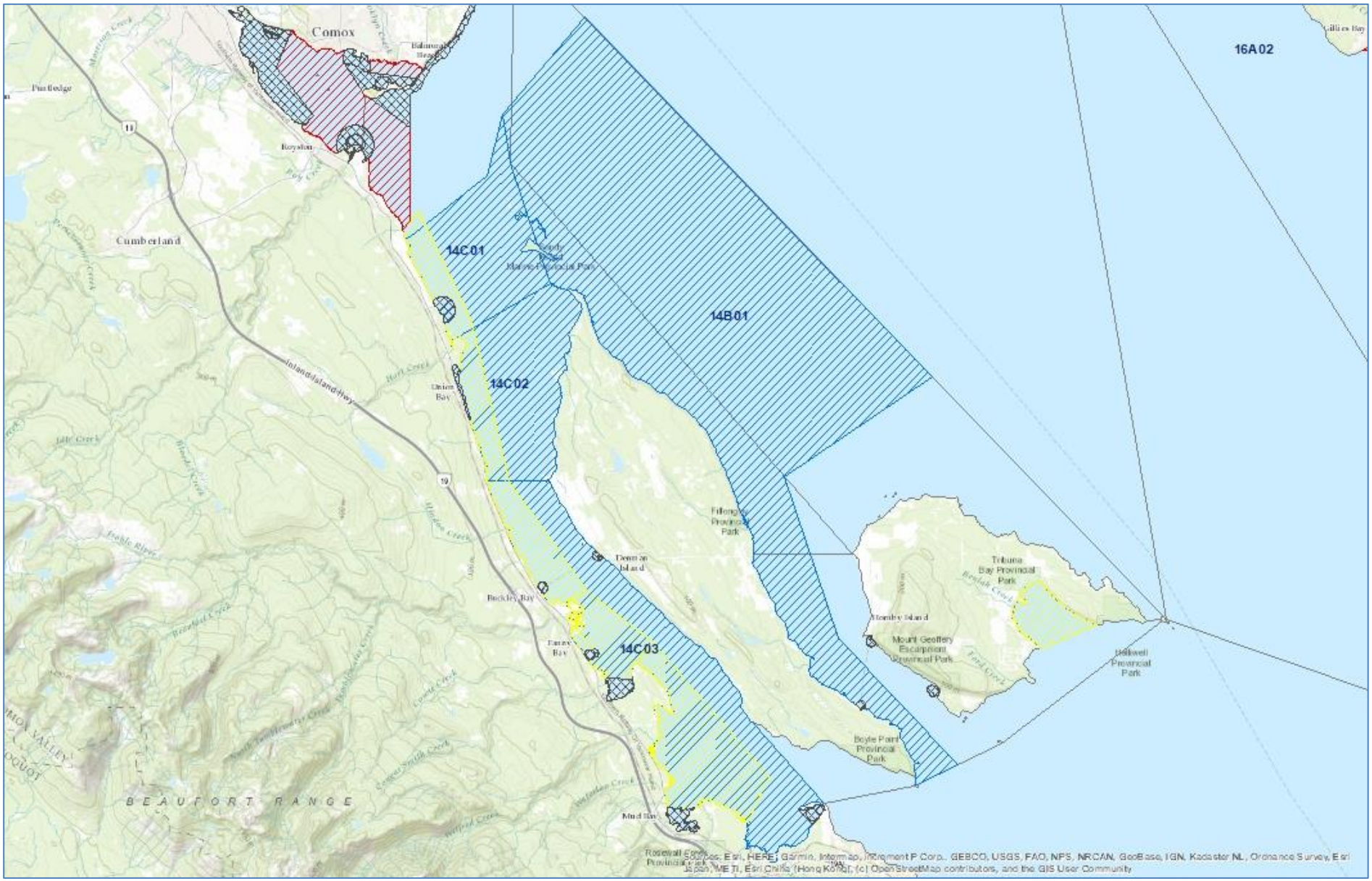
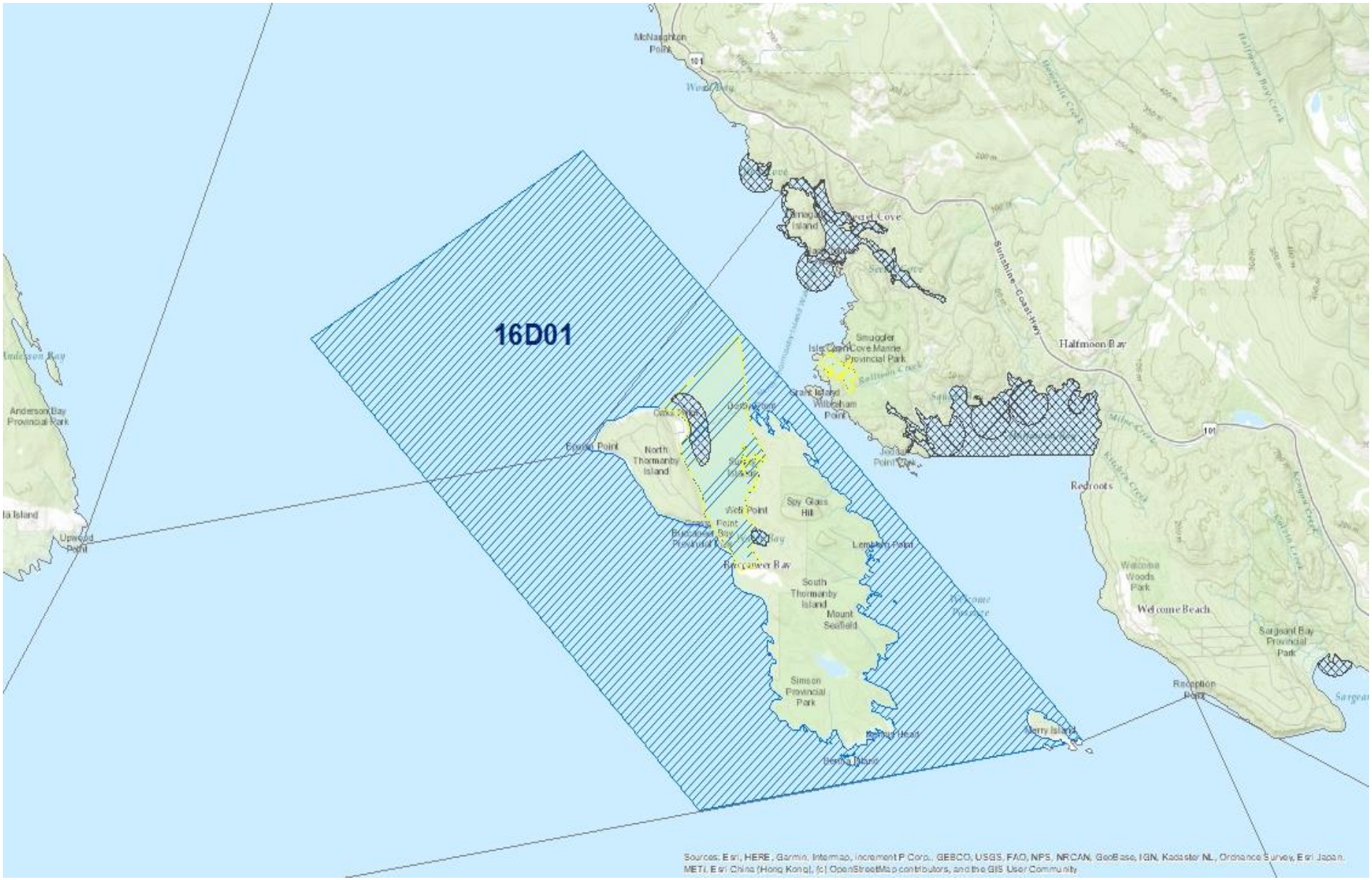
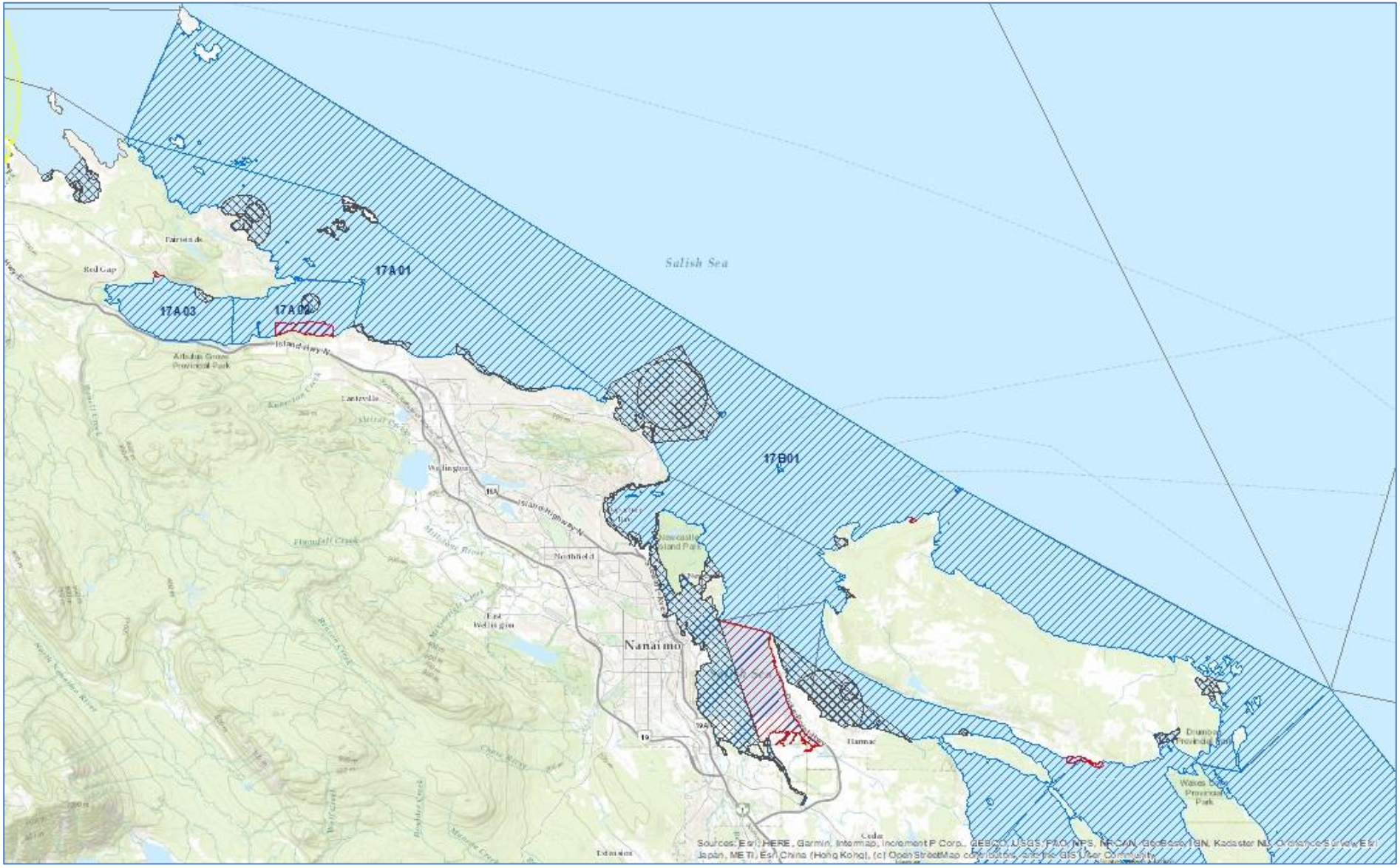


GMAs: 14B01, 14C01, 14C02, 14C03


16D01
McNaughton Point
Halfmoon Bay
Smuggler Cove Marine Provincial Park
Anderson Bay Provincial Park
Upwood Point
North Thormanby Island
Spy Glass Hill
Welt Point
Buccaneer Bay
South Thormanby Island
Mount Seafield
Simson Provincial Park
Redroots
Welcome Woods Park
Welcome Beach
Sargeant Bay Provincial Park
Reception Point
Sunshine Coast Hwy
101
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

