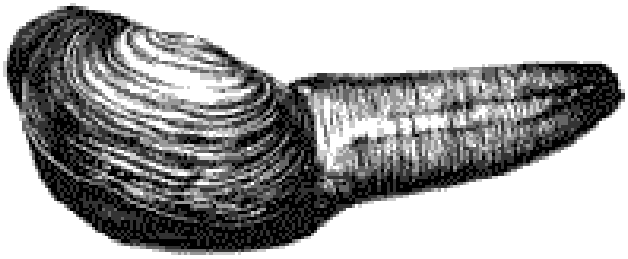
PACIFIC REGION

INTEGRATED FISHERIES MANAGEMENT PLAN

GEODUCK AND HORSE CLAM

JANUARY 1, 2016 TO FEBRUARY 28, 2017



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.

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.

Contents

1. OVERVIEW

1.1. Introduction

This Integrated Fisheries Management Plan (IFMP) for Geoduck and Horse Clam covers the period January 1, 2016 to February 28, 2017. The 14 month season is a one-time adjustment to facilitate changing the start date for upcoming seasons to March 1.

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 4 describes the most important current management issues. Section 5 describes the objectives to address issues identified in Section 4. Sections 6 and 7 describe the management procedures that will be employed during the year.

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, showing areas open, quotas, landings, number of participants, numbers of licences and vessels, values and reasons for management decisions, is contained in annual Post-Season Reviews that are available from the resource managers (see Contacts, Appendix 15). A Science Advisory Report for Geoduck is available from the CSAS Internet site at:

http://www.dfo-mpo.gc.ca/csas-sccs/Publications/SAR-AS/2011/2011_081-eng.html

Note that Appendices 3 to 5 detail the Aboriginal, 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 Salish language *g^{w}ideq* meaning ‘dig deep’. The commercial dive fishery for Geoducks (*Panopea generosa*) and Horse Clams (*Tresus capax* and *T. nuttallii*) in BC 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 will 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

Aboriginal harvest for food, social and ceremonial (FSC) purposes may occur coast-wide where authorized by a communal licence and open under the Canadian Shellfish Sanitation Program (CSSP), Appendix 6, section 3.1. There are an unknown number of Aboriginal harvesters for Geoduck and Horse Clam in the Pacific Region. The fishing effort by First Nations for FSC harvest is thought to be minimal, due to the general inaccessibility of these deep-water clams.

1.3.2. Recreational

A recreational fishery may occur coast-wide and where open under the CSSP, Appendix 6, section 3.1. 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:

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

The Tidal Waters licence includes access to numerous species, so the number of recreational harvesters taking advantage of the bag limit for Geoducks and Horse Clams 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, generally fished on approximately 40 vessels.

1.3.4. Aquaculture

There has been interest in Geoduck aquaculture in British Columbia 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 British Columbia.

Approximately 56 tenures are currently licenced under the Pacific Aquaculture Regulations (PAR) for Geoduck aquaculture. This totals approximately 774 hectares. This includes tenures licenced for intertidal, subtidal, deepwater suspended or any combination of the 3 types. The total number of tenures actively culturing Geoduck is unknown.

See Appendix 5 for more information.

1.3.5. Enhancement

The Underwater Harvesters Association (UHA) has been operating an experimental Geoduck enhancement program which began in 1995. This involves 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 BC did not renew the map reserve designation for the sites where enhancement work was occurring. Further 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

Aboriginal and recreational harvest may occur coast-wide, where appropriately licensed, and where the area is not closed as a result of sanitary or biotoxin contamination. The British Columbia coast north of Cape Caution (Pacific Fishery Management Areas 1 to 11 inclusive) is closed for the harvest of bivalves unless the appropriate testing is in place to ensure safe harvest. Several First Nations and some commercial interests have established the necessary sampling required for small-scale harvest openings. 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 3), and in-season changes to openings due to biotoxin contamination, the current commercial fishery occurs coast-wide 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 BC for aquaculture.

The Department is working with the Province of BC in planning and implementing a phased expansion of Geoduck aquaculture opportunities within the Strait of Georgia consistent with the mandates of both governments.

Currently approximately 56 existing aquaculture tenures have Geoduck on their licences. The number of these tenures actually engaged in Geoduck aquaculture is unknown at this time.

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.

Harvest is expected to occur on some sites in 2016/17. The harvests take place in small, marked locations and are monitored.

1.5. Fishery Characteristics

1.5.1. First Nations

First Nations harvest for food, social and ceremonial purposes may be open year-round, based on available sanitary and biotoxin contamination sampling and results, and is limited to the gear specified for bivalve harvest in the communal licence.

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.

1.5.3. Commercial

The commercial licence year will be from January 1, 2016 to February 28, 2017. The fishery may open and close during that timeframe based on sanitary and biotoxin contamination conditions and market demand. 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.

A pre-determined schedule of openings and closures varies from year to year, but is planned to allow for a year-round supply of Geoducks to the market. Commercial fishery schedules for 2016 are shown in Appendix 6, Tables 1, 2 and 3.

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 Pacific Fishery Management Area 16, 18 and 19 are fished annually). The West Coast of Vancouver Island 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

This fishery is governed by the *Fisheries Act* and the Regulations made thereunder.

Areas and Subareas, as described in the Pacific Fishery Management Area Regulations, are referenced in describing Geoduck Management Areas.

Fishery (General) Regulations (i.e. Conditions of Licence) and the Pacific Fishery Regulations, 1993 (i.e. open times).

- The British Columbia Sport Fishing Regulations (1996) and the Aboriginal Communal Fishing Licences Regulations.
- The Oceans Act.

- The Species at Risk Act.

These documents are available on the Internet at:

http://www.dfo-mpo.gc.ca/acts-loi-eng.htm

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

- A Fishery Decision-Making Framework Incorporating the Precautionary Approach;
- Managing Impacts of Fishing on Benthic Habitat, Communities and Species;
- Policy on New Fisheries for Forage Species.

Along with existing economic and shared stewardship policies, these will help the department meet objectives for long-term sustainability, economic prosperity, and improved governance. See the Internet at:

http://www.dfo-mpo.gc.ca/fm-gp/peches-fisheries/fish-ren-peche/sff-cpd/overview-cadre-eng.htm

Scientific advice for this fishery is peer-reviewed through a committee called Fisheries and Oceans Canada's Centre for Science Advice Pacific (CSAP) formerly the Pacific Region Scientific Advice Review Committee (PSARC).

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 'licence 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, SCIENCE AND TRADITIONAL KNOWLEDGE

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, which, after fertilization, develop in the water column until settling on the bottom within 40 to 50 days. At a shell length of 2mm, juvenile Geoducks burrow into the substrate and can bury to a refuge depth of 60cm in two years. The end of the burrowing stage coincides with the beginning of annual reproductive capacity. 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.