GMAs: 16D01



GMAs: 17A01, 17A02, 17A03, 17B01

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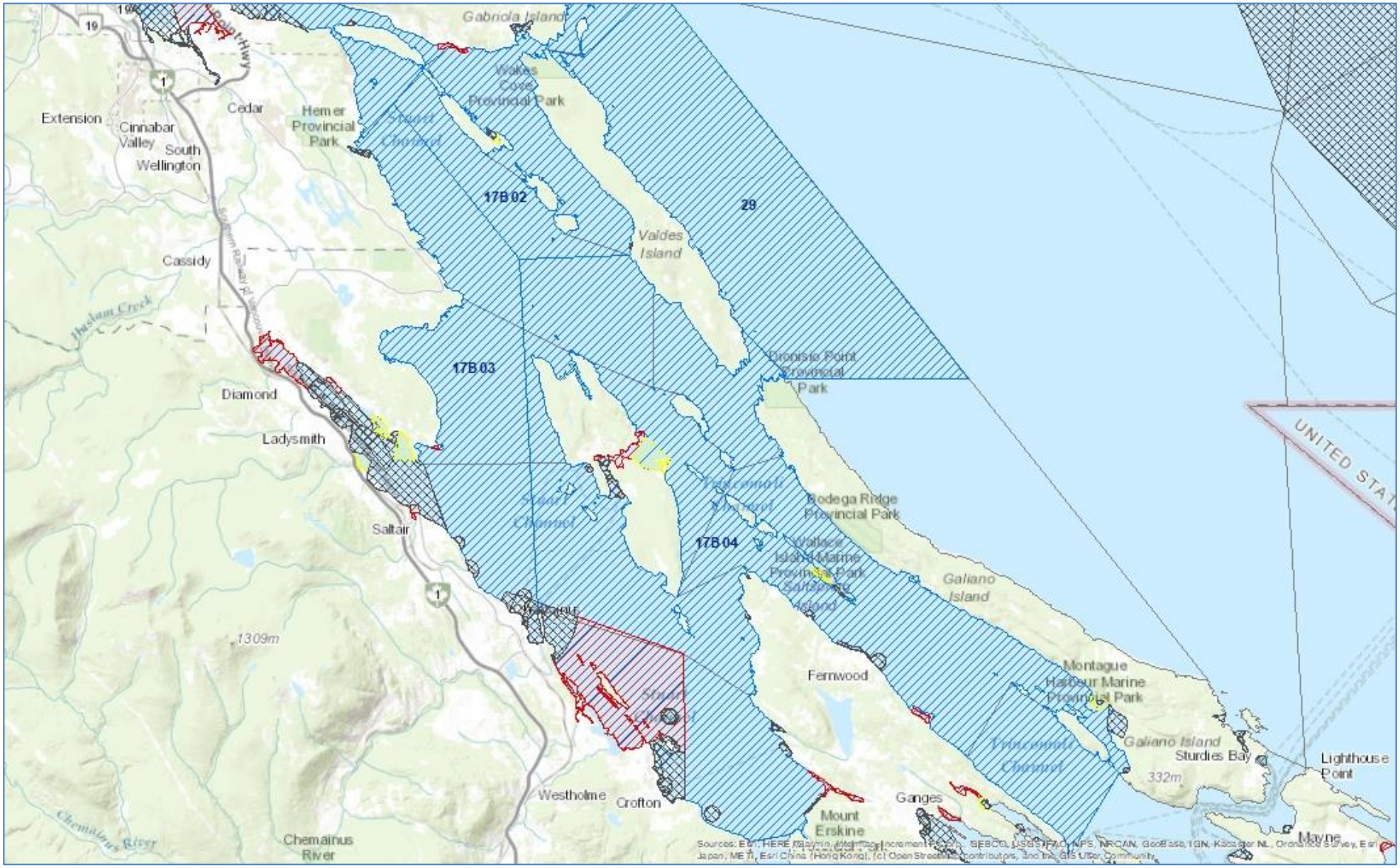
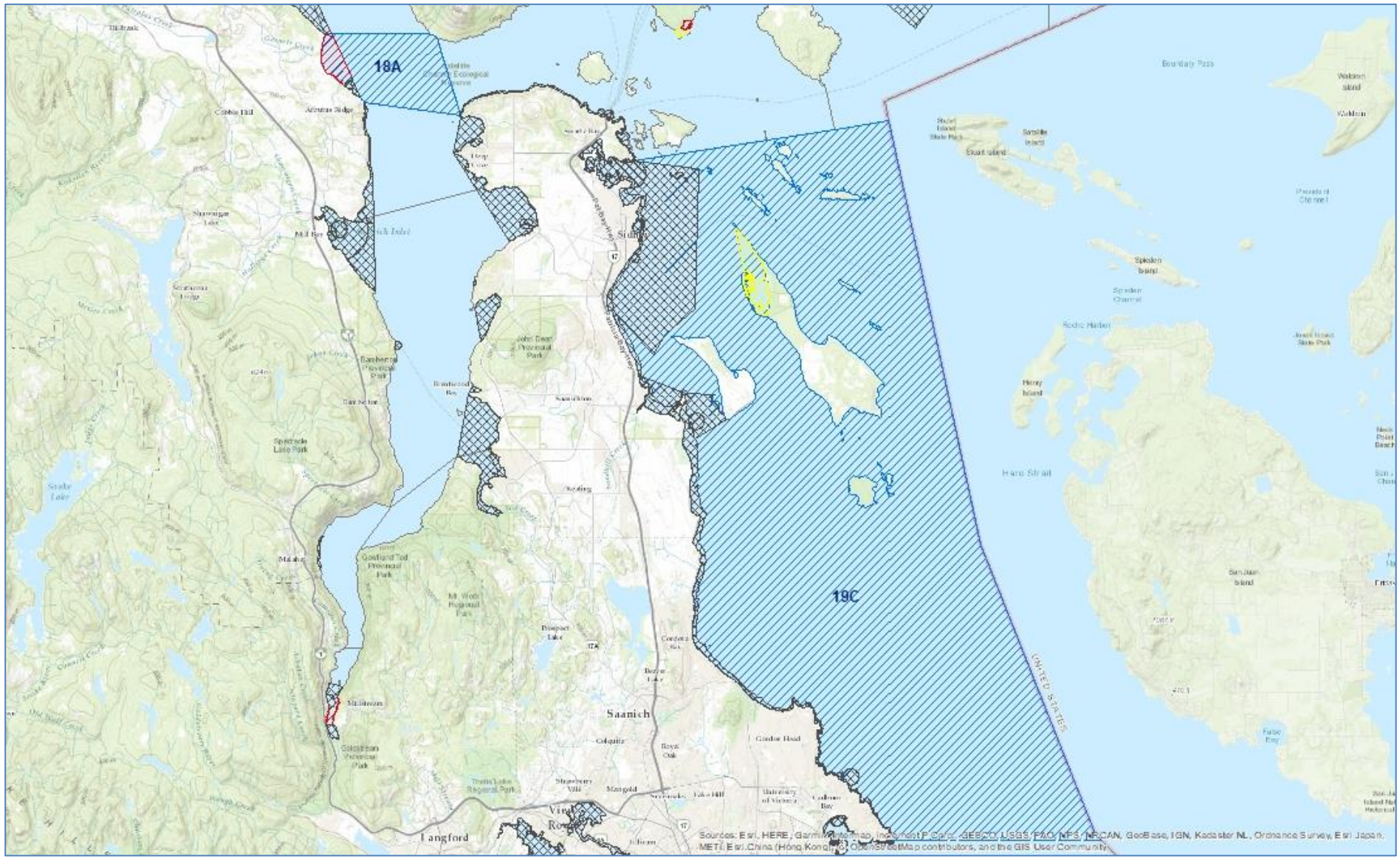


GMAs: 17B02, 17B03, 17B04, 29



GMAs: 18A and 19C.

APPENDIX 12: MAPS OF 2022/23 GEODUCK MANAGEMENT AREAS – WEST COAST VANCOUVER ISLAND

Harvesters are reminded that these maps and the area descriptions in Appendix 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*.

1. Geoduck Management Area Maps

Thick lines represent Geoduck Management Areas. See Appendix 9 Geoduck Management Area Descriptions for complete details.

For more detail on Pacific Fishery Management Areas and Subareas, see the internet at: http://www.pac.dfo-mpo.gc.ca/fm-gp/maps-cartes/areas-secteurs/index-eng.html

2. Closures to Commercial Fisheries

Closures to the commercial fishery may be in place for a variety of reasons: Aboriginal and recreational access, parks, marine reserves, research, navigation, contamination or biotoxins. In addition to the following information on contamination and biotoxin closures, see Appendix 6, Section 4 for information on all other seasonal and permanent closures.

2.1. General Information on Closures under the Canadian Shellfish Sanitation Program

Closures may be implemented on short notice in the event of changes to contamination status, Paralytic Shellfish Poisoning (PSP) or other biotoxin events. Licence holders, vessel masters, and harvester are reminded that:

- It remains the responsibility of the vessel master to ensure that an area is not closed for harvest due to sanitary or biotoxin contamination. Fishing in a closed area is an offence under the *Fisheries Act.* Consumption of product harvested from within a closed area poses a serious health risk.
- Prior to commencement of fishing, the vessel master must take care to confirm that an area is open for harvesting either through the DFO website at: http://www.pac.dfo-mpo.gc.ca/fm-gp/contamination/biotox/index-eng.html or the toll-free information line at 1-866-431-3474, or by contacting a local DFO office directly. Contact information is available in Appendix 15 of the Integrated Fisheries Management Plan.
- In remote areas of the coast, the vessel master often relies on a service provider or on-grounds monitors for transmission of information. However, while On-Grounds Monitors (OGMs) direct and track harvesting by bed for stock assessment purposes, the responsibility and accountability to comply with the *Fisheries Act* and to ensure that the fishing area is open and approved for harvest remains with the vessel master.

- Information may also be available through weekly broadcasts over a commercial or marine radio station ("the weather channel"). In the North Coast, this method is only updated weekly on Tuesdays and it is recommended that the sources listed above be the primary avenue for information.

2.2. Sanitary (Contamination) Closures

Shellfish may not be harvested for direct marketing from closed contaminated areas except by special permit licence under the *Management of Contaminated Fisheries Regulations*. Currently there is not an approved depuration process for Geoduck. There are both seasonal and permanent sanitary contamination closures. Descriptions and maps of contaminated closures may be found at the following DFO internet site: http://www.pac.dfo-mpo.gc.ca/fm-gp/contamination/biotox/index-eng.html

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Permanent bivalve harvesting closures are in place for Canadian fisheries waters of the Pacific Ocean within:

a) 300 m radius around industrial, municipal and sewage treatment plant outfall discharges; **NOTE**: Studies are being done to assess the specific effectiveness of this closure for each outfall. Closures around outfalls may change in-season and will be announced by Fishery Notice.

b) 125 m radius of any marina, ferry wharf, finfish net pen, and, subject to bullet (c), any floating living accommodation facility; and

c) 25 m of any floating living accommodation facility located within a shellfish aquaculture tenure where a zero-discharge waste management plan is a condition of the Provincial aquaculture licence and is approved by the Regional Interdepartmental Committee.

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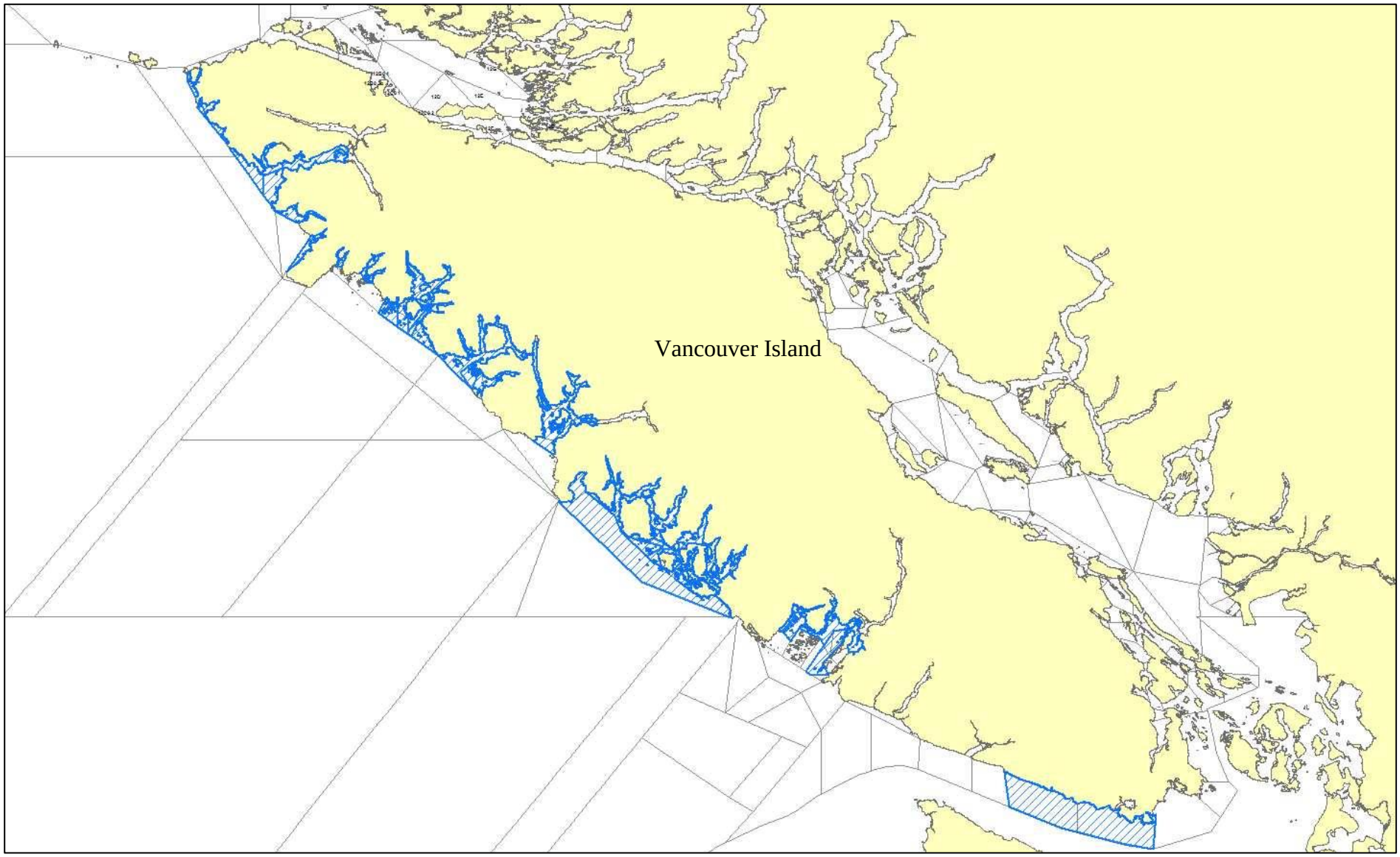
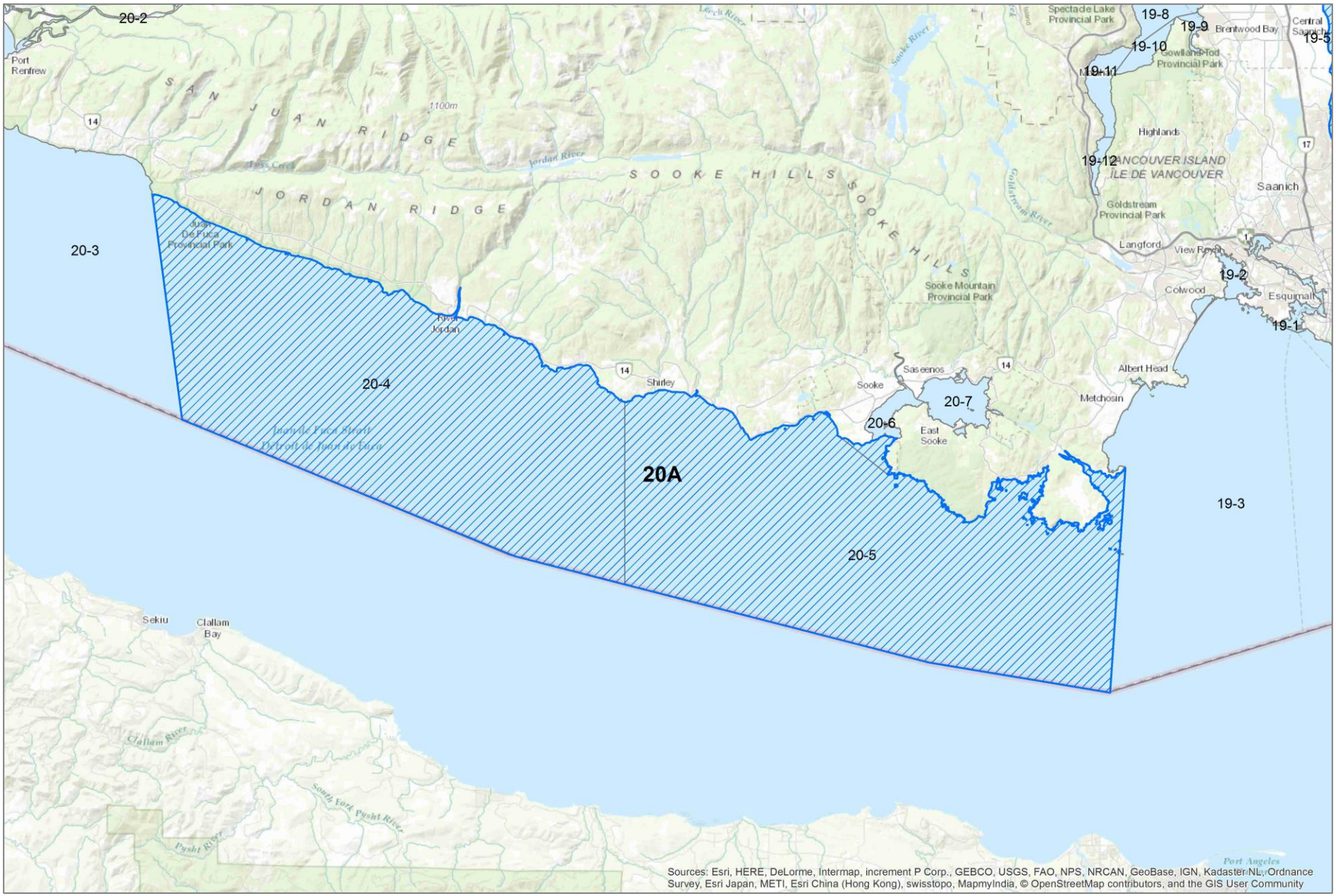
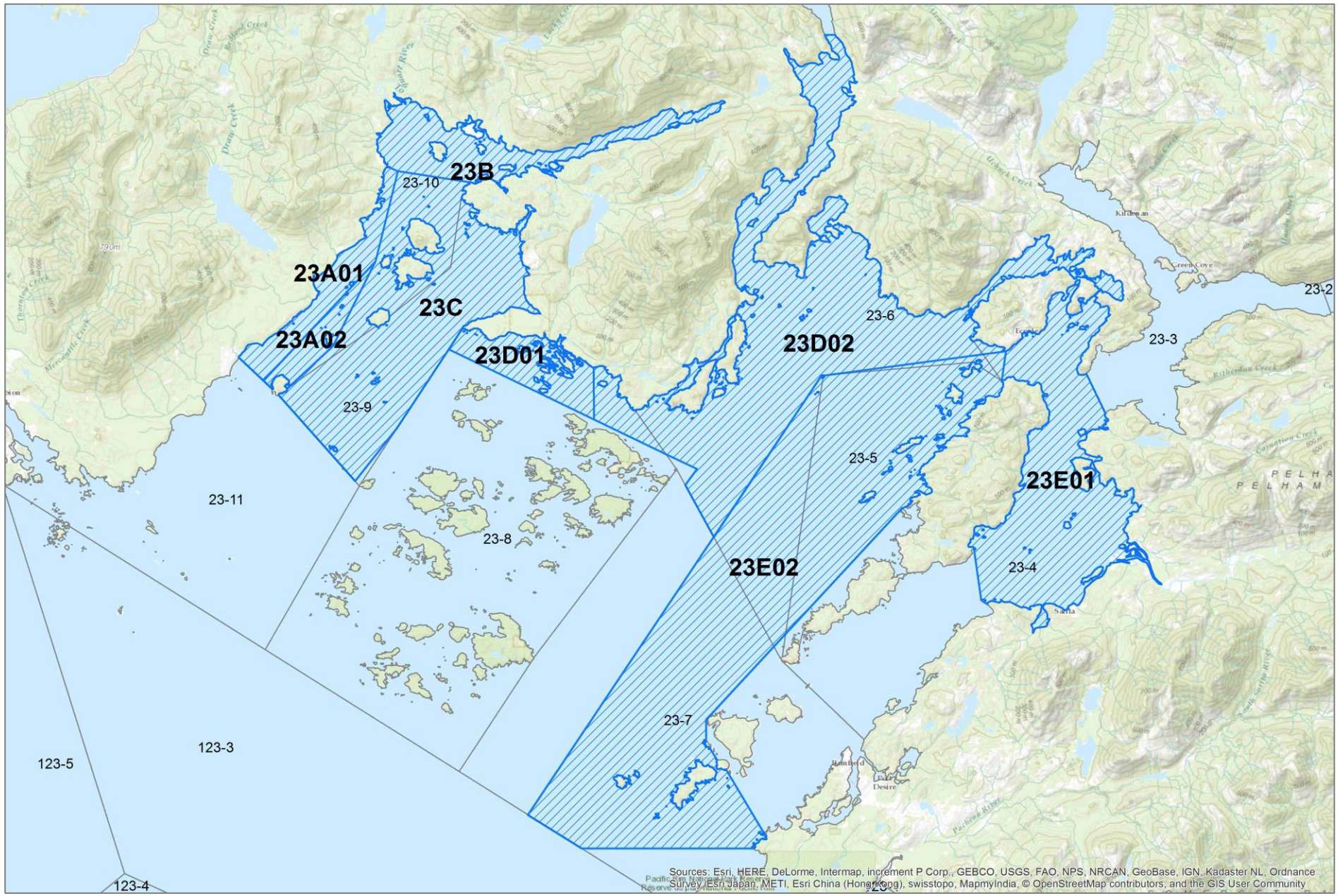
Shellfish may not be harvested from closed areas except by special permit licence issued under the *Management of Contaminated Fisheries Regulations*. Shellfish may not be harvested for consumption from any area closed due to biotoxin contamination. Descriptions of biotoxin closures may be found at the following DFO internet site: http://www.pac.dfo-mpo.gc.ca/fm-gp/contamination/biotox/index-eng.html



British Columbia South Coast Geoduck Management Areas –West Coast Vancouver Island

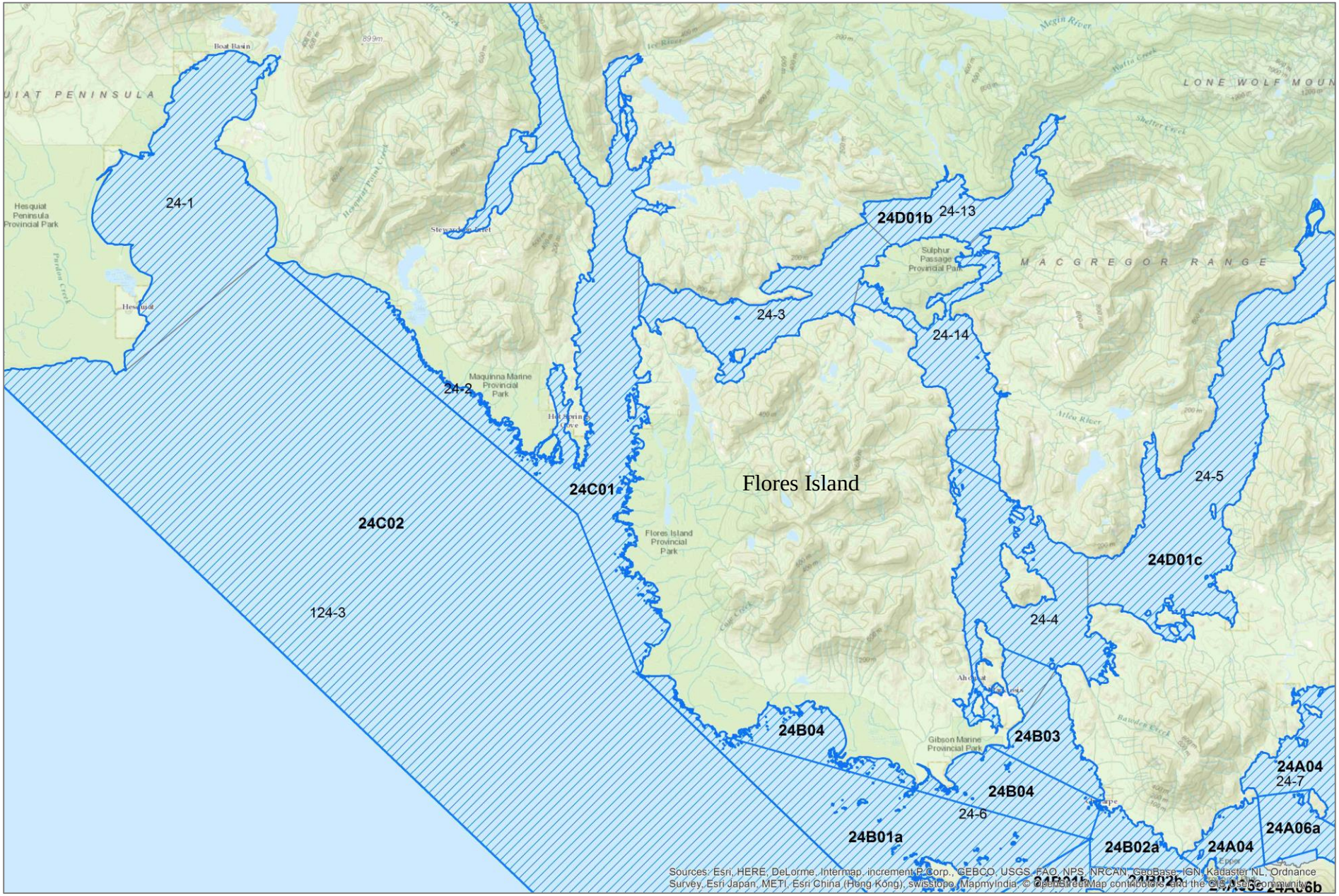

20-2
Port Renfrew
SAN JUAN RIDGE
1100m
Loss Creek
Jordan River
JORDAN RIDGE
SOOKE HILLS
SOOKE HILLS
Juan De Fuca Provincial Park
20-3
Jordan River
20-4
Shirley
Sooke
Saseenos
20-7
20-6
East Sooke
Albert Head
Metchosin
20A
20-5
Spectacle Lake Provincial Park
19-8
19-9
Brentwood Bay
Central Saanich
19-5
19-10
Sowlland-Tod Provincial Park
19-11
Mount
Highlands
19-12
VANCOUVER ISLAND
ÎLE DE VANCOUVER
Saanich
Goldstream Provincial Park
Langford
View Royal
19-2
Colwood
Esquimalt
19-1
Sooke Mountain Provincial Park
19-3
Sekiu
Clallam Bay
Clallam River
South Fork Pysht River
Pysht River
Port Angeles
Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

GMA: 20A



GMAs: 23A01, 23A02, 23B, 23C, 23D01, 23D02, 23E01 and 23E02.

GMAs: 24A02a, 24A02b, 24A03, 24A04, 24A05, 24A06a, 24A06b, 24A0c, 24A06d, 24B02a, 24B02b, 24D01a, 24D02, 24D03



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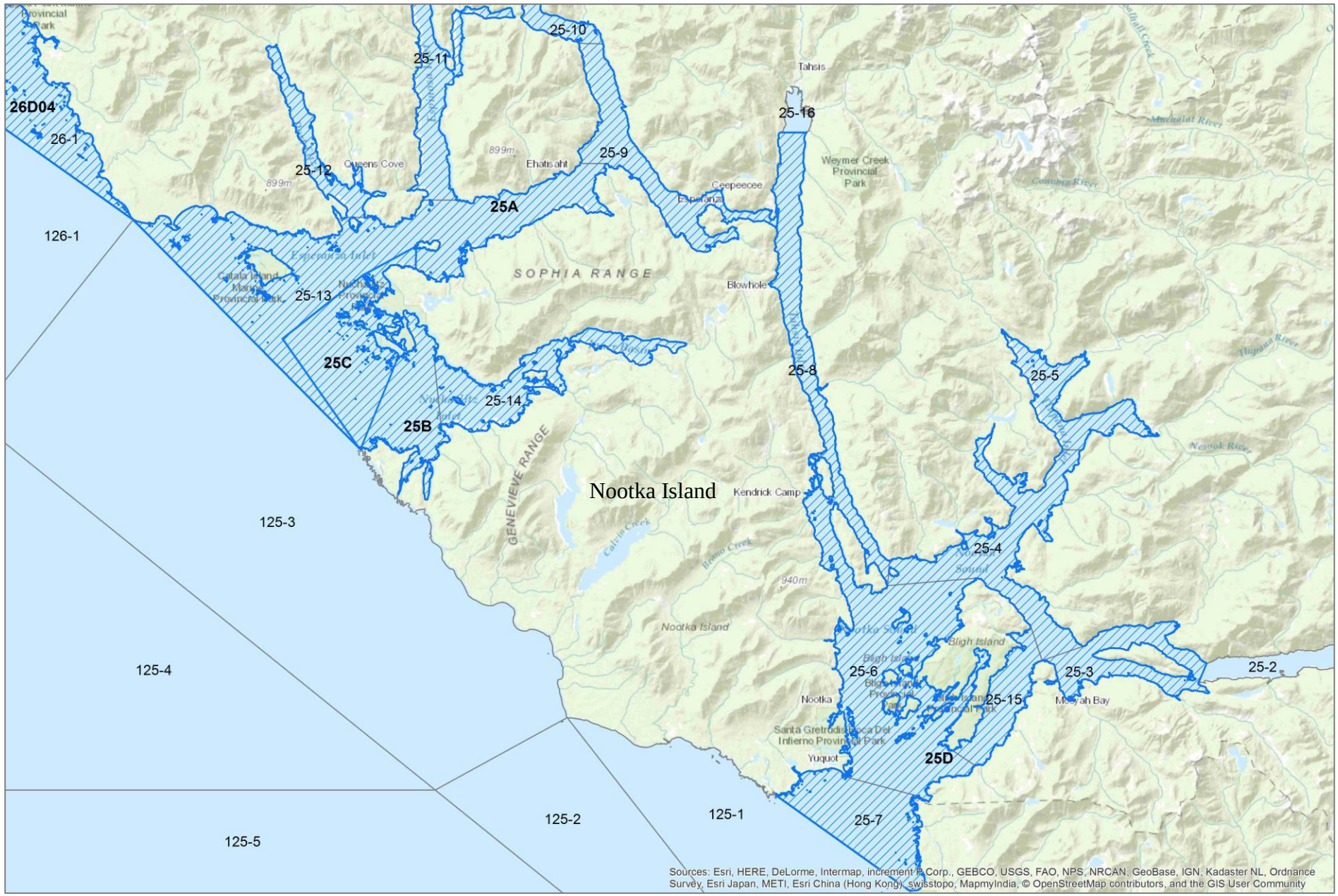