See the Science Advisory Report for more detail:

http://www.dfo-mpo.gc.ca/csas-sccs/Publications/SAR-AS/2011/2011_081-eng.html

2.1.2. Ecosystem Interactions

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

Along the WCVI, from Clayoquot Sound northward, 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.

2.1.3. Aboriginal Traditional Knowledge/Traditional Ecological Knowledge

Aboriginal Traditional Knowledge is not generally available.

Traditional 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 original (pre-fishery) biomass, with the objective of taking no more than that replaced by recruitment of juveniles into the biomass. 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 the current biomass for quota calculations eliminates the uncertainties around estimating original 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 unsurveyed 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.

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. Enhancement of Geoduck stocks in the Strait of Georgia will directly provide some additional quota and may, combined with additional stocks planted for aquaculture, provide increased recruitment due to higher concentrations of spawning adults.

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 refuge areas. These include deep water stocks, as divers are limited to depths of less than 20 meters, 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). These form a protected breeding pool that is separate from the harvestable population. In addition, the habit 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 some strong recruitment in recent years in some Geoduck beds.

2.1.6. Precautionary Approach

The Department is implementing the Sustainable Fisheries Framework (SFF), which is a toolbox of existing and new policies for DFO and other interests to sustainably manage Canadian fisheries in order to conserve fish stocks and support prosperous fisheries.

Fisheries worldwide are under increasing pressure, creating challenges for policy makers, resource managers, and industry leaders to make informed decisions regarding the conservation, recovery, and wise management of these resources. DFO held consultations throughout Canada in 2007 and 2008 to develop strategies to ease ecosystem pressures and enhance the capacity of the resource to sustain growing industry needs. New conservation policies have been developed to implement the ecosystem and precautionary approaches to fisheries management. These new policies, incorporated into development of new Integrated Fisheries Management Plan (IFMP) templates, will join existing policies in a framework to promote sustainable fisheries.

The new fishery decision-making framework incorporating the precautionary approach policy applies to key harvested fish stocks managed by DFO, including commercial, recreational, or subsistence fisheries:

http://www.dfo-mpo.gc.ca/fm-gp/peches-fisheries/fish-ren-peche/sff-cpd/precaution-eng.htm

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. It also requires a rebuilding plan when a stock reaches low levels.

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 or fail to take action to avoid serious harm to fish stocks or their ecosystem. This approach is widely accepted as an essential part of sustainable fisheries management.

The Department plans to review the existing assessment framework for the Geoduck fishery against the new policy. The current management plan for the Geoduck fishery has established limit reference points.

The Geoduck Stock Assessment Framework (Bureau et al. 2012) describes the Limit Reference Point currently in use for the BC Geoduck fishery. Currently, the Limit Reference Point consists of closing harvest on a bed once current biomass on the bed is below 40% of estimated original biomass. Beds that have been fished heavily in the past, with a reduction of 60% or more of the estimated original biomass, are closed to harvest until they are surveyed and assessed as having recovered above the Limit Reference Point.

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). Since Geoducks are long-lived and the recruitment process slow, these experiments are on-going.

DFO, the Underwater Harvesters Association (UHA), and First Nations have conducted surveys since 1992 to estimate Geoduck density. To date, over 160 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). Some survey results have been published as part of the PSARC research documents (available from the CSAP secretariat in Nanaimo at (250) 756-7208). 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 BC. Age-structured projection modeling was conducted to investigate the impacts of alternative exploitation intensities on estimates of current, rather than virgin, 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 the QCI 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 50 m, 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.

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 late 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, temperature dependent.

The maximum age seen in BC of *T. capax* is 18 years and the maximum age of T.nutallii seen in BC is 22 years.

2.2.2. Assessment

It is generally believed that Aboriginal and recreational harvesters collecting “Geoducks” are likely taking Horse Clams as these are more common 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 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 West Coast of Vancouver Island. 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, after which it was determined that the fishery may take place with an assigned quota of 20,500 lb. (9,300 kg). Market feedback to date indicates the fishery is not profitable within 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 eel grass, thus are often not available to the commercial fishery.

3. ECONOMIC, SOCIAL AND CULTURAL IMPORTANCE

3.1. Socio-Economic Profile

The Pacific Region has the only commercial Geoduck fishery within Canada. Harvested Geoduck are shipped to processing plants where they are packed and delivered live to Asian markets. This is a high-value fishery. Between 2012 and 2014 in BC, Geoducks accounted for only an average of 12% of the shellfish harvest by weight, but an average of 32% of the shellfish landed value (DFO Data, logbooks and sales slips).

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) as well as contribute directly and indirectly to the economy through expenditures on labour, supplies and services. In 2011, the Geoduck fishery accounted for about 17% of the GDP attributed to the capture fishery in BC (BC Stats, 2012). Geoduck accounted for 20% of shellfish processing wholesale value, while shellfish accounted for 18% of seafood processing wholesale value in 2013 (BC YIR, 2013).

There is a limited recreational and First Nations fishery for Geoduck. Clams identified as Geoduck in these fisheries are more likely to be 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 4 million lb. (1,814 t) between 1996 and 2004 (Figure 3.1). 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 2010 to just over 3.4 million lb. (1,560 t). In 2012, the allocated quota was reduced by a further 4% to 3.3 million pounds (1,497 t) and remained at this level to 2015. 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 was allocated 1/55 (1.8%) of the total allocated quota and 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). There

are now 5 communal commercial licences allocated to First Nations. Since 1994, due to changes in stock assessment, TAC has become more concentrated in the North Coast area (Table 3.2).

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 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. There have been several price peaks over the years including 1995 ($21/kg), 2001 ($24/kg) and 2012 ($33/kg) Adjusting the prices to account for inflation (i.e. putting all prices in 2014 dollars) shows a similar pattern, although the price differences between the peaks are much smaller (1995 = $31/kg, 2001 = $32/kg and 2012 = $34/kg). The 2014 price is about $27 per kilogram.

Figure 3.1. Landings (t), commercial TAC (t), and landed value ($), 1976-2014. Landed value is in nominal dollars and in 2014 dollars (adjusted for inflation).