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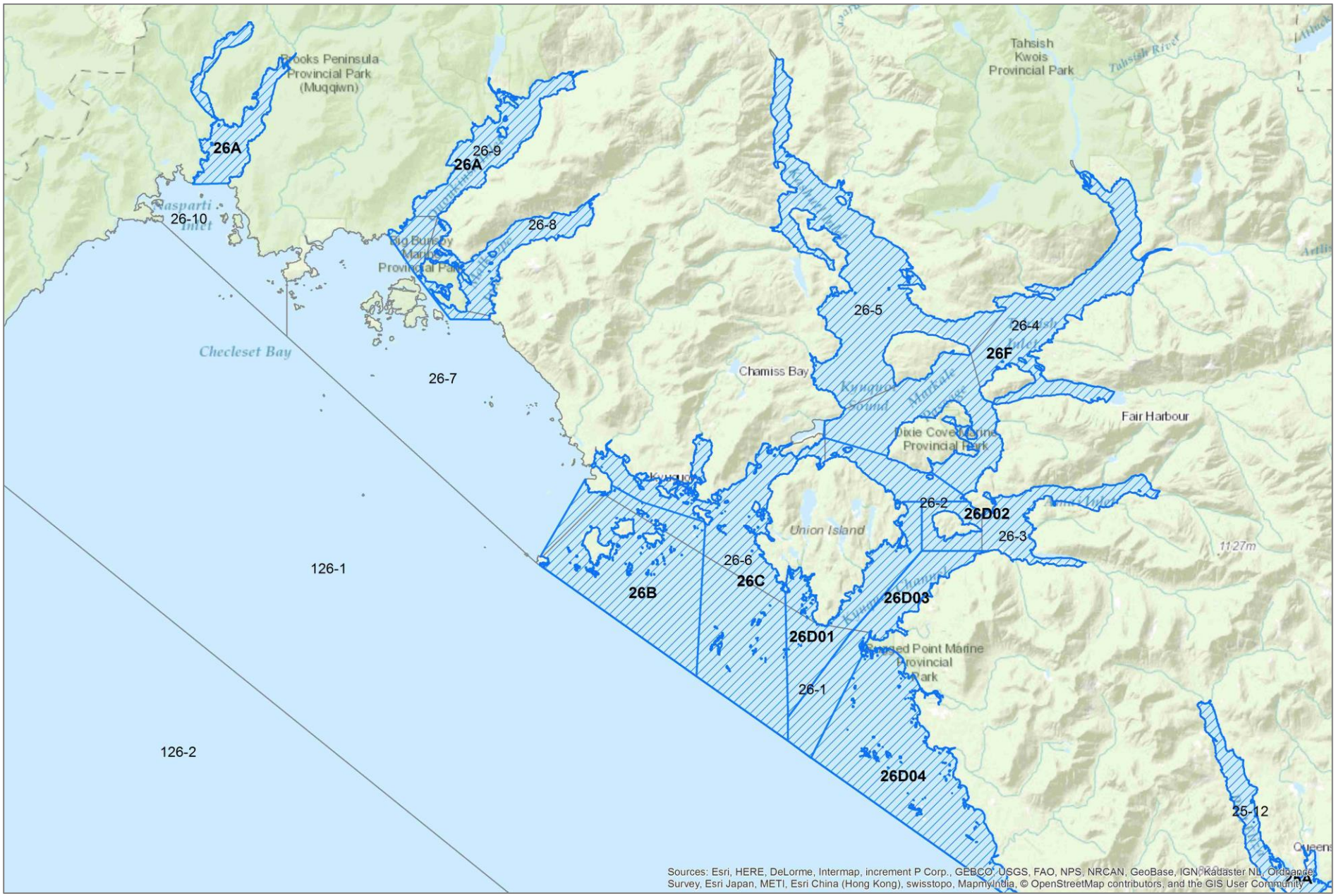

GMAs:, 26A, 26B, 26C, 26D01, 26D02, 26D03, 26D04 and 26F

APPENDIX 13: MAPS OF 2022/23 GEODUCK MANAGEMENT AREAS – NORTH COAST

Harvesters are reminded that these maps and the area descriptions in Appendix 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*.

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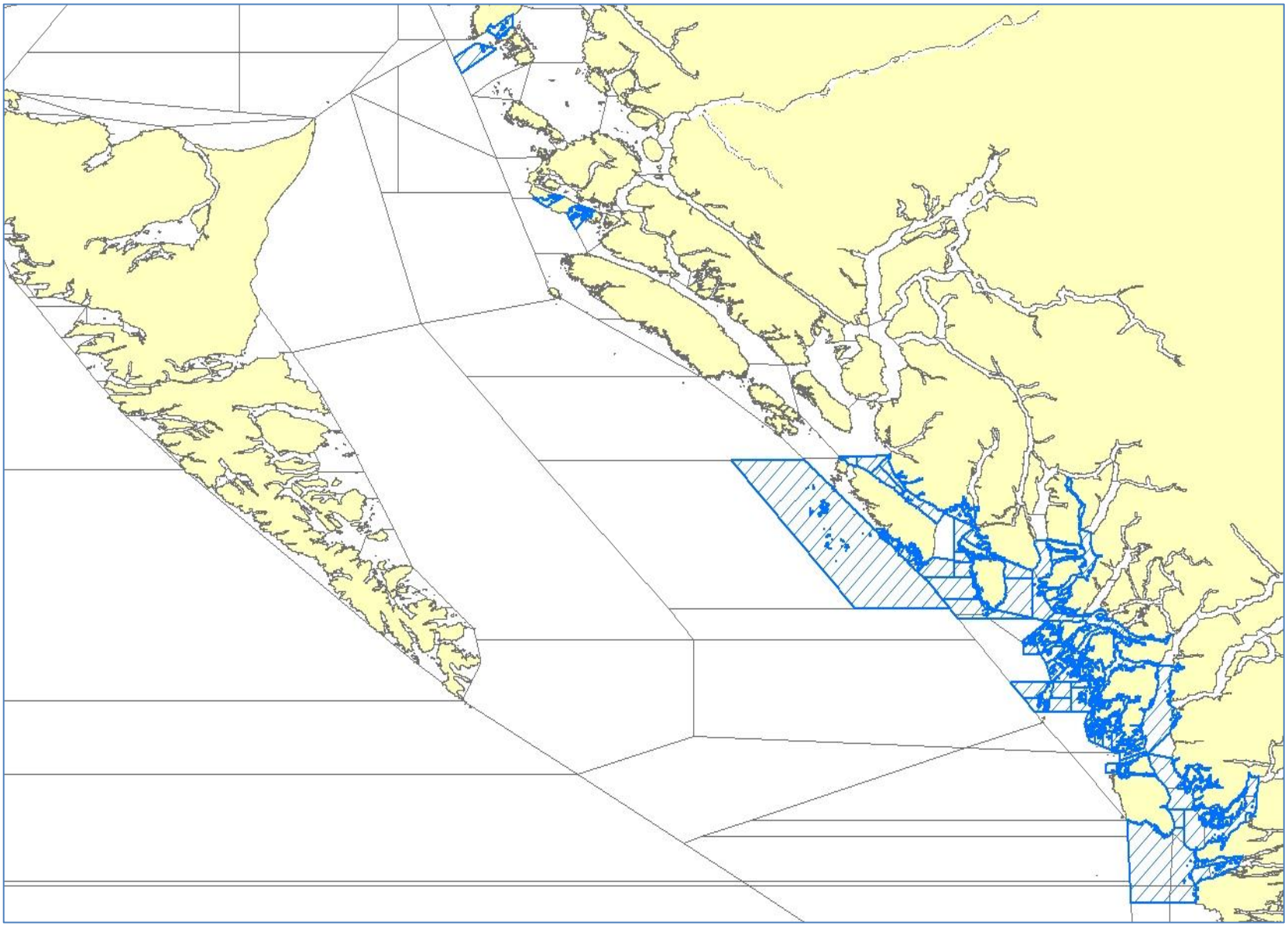
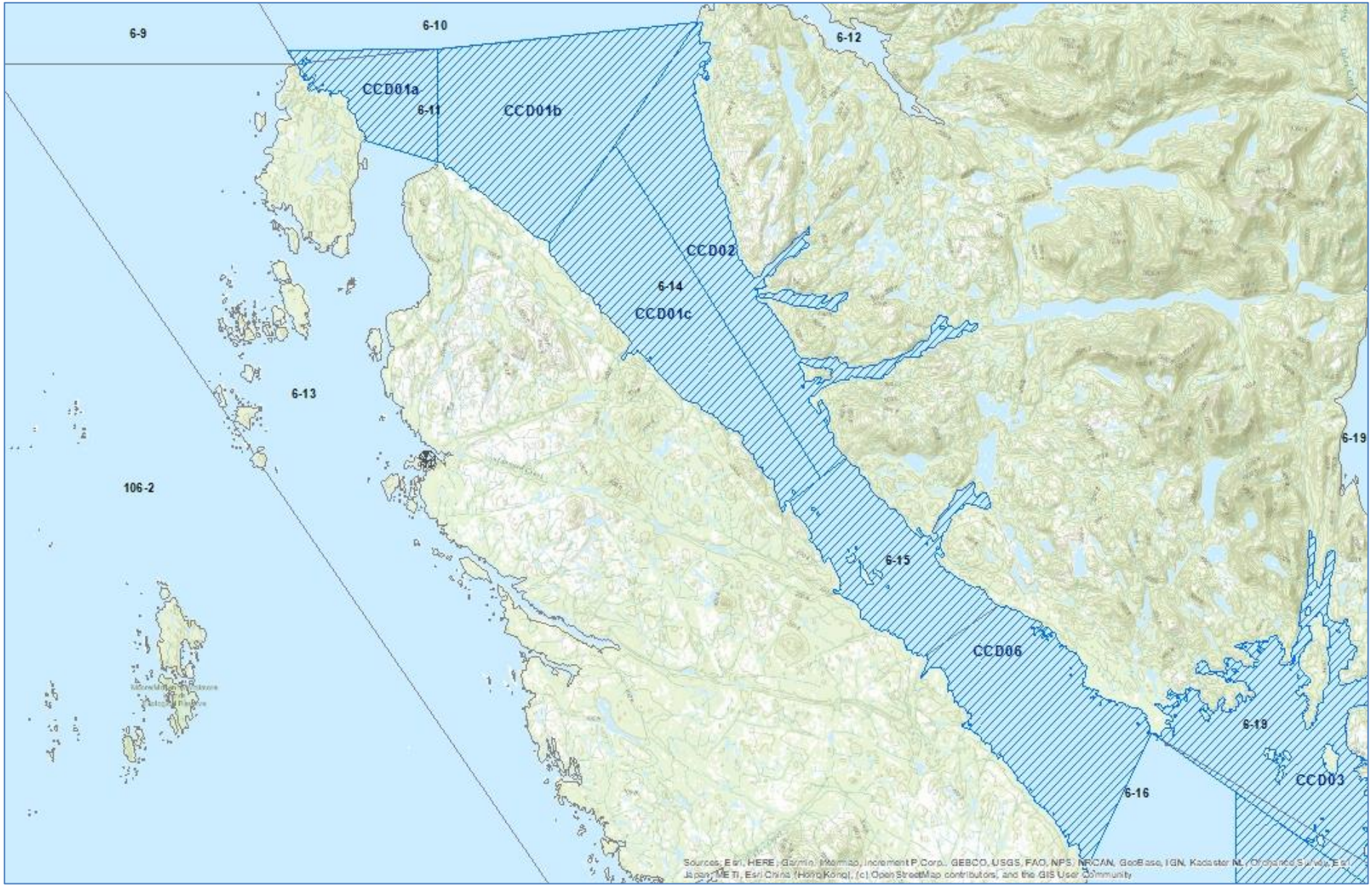