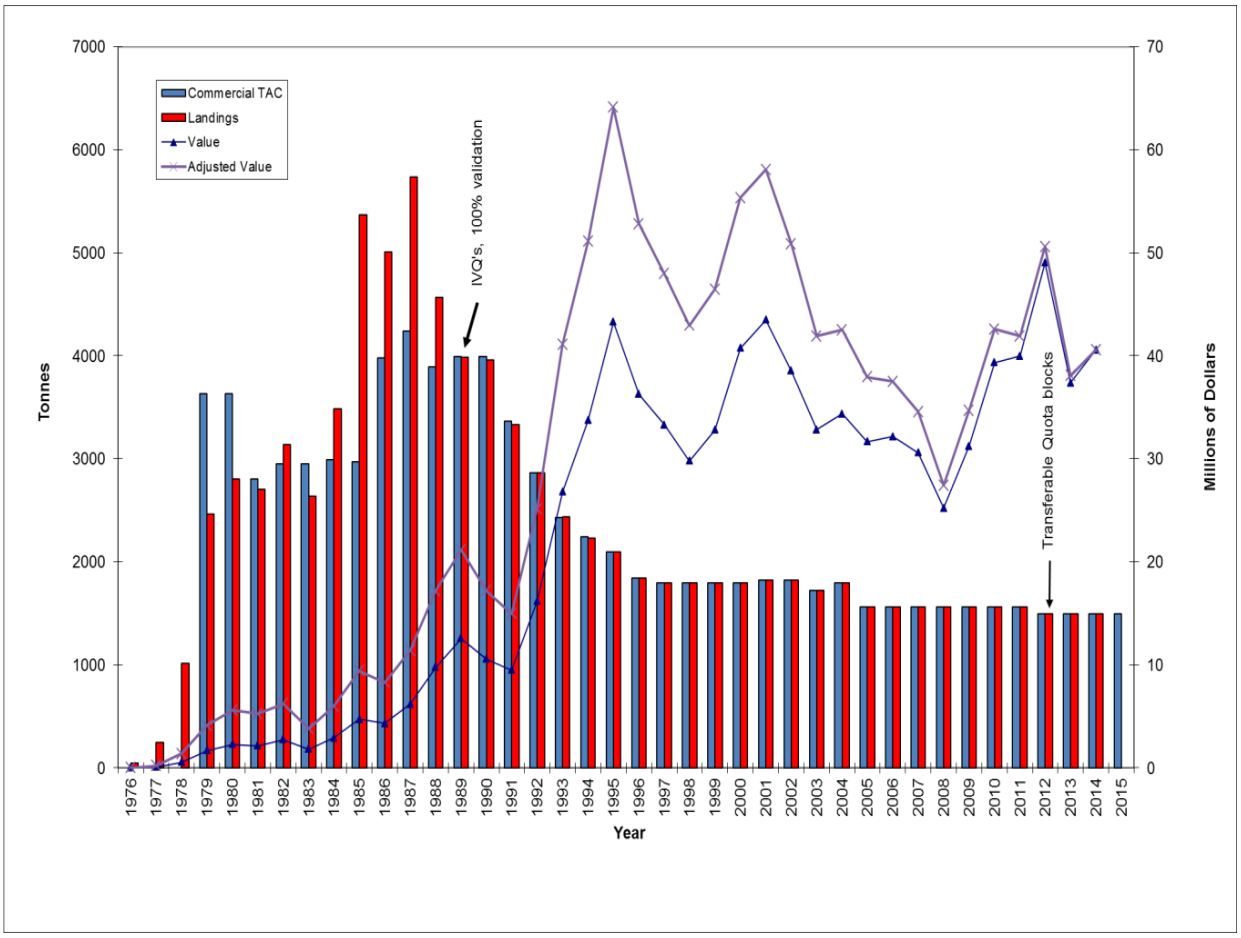
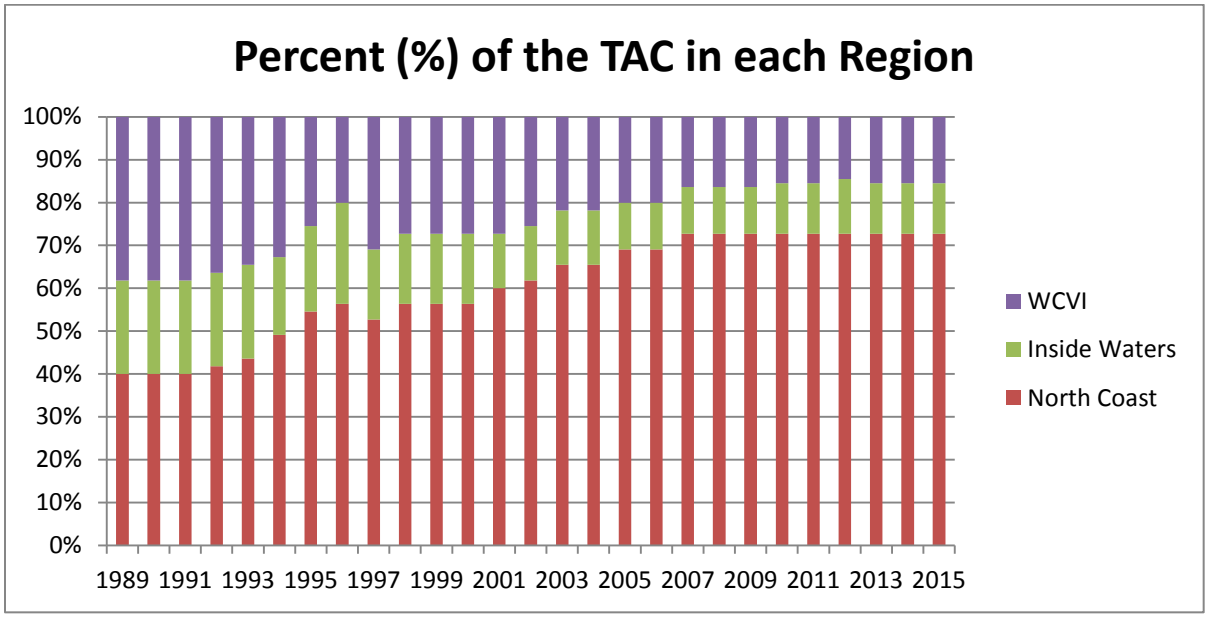


Figure 3.2. Historic Distribution of Geoduck TAC by management region.