British Columbia North Coast Quota Region



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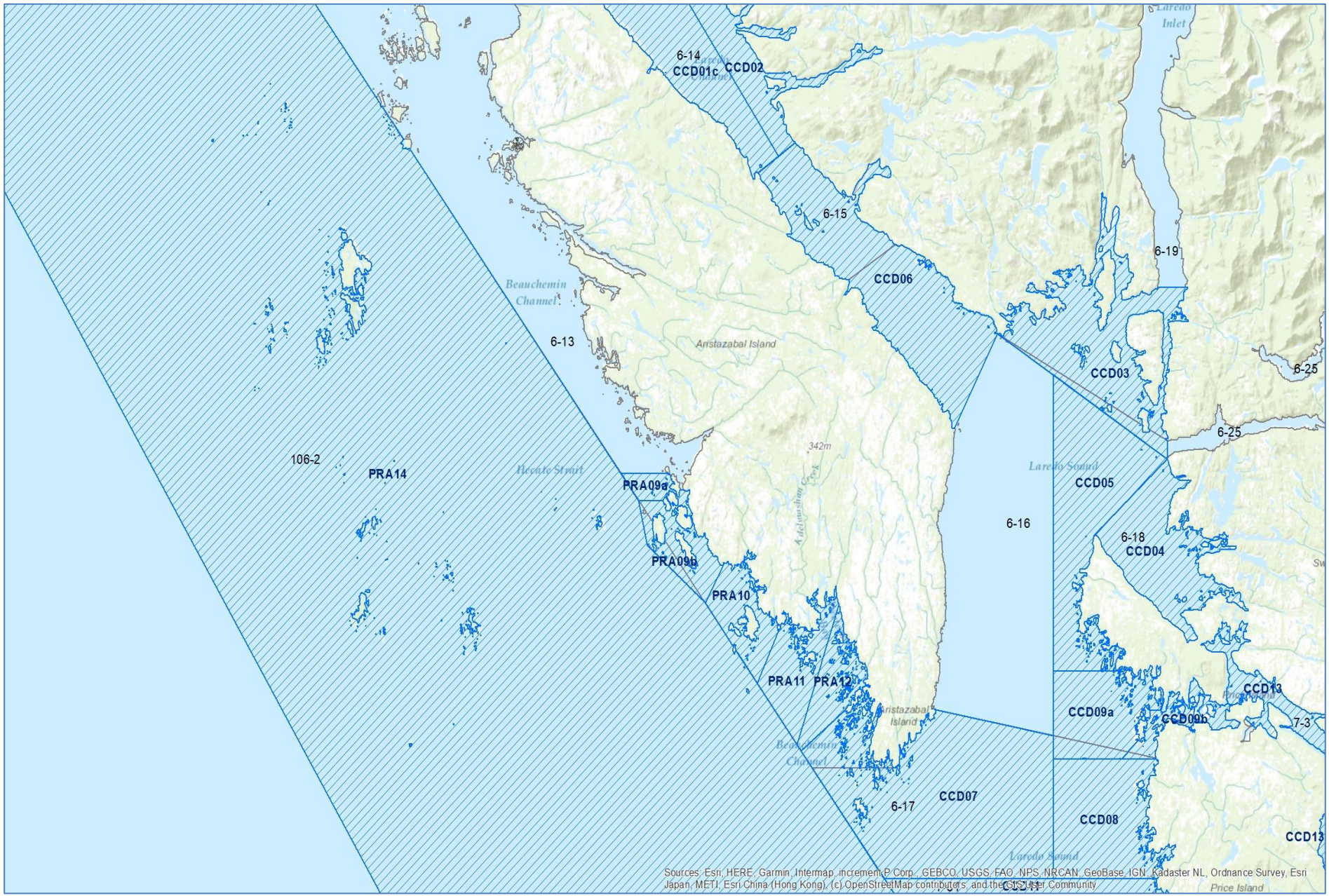
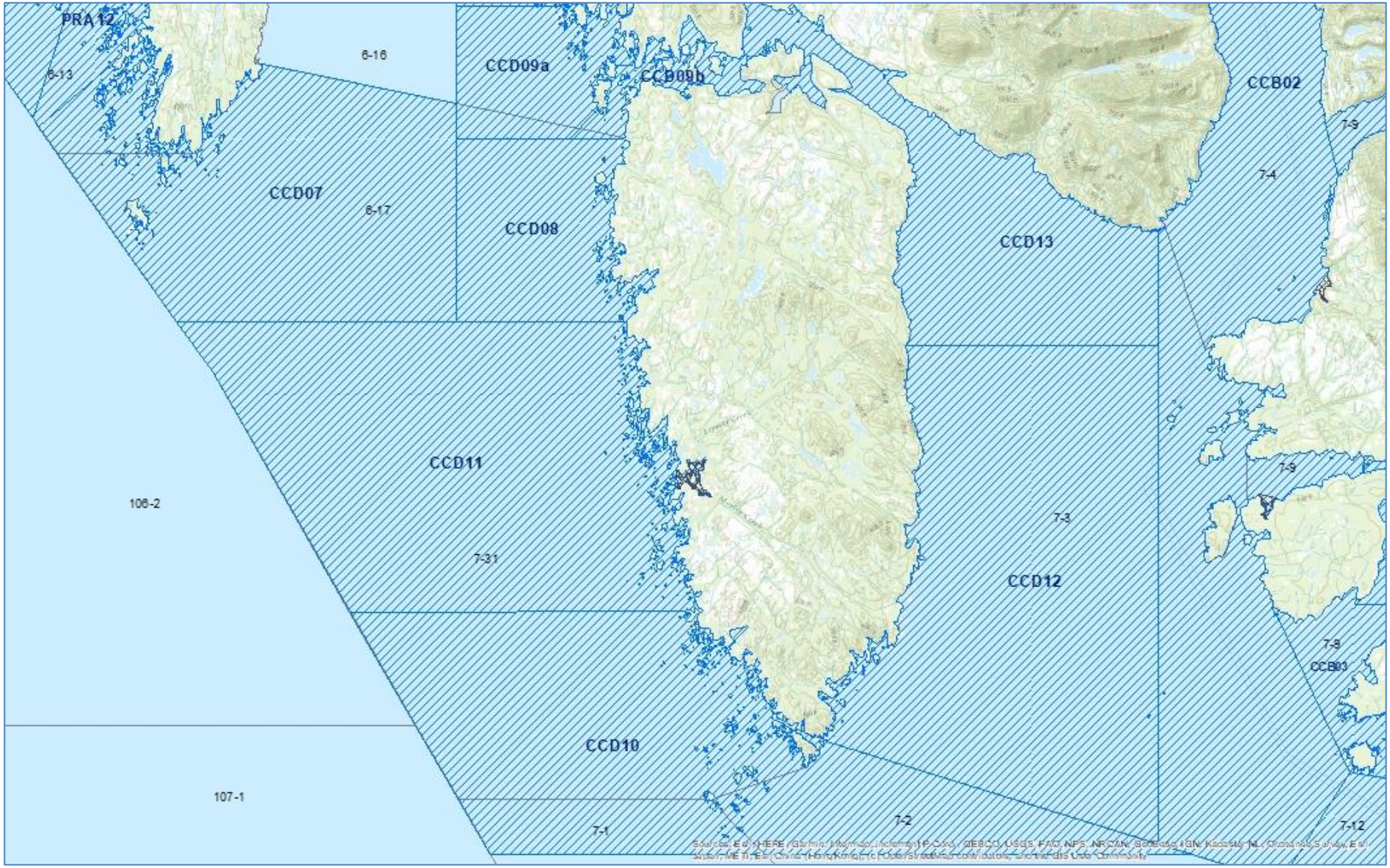


GMAs:CCD03 to CCD09b and PRA09a to PRA12



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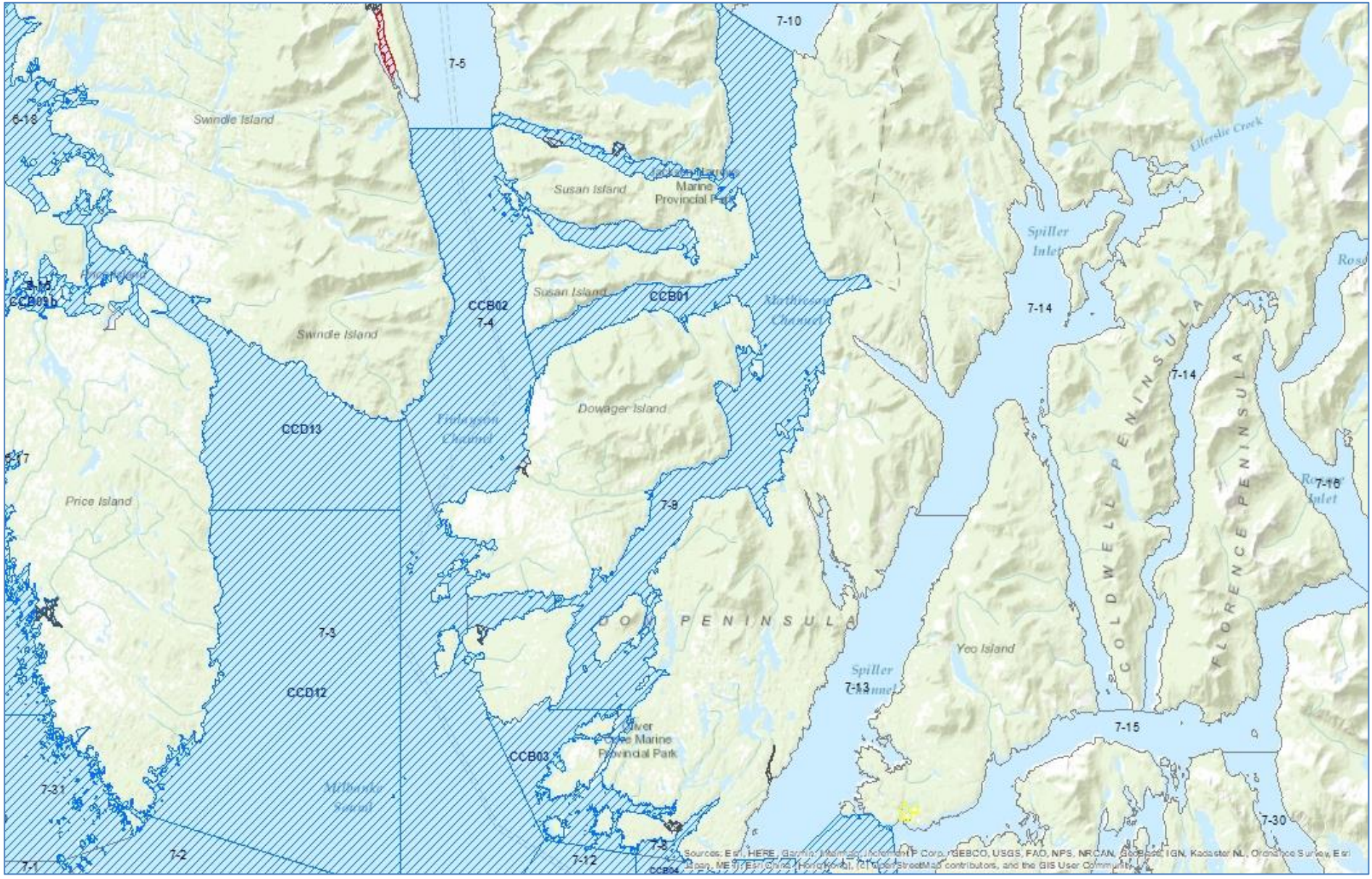
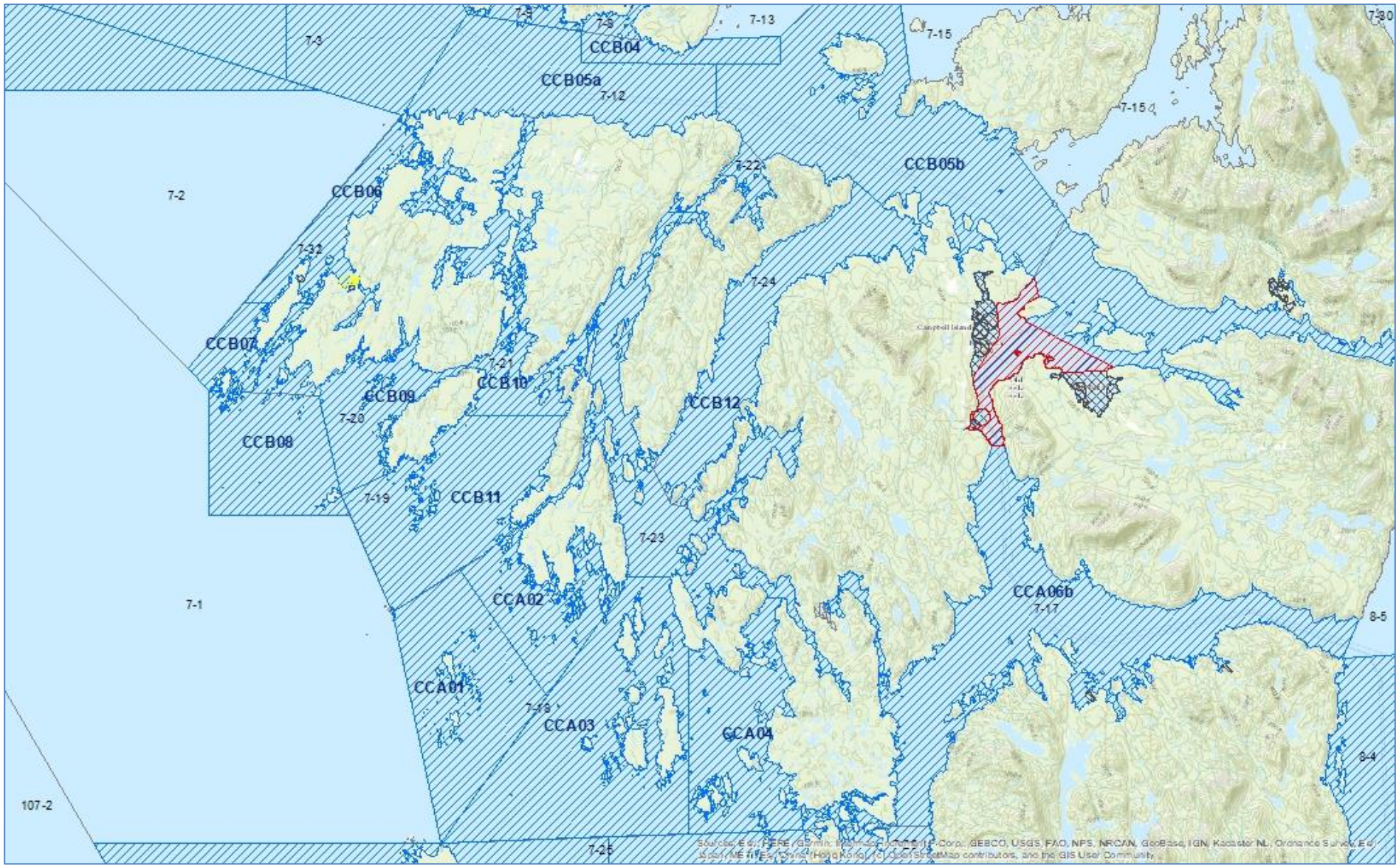