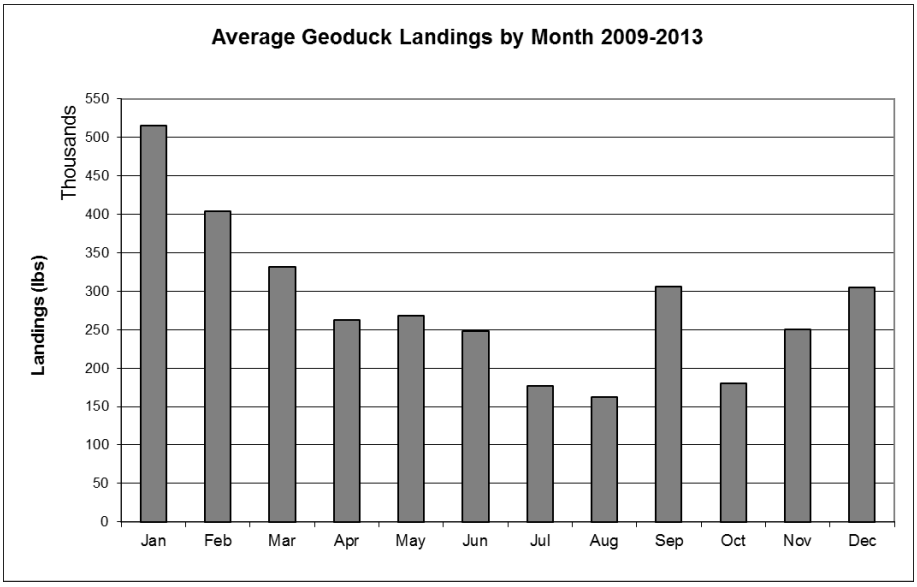
3.2. Viability and Market Trends

The Geoduck fishery is one of BC's most profitable fisheries with typical earnings per vessel (when vessels had equal quotas) before interest, taxes, depreciation, and amortization (EBITDA) estimated to be over $350,000 in 2009 (Nelson, 2011). This value is likely to have increased since 2009, as nominal prices have increase by about 35% while inflation (e.g. fuel) was low. 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 jump in the valuation for a total package (licence plus 10 quota blocks), likely due to latent demand for quota coupled with price increases for Geoduck. Lower realized prices appear to be reflected in licence lease rates, which declined by 14% between 2012 and 2014 (Nelson, 2014).

The commercial fishery is managed, within the TAC, to ensure stability and profitability by managing the timing of harvest and 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, 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 3.3). The largest harvests are in the winter months, peaking in January, with less Geoduck landed over the summer, with a low in the summer (July/August).

Figure 3.3. Average Geoduck Landings by Month, 2009 to 2013 (Source: DFO data, logbooks).



3.3. Processing & Exporting

Geoduck is harvested all along the coast of British Columbia but all Geoduck processing occurs in Vancouver. Processing for Geoduck is minimal with the majority exported live to Asian markets. In general, Geoduck is caught one day, 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.

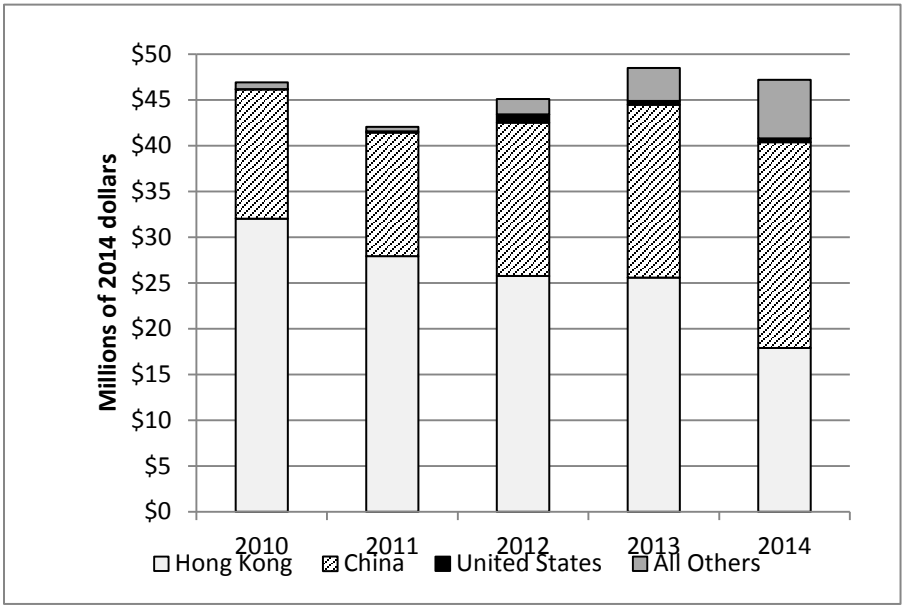
The majority of Geoduck harvested in Canada is exported, and high-value live Geoduck accounts for over 99% of Geoduck exports both by weight and by value. Geoduck exports go predominately to Hong Kong and the People's Republic of China, with 5-year average shares of 56% and 37% respectively (Figure 3.4). Small amounts of exports (i.e. less than 1%) go to the United States and Singapore. Export data may not accurately

represent the final destination of Geoduck. In 2009, the Chinese tariff on Geoduck was 28.82% of value while Geoduck imported into Hong Kong were not subject to a tariff (GSGislason, 2012). This creates an incentive to ship Geoduck to Hong Kong for transshipment to China.

The nominal value of Canada's Geoduck exports in 2014 was approximately $47 million, while the average value (2010-2014) was a $46.1 million in 2014 dollars (i.e. adjusted for inflation). The tariff system in China also creates an incentive for the declared value of exports to be underreported (GSGislason, 2012). For example, in 2012 there were 3.2 million pounds (1,465 t) of live Geoduck exported with a declared value of $42.7 million. This suggests a value of $13.22 per pound ($29.15 per kg), which is lower than the estimated payment to harvesters.

The Canadian industry has two main competitors, 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 2014, Washington state exported almost 5,000t of Geoduck, valued at $74 million USD, to China and Hong Kong (Terry 2015). There have been a number of temporary bans on exports of live shellfish to China from the US northwest (Washington DOH, 2015), which may affect the Geoduck market. 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).

Figure 3.4. Value of Pacific Geoduck exports by destination, adjusted for inflation (in millions of 2014 dollars).



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4. MANAGEMENT ISSUES

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

4.1. Conservation and Sustainability

4.1.1. Appropriate Scale of Management

Historically, when harvesters fished a Geoduck Management Area (GMA), (which is often made up of several beds), they may have gone to the bed which is the most productive, easiest to fish, or which is most familiar to them. Consequently, fishing effort may not have been spread across the whole GMA relative to the bed area. This can result in some beds in the GMA being overharvested and can result in a reduction in quota for the whole GMA while there are still productive beds available. Allocating and managing quotas on a bed basis has helped to prevent overharvesting any one location. Bed by bed management has evolved and was fully implemented in all areas by 2007. Bed questionnaires, initiated in 2004, have also allowed DFO to better manage and implement appropriate quotas by bed.

More recently it has been suggested that in some areas it may be more appropriate to allocate quota on groups of beds, in essence a management system in between allocation by GMA and allocation by bed. In some cases the allocated quota on a single bed may be very small and will not get fished as it is not worth a dive for only 50 lb., and bed by bed management can also be very onerous. DFO and industry are reviewing the most appropriate scale of management taking into account conservation and the sustainability of this fishery.

4.1.2. Sea Otters

Along the WCVI from Clayoquot Sound northward, and in the Central Coast areas, 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 West Coast of Vancouver Island, 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.

4.2. Social, Cultural and Economic

4.2.1. 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 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).

4.2.2. First Nations

Coastal First Nations are showing an increased 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). The Allocation Transfer Program retires existing commercial licence eligibilities from fish harvesters on a voluntary basis and re-issues these to eligible First Nation organizations as communal commercial licences.

To date the PICFI program has acquired five Geoduck licences with thirty (30) quota blocks. All the quota blocks were fished under 3 licences shared between multiple First Nations groups. The ATP program has acquired one quota block that has been allocated to one First Nation.

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

4.3. Compliance

There are no emerging issues for enforcement other than those already highlighted in the Compliance Plan (Section 9).

4.4. Ecosystem

4.4.1. Depleted Species Concern

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:

www.dfo-mpo.gc.ca/species-especes/listing-eng.htm

4.4.2. Oceans and Habitat

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

Pacific North Coast Integrated Management Area (PNCIMA): An integrated management plan for the Pacific North Coast Integrated Management Area (PNCIMA) has been 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.

An electronic copy of the draft plan will be available online at www.pncima.org

Marine Protected Areas (MPAs): DFO is responsible for designating Marine Protected Areas (MPAs) under Canada's *Oceans Act*. Under this authority, DFO has designated two MPAs in the Pacific Region, the Bowie Seamount and the Endeavour Hydrothermal Vents. Both areas are offshore and do not include Geoduck fishing areas.

Work is ongoing to consider MPA designations for other areas along the Pacific Coast, including the Race Rocks area off Rocky Point south of Victoria (currently designated as a Provincial Ecological Reserve), which is already closed to commercial Geoduck harvest, and the Hecate Strait / Queen Charlotte Sound Glass Sponge Reefs, an offshore area where commercial Geoduck fishing also does not occur. Changes to existing IFMPs with respect to fishing activities may be required upon designation of these MPAs. In addition, alignment of IFMPs and MPA Management Plans will be necessary.

The *Oceans Act* mandates DFO with leading and coordinating the development and implementation of a national system (or network) of marine protected areas. The National Framework for Canada's Network of Marine Protected Areas provides strategic direction for the design of a national network of marine protected areas (MPAs) that will be composed of a number of bioregional networks. Future network MPAs may overlap with and/or include Geoduck fishing areas depending on the type and nature of the MPA. More information on integrated management planning and Pacific MPAs under Canada's *Oceans Act* can be found at:

www.pac.dfo-mpo.gc.ca/oceans/index-eng.htm

National Marine Conservation Areas (NMCAs): The *Canada National Marine Conservation Areas Act* provides for the establishment of National Marine Conservation Areas (NMCAs).

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 portion of Haida Gwaii (formerly the Queen Charlotte Islands), approximately 100 kilometres off the north coast of British Columbia. The Haida Nation declared the area a Haida Heritage Site in 1985. The terrestrial part of Gwaii Haanas was designated a National Park Reserve by the Government of Canada soon after, and the two parties have been managing the area cooperatively since 1993. In 2010, following an extensive public consultation process, the marine area of Gwaii Haanas was given the designation of National Marine Conservation Area Reserve.

Gwaii Haanas is managed by the Archipelago Management Board, a cooperative body made up of equal representation from the Government of Canada (represented by Fisheries and Oceans Canada and Parks Canada) and the Council of the Haida Nation. The Gwaii Haanas marine area is currently managed under the Interim Management Plan and Zoning Plan, which includes "balancing protection and ecologically sustainable use" in its guiding principles. The Zoning Plan identifies six areas, (see section 3 Appendix 6), that are closed to commercial and recreational fishing.

Development of a long-term management plan for the Gwaii Haanas marine area is underway. This process will take place in consultation with the commercial and recreational fishing sectors

through Fisheries and Ocean's established integrated fisheries planning and advisory processes. Annual fishing plans will be developed in consultation with stakeholders.

Users of the Gwaii Haanas marine area should be aware that adjacent land is managed under the authority of the Canada National Parks Act and its regulations and, as specified in the Gwaii Haanas Agreement (1993), there is "no extraction or harvesting by anyone of the resources of the lands and non-tidal waters of the Archipelago for or in support of commercial enterprise" (s3.3). There are specific requirements for visiting the terrestrial portion of Gwaii Haanas, and advanced planning is necessary. Please contact the Gwaii Haanas administration office at 1-877-559-8818 for further information.

The Governments of Canada and British Columbia announced a proposed boundary for the proposed National Marine Conservation Area Reserve in the Southern Strait of Georgia in October, 2011. It encompasses a portion of the Geoduck fishing area in BC. The two governments will now begin in-depth consultations with First Nations and local governments and a final boundary will be determined only after consultations are complete and the feasibility assessment is concluded. If the results of the feasibility assessment indicate that establishment of a national marine conservation area reserve is practical and feasible, an establishment agreement between the Governments of Canada and British Columbia will be negotiated and an Interim Management Plan developed. First Nations, commercial and recreational fishing sectors, stakeholders, communities and the public will have opportunities to provide input to the development of the interim management plan. More information on the proposed National Marine Conservation Area Reserve in the Southern Strait of Georgia is available on the internet at:

http://www.pc.gc.ca/eng/progs/amnc-nmca/dgs-ssg/index.aspx

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.

The Cold-Water Coral and Sponge Conservation Strategy is available on the internet at:

http://www.pac.dfo-mpo.gc.ca/oceans/protection/docs/cscs-pcce-eng.pdf

More information on the occurrence, ecological function, and sensitivity to fishing of coldwater corals and sponges (DFO CSAS Sci. Adv. Rep. 2010/041; DFO CSAS Res. Doc. 2010/067) is available on the internet at:

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

Marine National Wildlife Areas: Under the Canada Wildlife Act, Environment Canada may establish marine National Wildlife Areas (NWAs). The Scott Islands marine National Wildlife Area, located off the northern tip of Vancouver Island, has been proposed for designation through amendment to the Wildlife Area Regulations. DFO would continue to regulate and administer fisheries within the proposed area. Environment Canada and DFO will develop a collaborative approach and agreement regarding management of fisheries in the area.

4.4.3. 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 5/8" 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, DFO Science (Dr. Chris Pearce) has been researching the potential effects of both intertidal and subtidal Geoduck clam harvest in aquaculture and enhancement plots. 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 are 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 will help 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 on the internet at:

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

5. OBJECTIVES

Sections 5.1 to 5.3 and 5.5 outline the "longer term" objectives for this and other invertebrate fisheries in BC. Section 5.4 describes the species-specific and "shorter term" objectives for Geoduck and Horse Clam.