GMAs: CCD12, CCD13, CCB01 and CCB02



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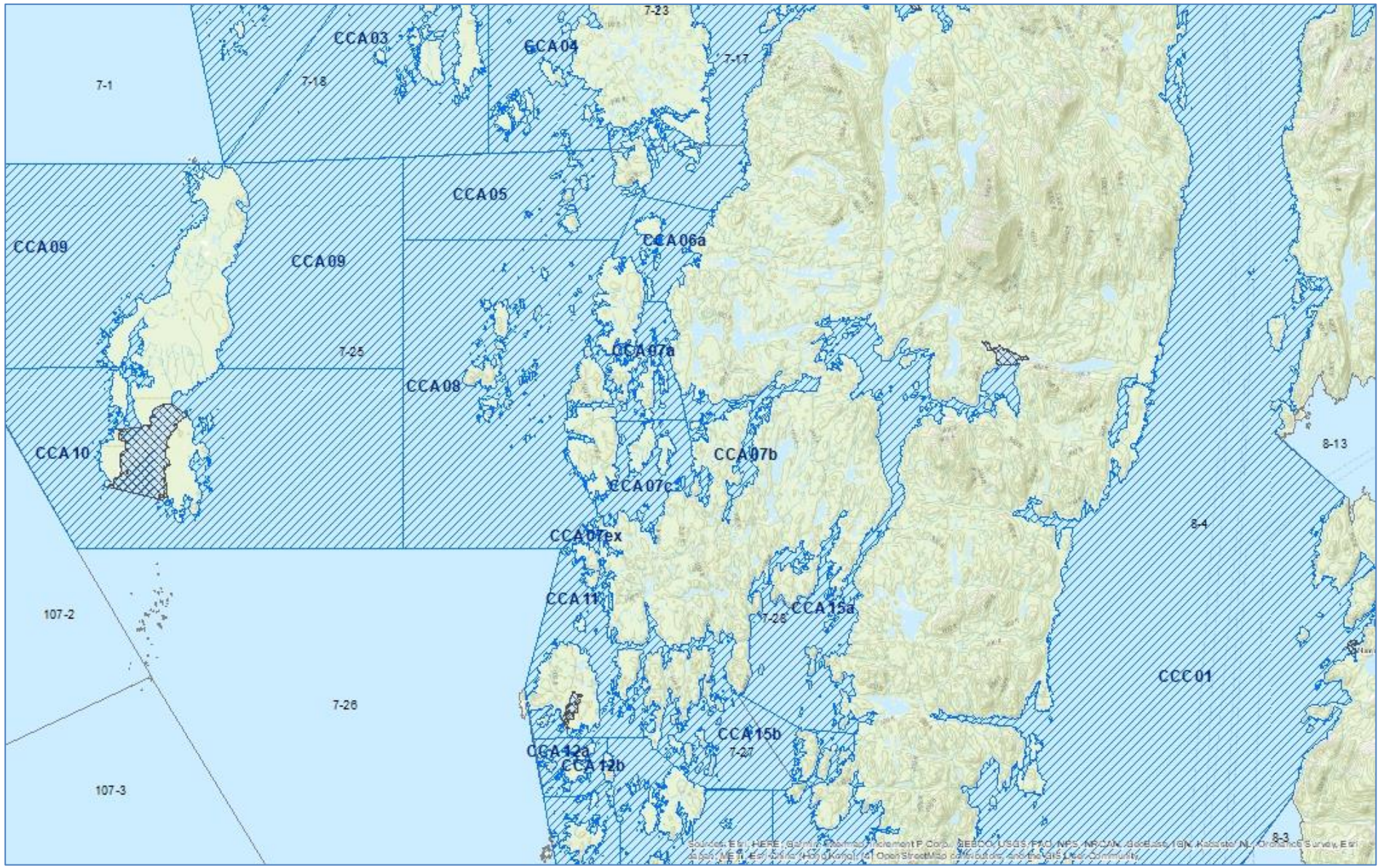

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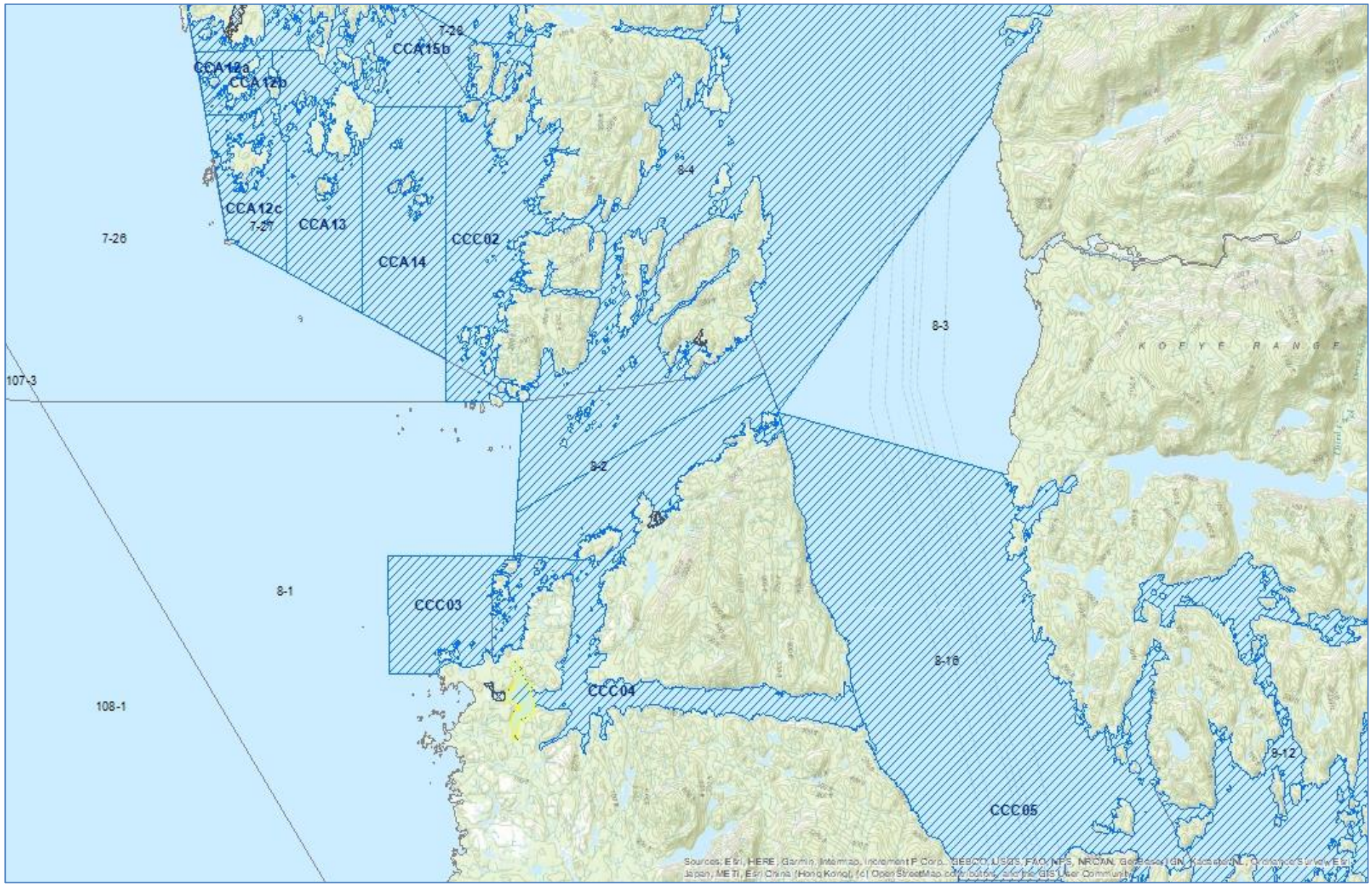

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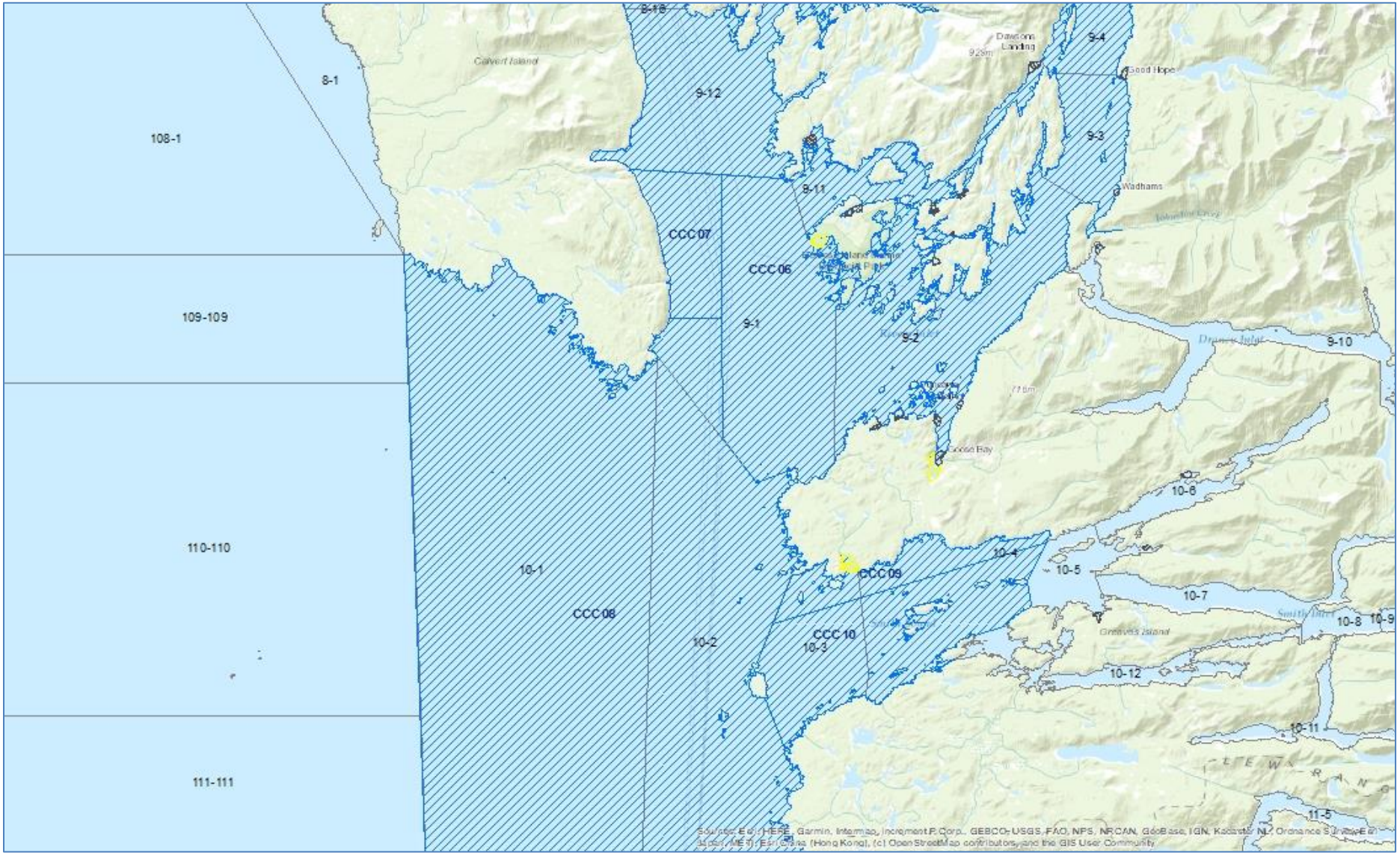

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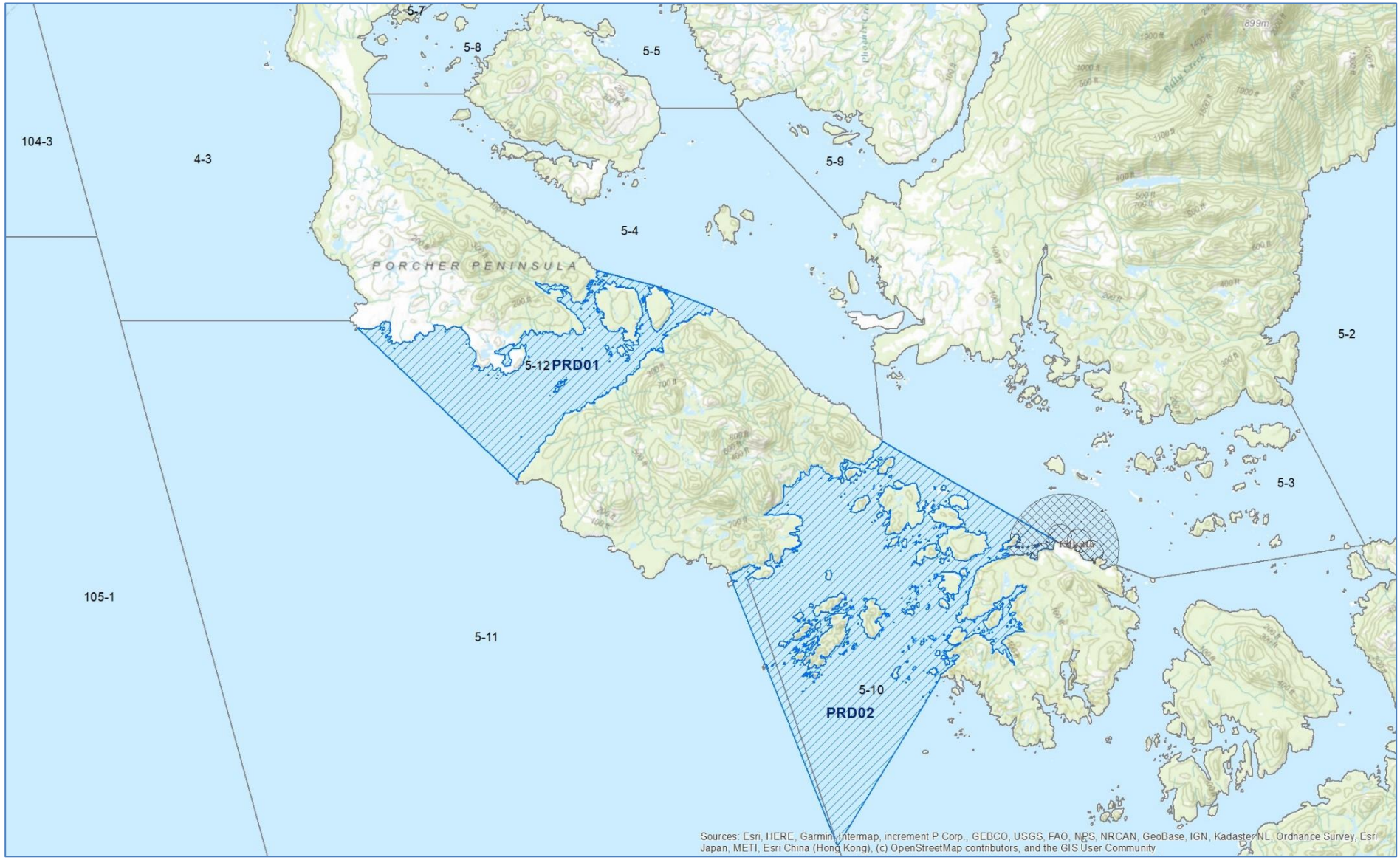
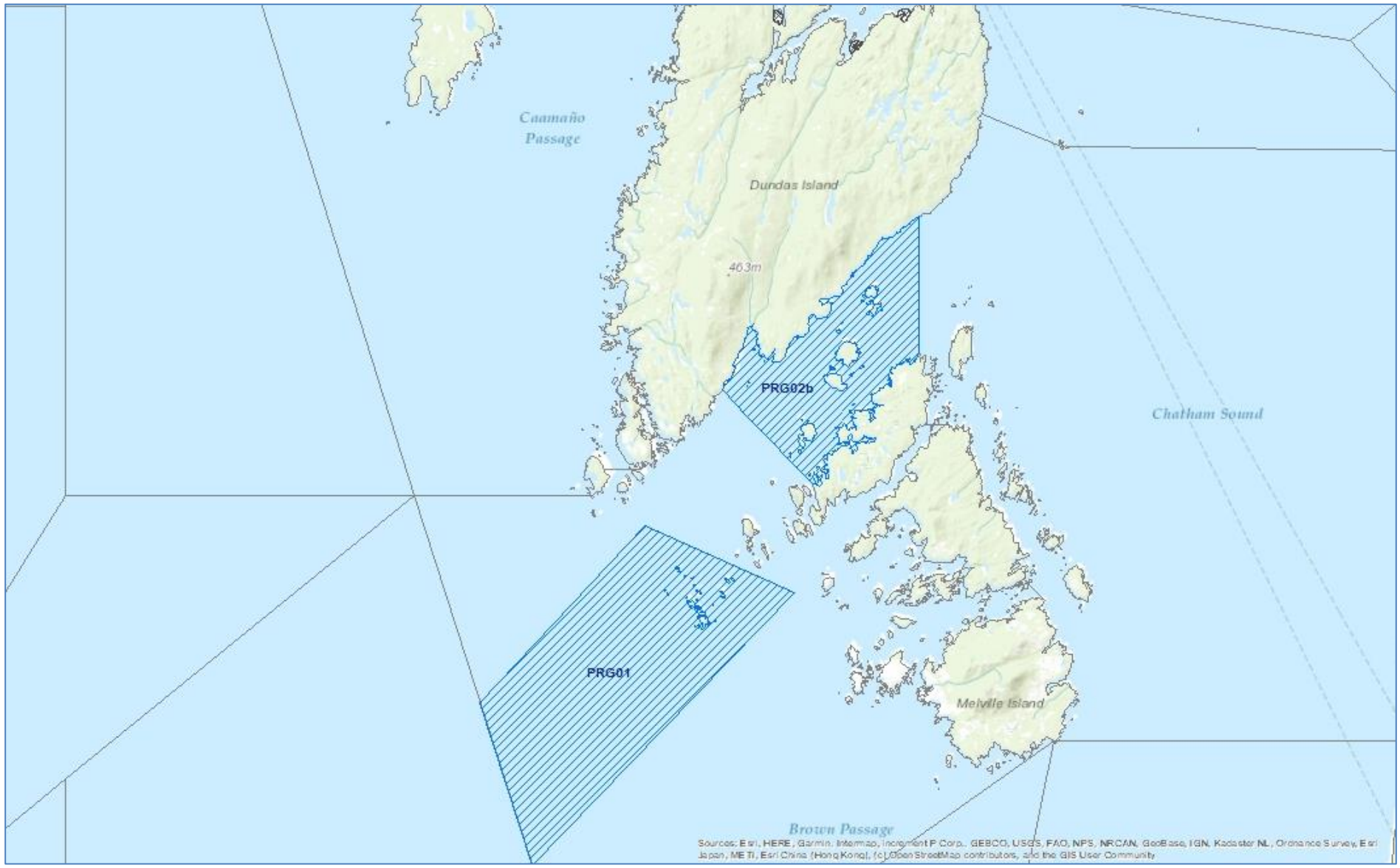


GMAs: PRD01 and PRD02



GMAs: PRG01, PRG02b

APPENDIX 14: EXAMPLE OF CONDITIONS OF GEODUCK & HORSECLAM LICENCE

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

CONDITIONS OF [YEAR] GEODUCK & HORSE CLAM LICENCE

Licence Period: May 1, [Year] to April 15, [Year + 1]

Authority

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

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

Also, it is the responsibility of individual 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 Geoduck and Horse Clam fishery obtain a copy of the current Geoduck and Horse Clam Integrated Fisheries Management Plan. The Management Plan is intended for general information purposes only. Where there is a discrepancy between the Plan and the regulations or conditions, the regulations and conditions prevail.

PART 1

Application

This Part applies to fishing for Geoduck and Horse Clam.

Definitions

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

"container" means a mesh harvest bag, mesh transport bag, plastic tote, cage or other container used for the gathering, handling or transportation of Geoduck or Horse Clam.

"Department (DFO)" means the Department of Fisheries and Oceans.

"discarding" means not placing harvested Geoduck or Horse Clam in a container or removing a Geoduck or Horse Clam from a container and not validating that Geoduck or Horse Clam.

"harvesting" means removing or dislodging, by any means, Geoduck or Horse Clam of any size from the substrate of the ocean floor.

"landed" or "landing" means the transfer of Geoduck or Horse Clam from a vessel in the water to land.

"log" means the Geoduck and Horse Clam Validation & Harvest Log (see section 8 and explanatory note after section 12) or an alternative log approved by the Department of Fisheries and Oceans.

"observer" means a person who has been designated as an observer by the Regional Director General for Pacific Region pursuant to section 39 of the *Fishery (General) Regulations* and in the employ of a service provider company that has been certified by the Canadian General Standards Board (CGSB) for Dockside Monitoring.

"On-Grounds Monitor" means an individual, who may or may not be designated as an observer, whose role is to take biosamples, co-ordinate sampling for the Marine Biotoxin Monitoring Program, communicate with dockside observers, write Incident Reports, advise operators of open and close times and fishing locations, monitor effort, manage fishing activity to avoid excessive harvesting in specific Geoduck and Horse Clam beds, observe product transfers to packer vessels, check dive harvest information, and record other observations about the prosecution of the Geoduck and Horse Clam fishery, and about sea otter impacts.

"tranship" means the transfer of Geoduck or Horse Clam from a vessel to another vessel.

"validated" means Geoduck or Horse Clam that have been weighed by an observer and the weight entered into the Geoduck and Horse Clam Validation & Harvest Log (see section 8 and explanatory note after section 12) or an alternative log approved by the Department of Fisheries and Oceans.

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

"wasting" means discarding, failing to gather harvested Geoduck or Horse Clam, or failing to validate harvested Geoduck or Horse Clam suitable for human consumption.

1. SPECIES OF FISH PERMITTED TO BE TAKEN:

Geoduck (Panopea generosa) and Horse Clam (Tresus spp.)

2. QUANTITIES PERMITTED TO BE TAKEN:

The licensed vessel is permitted to catch and retain a maximum of [quota] lbs. of Geoduck.

3. WATERS IN WHICH FISHING IS PERMITTED:

(1) Geoduck Quota Area as set out in the current licence amendment.

(2) All harvesting of Geoduck and Horse Clam shall be conducted from the seabed in waters at least 10 feet (3 m) below chart datum (i.e. deeper than 10 feet (3 m) at the lowest low tide).

(3) Harvesting of Geoduck and Horse Clam is not permitted in eel grass beds.

4. FISHING GEAR PERMITTED TO BE USED:

(1) All harvesting of Geoduck and Horse Clam shall be conducted using hand-held, manually operated water nozzles guided and controlled underwater by a diver.

(2) Each water nozzle shall have a maximum inside diameter of 5/8 inch (1.59 cm).

(3) All Geoduck and Horse Clam or portions of Geoduck and Horse Clam which have been removed or dislodged from the substrate of the ocean floor are considered to have been harvested and shall be landed and validated. (See section 8) The following steps shall be taken when harvesting Geoduck and Horse Clam:

a) all Geoduck and Horse Clam and portions of Geoduck and Horse Clam which have been harvested shall be immediately placed in a container;

b) Geoduck and Horse Clam shall remain in the container while taken to the surface and loaded onto the catcher boat;

c) on the catcher boat, Geoduck and Horse Clam may be removed from the first container and immediately placed in another container;

d) Geoduck and Horse Clam shall remain in the second container until landed and validated; and

e) no harvested Geoduck or Horse Clam may be discarded or wasted.

5. THE TYPE AND SIZE OF CONTAINERS TO HOLD OR TRANSPORT GEODUCK OR HORSE CLAM AND THE MARKING OF SUCH CONTAINERS:

(1) All Geoduck or Horse Clam shall be packed in containers with a maximum weight (while empty) of 5 lb (2.3 kg) each. The containers shall be clean and fabricated from approved material.

(2) All Geoduck or Horse Clam delivered to designated landing ports or transhipped to another vessel shall be in containers which are tagged. The tags shall be waterproof and provide the following information written in water resistant ink:

a) vessel name and Vessel Registration Number (VRN);

b) Geoduck licence number (G Tab);

c) harvest date;

d) Geoduck Management Area (GMA), e.g. 24D01c;

e) Area and Subarea, e.g. 24-4;

f) location of catch (bed code(s) where possible), e.g. 24-4-1(1); and

g) common name of the product, i.e. Geoduck Clam or Horse Clam

An example of a tag is illustrated in the current Geoduck and Horse Clam Integrated Fisheries Management Plan.

6. TRANSHIPMENT:

Geoduck or Horse Clam 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 Geoduck or Horse Clam are in containers and the containers are tagged as per section 5;

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

(3) the "packer weight" (determined by subtracting the weight of the containers from the weight of the product) is recorded in the log;

(4) a copy of the log accompanies the product to the designated port; and

(5) the product is landed at a designated port and validated by an observer.

7. SALE

All Geoduck and Horse Clam harvested under this licence shall be sold only to persons holding a Federal licence to process bivalve shellfish in British Columbia or persons holding a Fish Receiver's Licence issued pursuant to the *Fish and* Seafood *Act* (B.C.).

8. LOCATIONS PERMITTED FOR THE LANDING OF GEODUCK AND HORSE CLAM:

Geoduck and Horse Clam shall be landed at one of the following ports:

(1) For fisheries off the east coast of Vancouver Island:

a) Port Hardy, Port McNeill, Campbell River, Heriot Bay, Lund, Westview, Comox, Deep Bay, French Creek, Nanaimo, Ladysmith, Chemainus, Cowichan Bay and Sidney.

b) Madeira Park may be used as a landing port if prior arrangements have been made with the service provider to ensure that an observer and scale are available.

(2) For fisheries off the west coast of Vancouver Island: Sooke, Port Alberni, Ucluelet, Tofino, Gold River, Zeballos, Fair Harbour, Winter Harbour, Coal Harbour.

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

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 catch.

9. VALIDATION:

(see explanatory note after section 12)

(1) Subject to subsection 8(4), all Geoduck and Horse Clam harvested or removed from the seabed floor under the authority of this licence shall be validated at the point and time of landing.

(2) Prior to validation of Geoduck and Horse Clam no person shall:

a) smash the shells or slit the membranes of Geoduck or Horse Clam to drain the waters; or

b) dump, throw overboard, or otherwise discard Geoduck or Horse Clam which have been harvested and retained in accordance with the Fisheries Act and the regulations made thereunder.

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

(4) If the requirement to weigh Geoduck and Horse Clam at the point of landing cannot be met because weigh scales are not available, of the vessel master the licensed vessel or, if the catch is transhipped to another vessel the vessel master of that vessel, shall have an observer enter the total number of containers in the log.

(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 the observer with a hard copy of the log prior to each validation.

(6) 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.

10. ORAL REPORTS:

(1) The vessel master shall, under the circumstances set out in subsection 9(2), report the information set out therein by notifying in person an observer or by telephoning (250) 383-4535. Where feasible, at least 24 hour notice will be given.

(2) Before a fishing trip, upon cancellation of a fishing trip, after fishing, and prior to delivering Geoducks and Horse Clams:

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

b) Area, Subarea(s) and Geoduck Management Area(s);

c) date and time of arrival on, or departure from, the fishing location; and

d) date and time of landing, landing port and location at the port.

11. HARVEST LOGS AND CHART RECORDS:

(See explanatory note after section 12)

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

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

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

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

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

(6) The vessel master shall enter latitude and longitude co-ordinates for each dive in the log.

(7) For Geoduck and Horse Clam harvested from Areas 12 to 19 and 29, the vessel master shall provide a chart record of the locations fished to the Department.

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

The validation I.D. number is the unique page number assigned to each validation page of the Geoduck and Horse Clam Validation & Harvest Log. If an alternative log is used, the validation I.D. number is the unique page number provided by the Shellfish Data Unit when the licence holder contacts the Unit to obtain the information necessary to fulfil the log requirements. (see explanatory note after section 12).

b) Each harvest site shall be clearly marked on the chart with a dive site reference or dive number, validation I.D. number and the dates that fishing activity occurred at each site. The dive numbers on the chart record shall 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.

(8) The completed log pages (original copy), electronic copy of the log and, for Geoduck and Horse Clam harvested in Areas 12 to 19 and 29, the chart record of locations fished, shall be forwarded within 28 days following the end of each month in which fishing occurred to:

Department of Fisheries and Oceans
Shellfish Data Unit
Pacific Biological Station
3190 Hammond Bay Road
Nanaimo, BC V9T 6N7
Tel: (250) 756-7022
Email: PACSDU@dfo-mpo.gc.ca

(9) In the event that a licence holder does not fish during the current fishing season, the licence holder shall submit a nil report. The nil report shall include one page from the harvest logbook identifying the vessel, licence number and the year with 'nil' entered in the body of the log; the licence holder shall sign the nil report.

12. FISH SLIPS:

(1) An accurate written report shall be furnished on a fish slip of all fish and shellfish caught and retained under the authority of this licence.

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

(3) The report shall be mailed not later than seven days after landing. Slips shall be mailed to:

Department of Fisheries and Oceans

Fisheries Management Data Unit
Suite 200 – 401 Burrard Street
Vancouver, BC V6C 3S4

Fish slip books may be purchased directly from the printer, Proforma Business Forms, phone (604) 596-6133. Alternately fish slips can be downloaded free of charge, from the DFO website. For more information, see the website http://www.pac.dfo-mpo.gc.ca/stats/fishslips-carnets/index-eng.html, or phone the FM Data Unit message line at (604)666-2716.