5.1. National

DFO aims to:

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

5.2. Pacific Region

In 1994, the Biological 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 (in the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) sense of "threatened").
- Operationally, the above objective requires at least that management allow enough spawners to survive, after accounting for all sources of mortality (including all fisheries and natural mortality), to ensure production of enough progeny that they will, themselves, be able to replace themselves when mature.
- Fisheries may have collateral effects on other species, mediated by the ecological relationships of the target species. Fisheries should be managed in ways that do not violate the above objectives for ecologically related species, as well as target species.

5.3. Invertebrate Resource Management

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

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

- To provide opportunities for a recreational fishery.

5.4. Geoduck and Horse Clam

5.4.1. 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, clam weight, and clam 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 will be accomplished through a Dockside Monitoring Program;
- Close beds that have exceeded the reference point of an aggregate harvest of 60 percent of the estimated original biomass; (Note: This reference point 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.

5.4.2. 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 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.
- Complete a historical and socio-economic review of BC 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 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.

5.4.3. Ecosystem

Harvest and culture activities should occur in a manner that will minimize 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.

5.4.4. Social, Cultural, and Economic Considerations

5.4.4.1. First Nations

The Department will continue to provide opportunities for First Nations to harvest fish for food, social and ceremonial purposes, in a manner consistent with the decision of the Supreme Court of Canada in 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 see Appendix 3.

5.4.4.2. 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.

The documents "Recreational Fisheries in Canada, An Operational Policy Framework" and "A Vision for Recreational Fisheries in British Columbia" may be requested from any fishery manager listed in this plan or is available on the internet at:

http://www.dfo-mpo.gc.ca/fm-gp/policies-politiques/op-pc-eng.htm

http://www.pac.dfo-mpo.gc.ca/consultation/smon/sfab-ccps/docs/rec-vision-eng.pdf

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.

5.4.4.3. Commercial:

The Department will continue to work collaboratively with Industry to:

- Maximize the long term profitability and stability of the Geoduck and Horse Clam fishery and industry in BC;
- Manage the fishery to allow for a year round supply of product to the market;
- Establish and monitor conditions of harvest to develop knowledge of the stock;
- 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 Canadian Shellfish Sanitation Program programs.
- Manage the fishery to increase safety for harvesters.
- Implement protocols to address the impact of PSP on completion of the annual quota.

5.4.4.4. Aquaculture and Enhancement:

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. *Note: There are no explicit decision rules yet in place. The Government of Canada has committed to support aquaculture, and this includes Geoducks and Horse Clams. The issue of 'undue detrimental effect' is being addressed by the ongoing development of policies to govern Geoduck aquaculture development*. See Appendix 5.

5.5. 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, EC and 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 Environment Canada.

6. ACCESS AND ALLOCATION

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

6.1. First Nations

To date, no limits have been placed on Aboriginal harvest for food, social and ceremonial purposes.

6.2. 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.

6.3. Commercial

The coast-wide Geoduck total allowable catch (TAC) for 2016 is 3,086,000 lb. (1,400 tonnes). 6,000 lb. of the TAC is allocated for biological samples with additional small harvests authorized for biotoxin monitoring and broodstock collection. A commercial TAC of 3,080,000 lb. provides for 550 Quota Blocks each for 5,600 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, whereas areas with a survey-based TAC may be harvested in addition to the area caps.

6.4. 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).

7. 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

8. SHARED STEWARDSHIP

8.1. Commercial

The estimated total cost for the Department to manage the Geoduck fishery was estimated to be approximately $650,000.

The UHA funds the catch verification program, survey and research, enhancement research, PSP sampling and other fishery related costs to an estimated total of over $2,500,000.

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

8.2. Fisheries and Oceans Canada

Several Stock Assessment and three 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, C&P, the Pacific Fishery Licence Unit, the Treaty and Aboriginal Policy Directorate, and numerous administrative personnel. Generally, all personnel are multi-tasked, i.e. Resource Managers may work on all dive fisheries.

9. COMPLIANCE PLAN

9.1. Overview

Fisheries and Oceans Canada (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 British Columbia and Yukon Territory. They are designated as "Fishery Officers" under Section 5 of the *Fisheries Act*. The *Fisheries Act* and the *Criminal Code of Canad*a 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.

9.2. 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 Regulations (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.

ISSUE	SECTION	STRATEGY
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.
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.

ISSUE	SECTION	STRATEGY
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..
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 Oceans, Habitat and Enhancement Branch (OHEB) 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.

10. PERFORMANCE REVIEW

The following criteria will be utilized in developing the post-season review for the Geoduck fishery. See Appendix 1 for details.

10.1. Management Plan Evaluation Criteria

10.1.1. Pacific Region Objectives

- Were adequate steps taken to insure that Geoduck and Horse Clam stocks are not biologically threatened?
- Were stocks managed so as to have no collateral ecological effects?

10.1.2. Invertebrate Resource Management Objectives

- Were goals for conservation and protection of Geoduck stocks and their habitat met?
- Did the Department meet the food, social and ceremonial needs of First Nations with respect to Geoduck and Horse Clams?
- Were co-management goals achieved?
- Were goals around health and safety achieved?
- What opportunities for aquaculture development were provided?
- What opportunities for a recreational fishery were provided?

10.1.3. Geoduck and Horse Clam Objectives

- Were there advances in the understanding of oceans and aquatic resources relative to Geoduck and Horse Clams? How many research and survey activities were conducted?
- Was the annual harvest limited to 1.8% of the current biomass?
- Did the commercial Dockside Monitoring Program function appropriately, and what advances in catch monitoring for other sectors were made?
- How many beds have been closed upon reaching the limit reference point?
- Were area boundaries and fishing times adjusted so as to spread effort appropriately across all harvestable beds?
- Were improvements in understanding of Horse Clam populations made?

10.1.4. Current Geoduck Management Issues

- Have any advances been made in determining appropriate scale of management?
- Were any actions taken to control high grading?
- Were any actions taken to control poaching?
- Were any changes to scheduling required to mitigate biotoxin blooms?
- Have any management measures been implemented to address the effects of sea otters on Geoduck populations?
- Are any further measures required to ensure that fishing activity does not adversely affect fish habitat, in particular eelgrass?

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12. GLOSSARY

Aboriginal Traditional Knowledge (ATK)	Knowledge that is held by and unique to Aboriginal peoples. It is a living body of knowledge that is cumulative and dynamic and adapted over time to reflect changes in the social, economic, environmental, spiritual, and political spheres of the Aboriginal knowledge holders. It often includes knowledge about the land and its resources, spiritual beliefs, language, mythology,

	culture, laws, customs and medicines.
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: www.pac.dfo-mpo.gc.ca/ops/fm/Areas/areamap_e.htm
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.
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.
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.
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.
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	"On-Grounds Monitor" means a third party individual, who may or may not

monitor	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 1000kg or 2204.6 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

Overall, the 2015 fishing season was challenging and was not completed at the time of finalizing this document. However, the season started with market challenges resulting in a much lower production over the first five months. Biotoxin levels remained high in many areas throughout the entire year, not typical, resulting in further reduction in harvest. 53 of the 55 licences were active in the fishery and were designated to approximately 40 vessels. However, the entire available quota was allocated to the 53 active licences. Completing the allocated Total Allowable Catch by the end of season will be unlikely.

1.1. Stock Assessment and Research

Surveys are planned 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 or not surveyed in some time, areas that are approaching reference point and areas in which the science advice contradicts harvester's advice.

In 2015 in the North Coast, the Prince Rupert region was the focus for surveys. 24 days were spent in June and July doing surveys targeting portions of PFMA 4, 5 and 6. The focus of survey work in the Gulf was in portions of Areas 12, 17 and 29 for a total of 10 days. The majority of harvesting on the West Coast of Vancouver Island is in area 24 and 10 days of survey time was spent in this area. 12 further days were spent looking at the enhancement sites and long term research plots.

The current assessment model does not account for natural recruitment and heavily relies on calculation of the original biomass. The Department is reviewing the current assessment model and, through the CSAS process, is considering options for alternatives to the current model.

1.2. Commercial Fishery

At the end of the 2014 season the main market, Hong Kong, prohibited the imports of Canadian Geoduck due to high PSP. This ban continued for approximately five months into the 2015 season. Modifications to the fishing plan to deal with PSP blooms were substantial this season. These blooms, and the effects on the timing of the fishery, remain one of the challenging in-season issues in this fishery. This, along with the product ban, has resulted in doubt that the quota will be achieved by the end of the year. Industry has requested a one month extension to the 2015 season ending January 31, 2016. This has been approved but there will still be challenges in completing the quota by this new season end.

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 thirty quota blocks under the PICFI program and one quota block under the ATP program. All five of the licences, with all 30 quota blocks within the PICFI program, were provided to First Nations in 2015. The single quota block purchased by the ATP program was also allocated in 2015 to a First Nation.

The Quota Block transfer program initiated in 2012 continued through 2015. By all accounts the program has proven successful and continues to be supported by industry. There were approximately 29 temporary transfer transactions and 9 permanent transfer transactions in 2014. To date in 2015 we have seen 27 temporary transfer transactions and 4 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.

APPENDIX 2: STOCK ASSESSMENT RESULTS

Geoduck resources in the Pacific Region are assessed and managed on a bed-by-bed basis. There are over 4,900 Geoduck beds (or subbeds) defined in the current system. 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 Geoduck beds in BC is currently estimated at 21,107 hectares (ha), of which 16,835 ha is considered harvestable. 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 limit reference point (Table 1).

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

Quota Area	Bed Area (Ha)			
	Total*	Closed**	Otters***	Harvestable
North	6,988	198	502	6,288
Gulf	8,664	1,247	0	7,417
WCVI	5,456	729	1,746	2,981
Totals	**21,107**	**2,174**	**2,248**	**16,685**

* All Bed Area documented by fishing events or surveys.
** Closed for Park, contaminated, research, aquaculture or below ref. pt.
*** Unharvestable due to sea otter predation.

Harvestable biomass (Table 2) is estimated as the product of harvestable bed area, Geoduck density and the mean Geoduck weight on each bed. Bed area is estimated using harvest locations, substrate and dive survey data feedback from On-Grounds Monitors and harvesters 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.

Quota Area	Statistical Area	Harvestable Bed Area (Ha)	Density (geoducks/m^2)		Current Biomass Estimates (lbs)	
			Average	Range	Lower 95%	Maximum*
N	1	188.7	0.66	0.25 - 1.01	720,224	2,110,260
N	2	2,168.5	1.28	0.10 - 5.86	34,681,385	67,213,597
N	102	9.6	1.01	1.01 - 1.01	28,362	119,126
N	3	186.9	1.92	0.35 - 4.51	4,051,562	7,683,279
N	4	620.3	2.69	1.03 - 5.70	22,423,846	36,898,078
N	5	757.1	2.30	0.35 - 5.55	22,850,534	38,084,734
N	6	1,285.8	2.22	0.10 - 12.04	33,897,882	64,212,510
N	106	91.9	4.78	0.14 - 9.09	7,054,604	10,404,876
N	7	658.3	1.82	0.09 - 10.42	11,745,765	25,551,147
N	8	150.1	2.35	0.68 - 6.54	4,266,252	8,495,333
N	9	83.8	1.07	0.30 - 1.54	758,868	1,623,708
N	10	87.1	1.29	0.12 - 2.33	925,190	2,247,227
Total North		**6,288.0**	**1.86**	**0.09 - 12.04**	**143,404,474**	**264,643,874**
G	12	566.2	0.89	0.11 - 2.69	5,974,053	10,843,464
G	13	585.9	0.23	0.23 - 0.24	1,184,542	2,325,131
G	14	3,602.2	0.17	0.05 - 0.57	9,697,356	14,596,941
G	15	746.2	0.20	0.08 - 0.54	1,200,419	2,418,302
G	16	659.7	0.41	0.15 - 1.05	3,672,055	5,430,152
G	17	402.6	0.28	0.11 - 1.83	1,515,678	2,261,274
G	18	156.4	0.59	0.23 - 1.54	1,226,530	1,847,489
G	19	541.6	0.23	0.23 - 0.23	956,052	2,224,792
G	29	155.9	0.29	0.23 - 0.72	359,580	751,703
Total Gulf		**7,416.6**	**0.28**	**0.05-2.69**	**25,786,265**	**42,699,246**
W	20	299.4	0.29	0.29 - 0.29	0	751,697
W	23	445.3	0.81	0.27 - 1.84	4,604,924	7,523,524
W	24	2,154.6	1.10	0.28 - 4.24	35,843,065	51,174,718
W	124	14.1	1.02	1.02 - 1.02	95,071	254,558
W	25	5.9	1.03	0.29 - 1.61	42,388	107,452
W	26	61.7	0.41	0.29 - 0.75	156,261	349,001
W	27	0.0	na	na	na	na
Total WCVI		**2,981.0**	**0.96**	**0.27 - 4.24**	**40,741,708**	**60,160,951**
Coastal Total		**16,685.6**			**209,932,448**	**367,504,072**

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

APPENDIX 3: GEODUCK AND HORSE CLAM FIRST NATIONS HARVEST PLAN

1. OVERVIEW OF THE FISHERY

Section 35(1) of the *Constitution Act*, recognizes and affirms the existing Aboriginal and treaty rights of 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. This decision found that the Musqueam First Nation has an Aboriginal right to fish for food, social and ceremonial purposes. The Supreme Court found that where an Aboriginal group has a right to fish for food, social and ceremonial purposes, it takes priority, after conservation, over other uses of the resource. The Supreme Court also indicated the importance of consulting with Aboriginal groups when their fishing rights might be affected.