(4) This report shall be made within seven (7) days of the offloading regardless of whether or not the catch has been sold within that period.

13. WORKSAFEBC (WORKERS' COMPENSATION BOARD) REQUIREMENTS:

All Geoduck and Horse Clam divers shall be in possession of a WorkSafeBC (previously Workers' Compensation Board of BC) Seafood Harvesting Diving Certificate.

Explanatory note *- harvest log, fishing location information and validation: the Geoduck and Horse Clam Validation & Harvest Log issued by the Underwater Harvesters' Association is approved for both form and content by the Shellfish Data Unit. A service provider contracted by the Underwater Harvesters' Association will provide, for a fee, the logbook and coding, keypunch, bonded chart coding, mapping and validation services.*

APPENDIX 15: CONTACTS

Observe, Record and Report (Enforcement Line)		**(800) 465-4336**
Fisheries Information and Shellfish Contamination Closure Update (24 Hours)		(866) 431-3474
	(Greater Vancouver)	(604) 666-2828
Invertebrate Internet Page	www.pac.dfo-mpo.gc.ca/ops/fm/shellfish/index.htm	

Fisheries Management

Regional Resource Manager - Invertebrates	Lisa Mijacika	(604) 666-3869
Lead Geoduck Resource Manager	Erin Wylie	(250) 756-7271
Regional Recreational Fisheries Co-ordinator	Greg Hornby	(250) 286-5886
Resource Manager – Canadian Shellfish Sanitation Coordinator	Erin Milligan	(250) 756-7192
North Coast Area, Areas 1 to 10 417 2nd Avenue West Prince Rupert, BC V8J 1G8	General Inquiries	(250) 627-3499
Resource Management Biologist	Pauline Ridings	(250) 756-7118
Resource Manager - First Nations Fisheries	Melanie Anthony	DFO.NCAP-PACN.MPO@dfo-mpo.gc.ca
South Coast Area, Areas 11 to 26 3225 Stephenson Point Road Nanaimo, BC V9T 1K3	General Inquiries	(250) 756-7270
Resource Management Biologist (Lead Manager)	Erin Wylie	(250) 756-7271
Resource Manager – First Nations Fisheries (NEVI)	Kent Spencer	(250) 286-5885
Resource Manager – First Nations Fisheries (SEVI)	Gerry Kelly	(250) 756-7122
Resource Manager - First Nations Fisheries (WCVI)	Kevin Conley	(250) 756-7196
Lower Fraser Area, Areas 28 and 29 Unit 3, 100 Annacis Parkway Delta, BC V3M 6A2	General Inquiries	(604) 666-8266
A/Non-salmon Resource Manager	Hong Tjhie	(236) 330 3240

Conservation and Protection

Enforcement Plan	Michael Black	(250) 754-0309

Science Branch

Pacific Biological Station Hammond Bay Road Nanaimo, BC V9R 5K6		
Mollusc Program Head	Dominique Bureau	(250) 756-7114
Geoduck Biologist	Erin Porszt	(250) 618-1615

Program Head, Shellfish Data Unit		Rob Flemming	PACSDU@dfo-mpo.gc.ca

Fisheries Protection 1-866-845-6776

Aboriginal Negotiations Division (604) 666-0197

Aboriginal Programs Division (604) 666-6757
401 Burrard Street
Vancouver, BC V6C 3S4

Commercial Licensing

Pacific Fishery Licence Unit (604) 666-0566
200 - 401 Burrard Street
Vancouver, BC V6C 3S4

National On-line Licencing System (NOLS)

E-mail	SDC-CPS@dfo-mpo.gc.ca
Telephone	1-877-535-7307
Fax	613-990-1866
TTY	1-800-465-7735

Aquaculture

Shellfish Aquaculture Resource Manager Melinda Scott (250) 754-0399

Environment Canada

Growing Water Quality Classification and Surveys (604) 903-4475

Canadian Food Inspection Agency

Pacific Shellfish Desk (604) 666-3737

BC Ministry of Agriculture and Lands

Aquaculture Development (250) 387-9574

BC Ministry of Environment

Oceans and Marine Fisheries Division (250) 387-7183

WorkSafe BC

Occupational Safety Officer	Courtenay	Mark Lunny	(250) 334-8732
	Courtenay	Pat Olsen	(250) 334-8777
	Victoria	Jessie Kunce	(250) 881-3461
	Richmond	Bruce Logan	(604) 244-6477
	Terrace	Shane Neifer	(250) 615-6640

Focus Sector Manager for Fishing	Mark Peebles	(604) 279-7563 toll free 1-888-621-7233 (ext. 7563)

Underwater Harvesters Association **www.geoduck.org**

Grant Dovey, Executive Director	(250) 245-1037
Jamie Austin, President	(250) 752-7205
North Coast Area Committee	
Clint Ridgway, Chairperson	(250) 668-2414
John Palychuk, Coordinator	(250) 338-9690
Inside Waters Area Committee	
Darrell Thomas, Chairperson	(250) 208-6252
Steve Renshaw, Alternate Chair	(250) 592-5163
West Coast Vancouver Island Area Committee	
Les Tulloch, Chairperson	(604) 986-5170
Jesse Devine, Alternate Chair	(250) 213-5981

Geoduck Service Provider

Archipelago Marine Research Ltd. 525 Head Street Victoria, BC V9A 5S1	Jen Toole Fax	(250) 383-4535 (250) 383-0103

Sighting Networks

BC Cetacean and Sea Turtle Sighting Network (866) 472 9663
Email: sightings@ocean.org
On the internet at: www.wildwhales.org/
App: WhaleReport

Basking Shark Sighting Network 1 (877) 50 SHARK
Email: BaskingShark@dfo-mpo.gc.ca
On the internet at: www.pac.dfo-mpo.gc.ca/SharkSightings

DFO welcomes assistance in the reporting of any whale, leatherback sea turtle or basking shark entanglement or sighting. While there are many whale species found in Pacific Canadian waters, sightings of Basking Shark and Leatherback Sea Turtles are infrequent. The collection of sighting data is useful to scientists in determining population size and species distribution and aids in recovery efforts under the *Species at Risk Act*.

Marine Mammal Incident Reporting Hotline 1 800 465 4336 or VHF Channel 16

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

name and contact information, date and time of the incident, species, whether the animal is alive or dead, nature of injury, location latitude/longitude coordinates and landmarks, and whether any pictures or video were taken.

APPENDIX 16: FISHING VESSEL SAFETY

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1. OVERVIEW – FISHING VESSEL SAFETY

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

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

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

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

- Education and training programs
- Marine emergency duties training
- Fish Safe – Stability Education Program & 1 Day Stability Workshop
- Fish Safe – SVOP (Subsidized rate for BC commercial fishers provided)
- Fish Safe – *Safest Catch* program – **FREE** for BC commercial fishers
- Fish Safe *Safe At Sea* DVD Series – Fish Safe
- Fish Safe Stability Handbook – *Safe at Sea* and *Safest Catch* – DVD Series
- Fish Safe *Safest Catch* Log Book
- Fish Safe *Safety Quiz*
- First Aid training
- Radio Operators Course (Subsidized rate for BC commercial fishers provided)
- Fishing Masters Certificate training
- Small Vessel Operators Certificate training

Publications:

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

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

2. IMPORTANT PRIORITIES FOR VESSEL SAFETY

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

2.1. Fishing Vessel Stability

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

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

In 2017, Transport Canada Marine Safety (TC) issued Ship Safety Bulletin (SSB) No. 03/2017 announcing the coming into force of the *New Fishing Vessel Safety Regulations*. The initial regulations were published in the Canada Gazette Part II on July 13, 2016 and came into force on July 13, 2017. The bulletin includes important information on changes to requirements for Written Safety Procedures, Safety Equipment and Vessel Stability.

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

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

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

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

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

The TSB has investigated several fishing vessel accidents since 2005 and found a variety of factors that effected the vessel's stability were identified as contributing factors in vessels capsizing, such as with: M05W0110 - *Morning Sunrise*, M07M0088 - *Big Sisters*, M08W0189 - *Love and Anarchy*, M09L0074 – *Le Marsouin I*, M10M0014 - *Craig and Justin*, M12W0054 – *Jessie G*, M12W0062 - *Pacific Siren*, M14P0121 – *Five Star*, M15P0286 – *Caledonian*, M16A0140 – *C19496NB*, M17C0061 – *Emma Joan*,

*M*17P0052 – *Miss Cory*, M18P0073 – *Western Commander*,M18A0425 – *Charlene A* and M18A0454 – *Atlantic Sapphire.*

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

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

Fish Safe has developed a code of best practices for the food and bait/roe herring fisheries and the prawn fishery: These Best Practices are available on Fish Safe's website for convenient download here: https://www.fishsafebc.com/best-practices Please contact 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 – office: (604) 261261-9700 - Email: ryan@fishsafebc.com.

2.2. Emergency Drill Requirements

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

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

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

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

crew, and at periodic intervals to ensure that crewmembers are familiar with emergency procedures.

Between 2011 and 2015 the TSB investigated 17 fishing vessel accidents which resulted in 17 fatalities. The report's findings highlighted the lack of safety drills and safety procedures and practices. The *Safest Catch* program, delivered by Fish Safe and free to BC commercial fishers, includes comprehensive practice of drills such as abandon ship, man overboard and firefighting drills.

2.3. Cold Water Immersion

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

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

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

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

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

2.4. Other Issues

2.4.1. Weather

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

2.4.2. Emergency Radio Procedures, EPIRB's and AIS

Vessel owners and masters should ensure that all crew are able to activate the Search and Rescue (SAR) system early rather than later by contacting the Canadian Coast Guard (CCG). All fishing vessels greater than 20m in length must carry a Class A AIS, as well as a float free 406 MHz Emergency Position Indicating Radio Beacon (EPIRB). These beacons must be registered with the Canadian Beacon Registry. When activated, an EPIRB transmits a distress call that is picked up or relayed by satellites and transmitted via land earth stations to the Joint Rescue Co-ordination Centre (JRCC), which will task and co-ordinate rescue resources. The TSB notes that there have been several recent occurrences on board vessels not equipped with an EPIRB, and that were either unable or did not use any other means of emergency signaling distress (e.g. M14P0121, M14A0289, M15A0189, M16A0327, M18A0076, M18A0303, M18A0078, M18P0184, M19A0082, M19P0242, M20A0258, M20A0160, M21A0315) which resulted in 26 fatalities. The carriage of both AIS and EPIRB is strongly encouraged for all fishing vessels who do not fall under the mandatory threshold.

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

Since August 1, 2003 all commercial vessels greater than 8 metres in length are required to carry a Class D VHF Digital Selective Calling (DSC) radio. A registered DSC VHF radio has the capability to alert other DSC equipped vessels in your immediate area and MCTS that your vessel is in distress. Masters should be aware that they should register their DSC radios with Industry Canada to obtain a Marine Mobile Services Identity (MMSI) number or the automatic distress calling feature of the radio may not work. For further information see the Coast Guard website at: http://www.ccg-gcc.gc.ca/eng/CCG/Home or go directly to the Industry Canada web page: www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf01032.html

A DSC radio that is connected to a GPS unit will also automatically include your vessel's current position in the distress message. More detailed information on DSC can be found

here: TC DSC Safety Bulletin. Questions regarding Coast Guard DSC capabilities can be obtained by contacting your local MCTS centre (Prince Rupert MCTS (250)627-3070 or Victoria MCTS (250)363-6333).

2.4.3. Collision Regulations

Fish harvesters must be knowledgeable of the *Collision Regulations* and the responsibilities between vessels where risk of collision exists. Navigation lights must be kept in good working order and must be displayed from sunset to sunrise and during all times of restricted visibility. To help reduce the potential for collision or close quarters situations which may also result in the loss of fishing gear, fish harvesters are encouraged to monitor the appropriate local Vessel Traffic Services (VTS) VHF channel when travelling or fishing near shipping lanes or other areas frequented by large commercial vessels. Vessels required to participate in VTS include:

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

Exceptions include:

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

More detailed information on VTS can be obtained by calling either Prince Rupert MCTS (250)627-3070 or Victoria MCTS (250)363-6333 or from the Coast Guard website: https://www.ccg-gcc.gc.ca/publications/mcts-sctm/ramn-arnm/part3-eng.html

2.4.4. Buddy System

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

3. WORKSAFEBC

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

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

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

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

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

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

For further information, contact an Occupational Safety Officer:

Bruce Logan	Vancouver/ Richmond/Delta	(604) 244-6477
Mark Lunny	Courtenay	(250) 334-8732
Cody King	Courtenay	(250) 334-8733

Gregory Matthews	Courtenay	(250) 334-8734
Paul Matthews	Courtenay	(250) 334-8741
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, Manager, OHS Consultation and Education Services, at (604) 233-4062 or by email: tom.pawlowski@worksafebc.com or Tim Pryde, OHS Consultant at (604) 802-2954 or by email: tim.pryde@worksafebc.com.

4. FISH SAFE BC

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

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

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

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

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5. TRANSPORTATION SAFETY BOARD

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

In 2014 the TSB pacific region released three investigation reports:

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

In 2016 the TSB pacific region released one investigation report:

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

In 2018 the TSB pacific region released two investigation reports:

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

In 2020 the TSB pacific region is currently investigating the fatal accident involving the *Arctic Fox II* on August 11.

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

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

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

The other two recommendations address the most basic step that harvesters can take: wearing a personal flotation device. Here in British Columbia, roughly 70 percent of all fishing-related fatalities in the past decade came while not wearing a PFD. Yet many harvesters still do not wear them. TC regulations currently require that PFDs be worn only

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

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

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

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

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

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APPENDIX 17: CONSULTATION

GEODUCK SECTORAL COMMITTEE AND RESEARCH SUBCOMMITTEE

A consultative process exists for the Geoduck fishery and is a major part of the planning for the fishery. The primary consultative body for Geoduck is the Geoduck 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 Underwater Harvesters' Association (UHA) represent commercial fish harvesters on this committee.

The Sectoral Committee meets annually, typically in the fall 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.

Area Committees for each commercial licence area discuss the observations, opinions and desires of the area fish harvesters and the industry association (UHA) with respect to the harvest plan. All advice, where practical and useful, is considered. Often a Steering Committee is called, which consists of all three of the Area Committees together, to ensure there is consensus and coast-wide integration of quota considerations.

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

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