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

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

AFS fisheries agreements may identify the amounts that may be fished for FSC purposes, terms and conditions that will be included in the communal fishing licence and fisheries management arrangements. The Minister of Fisheries and Oceans issues the communal fishing licences to First Nations groups to fish for FSC purposes.

There are approximately 204 First Nations in British Columbia, of which 187 qualify for AFS funding. Fisheries, and the harvest and management of aquatic resources, have particular importance to many Aboriginal communities. Many Aboriginal communities are located adjacent to key fishing sites, oceans and aquatic resources, and consider the management of these resources to be matters importance to these communities. There are Aboriginal groups who are seeking greater access to economic opportunities from aquatic resources as a potential driver for economic development in their communities; more stability in food, social and ceremonial (FSC) fisheries; a greater role in the aquatic resource and oceans management decisions that affect them; and a greater role in stewardship, including stock assessment, oceans and habitat management, conservation and protection, and recovery strategy development and implementation.

2. OPEN TIMES AND AREAS

Aboriginal harvest for food, social and ceremonial purposes is open year-round if authorized by a communal licence and not closed for sanitary or biotoxin (e.g., paralytic shellfish poisoning (PSP) or red tide) contamination.

3. CLOSURES

With some exceptions, the North Coast (Areas 1 to 11 inclusive) is closed for the harvest of intertidal bivalves.

3.1. Two Types of Contamination closures

The consumption of bivalves from areas closed due to contamination concerns can be life threatening.

Area-specific and fishery-specific testing may be conducted in collaboration with Environment Canada (sanitary) and the Canadian Food Inspection Agency (biotoxin).

Harvesters are strongly advised to check for sanitary and biotoxin contamination closures prior to harvesting any bivalves by:

- calling our toll-free line 1-866-431-3474
- checking the following website:
- http://www.pac.dfo-mpo.gc.ca/fm-gp/contamination/biotox/index-eng.html
- calling a local DFO office (see Contacts section of IFMP, the British Columbia Sport Fishing Guide (www.pac.dfo-mpo.gc.ca/fm-gp/rec/docs/SFG-GPS-2015-eng.pdf) or check blue pages of the phone book).

Remember to check for both types of contamination closures that may affect bivalves: sanitary closures and biotoxin closures (PSP/red tide, Domoic Acid Poisoning and DSP).

3.1.1. Sanitary Contamination Closures

Sanitary closures are in place in areas that have been tested and found to contain unacceptable levels of contaminants. Please visit the DFO website above to view maps and descriptions of these closures, prior to harvesting any shellfish:

Harvesters are advised that, unless other closures are specified, permanent bivalve harvesting closures (no harvesting for any purpose) are in place for all waters within:

1. 300 m radius around industrial, municipal and sewage treatment plant outfall discharges;
2. 125 m radius of any;
    i. marina
    ii. ferry wharf
    iii. any floating living accommodation facility, other than a floating living accommodation described in subsection (3);
    iv. any finfish net pen, other than a finfish net pen described in subsection (4);
3. 25 m radius of any floating living accommodation facility located within a shellfish aquaculture tenure where a zero-discharge and appropriate waste management plan is a

condition of the Aquaculture Licence and is approved by the Regional Interdepartmental Committee: and

4. 0 m 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

Closures due to biotoxin closure (Paralytic Shellfish Poisoning (PSP/Red Tide), Domoic Acid Poisoning and DSP) are frequent and often encompass large areas. These closures can occur on very short notice with the closure taking effect immediately. Consumption of shellfish that contain the toxins causing PSP and Domoic Acid Poisoning can cause paralysis, memory loss or death.

Check to ensure that the area where you intend to harvest is open prior to harvesting using the contact information above.

3.2. 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. The Canadian Food Inspection Agency (CFIA), Environment Canada (EC) and DFO introduced changes to the Canadian Shellfish Sanitation Program (CSSP) shellfish harvesting and handling requirements in 2008.

Human wastes, sewage or refuse shall not be discharged from harvest 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 the Prevention of Pollution from Ships and for Dangerous Chemicals*, entered into force on May 3, 2007 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, and portable toilets or other designated human waste receptacles shall be cleaned before being returned to the vessel. (Facilities used for cleaning food-processing equipment shall never be used for cleaning portable toilets or designated human waste receptacles.)

All persons must clean their hands after using or cleaning the receptacles described above.

3.3. 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 based 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 Elysha Gordon at (250) 756-7192.

3.4. 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. All tenures must be clearly marked. Subtidal Geoduck tenures require marking on the sea floor, normally consisting of sinking ground line and concrete blocks.

4. LICENSING

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

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

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

5. CONTROL AND MONITORING OF ABORIGINAL FISHING ACTIVITIES

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

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

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

5.1. Treaty Fisheries

Fisheries chapters in modern First Nation treaties articulate a treaty fishing right for FSC 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*.

Three modern treaties (Nisga'a Final Agreement, Tsawwassen First Nation Final Agreement (TFA) and Maa-nulth First Nations Final Agreement (MNA) have been ratified in British Columbia. Geoduck were not allocated under these treaties but FSC harvest is permitted.

Details of the Nisga'a Final Agreement can be found at:

www.aadnc-aandc.gc.ca/eng/1100100031292/1100100031293

Details of the TFA and MNA agreements can be found on the BC Treaty Commission website at:

www.bctreaty.net/

5.2. *T'aaq-wiihak First Nations (Ahousaht et al Plaintiffs)*

In addition to fishing opportunities for food, social and ceremonial purposes (or domestic purposes for treaty bands), DFO acknowledges that in *Ahousaht Indian Band et al. v. Canada and British Columbia*, the courts have found that five Nuu-chah-nulth First Nations located on the West Coast of Vancouver Island - Ahousaht, Ehattesaht, Hesquiaht, Mowachaht/Muchalaht, and Tla-o-qui-aht - have what the courts have characterized as "aboriginal rights to fish for any species of fish within their Fishing Territories and to sell that fish, with the exception of geoduck".

5.3. Sliammon Domestic Fishing

The Sliammon fishery for domestic (FSC) purposes under the Tla'amin (Sliammon) Final Agreement (Treaty) will come into effect on April 5, 2016. The Tla'amin Nation is located near the City of Powell River, 130 km northwest of Vancouver, and their claimed territory spans the northern portion of the Strait of Georgia from the BC mainland to Vancouver Island.

More information on the Treaty can be found at:

www.aadnc-aandc.gc.ca/eng/1397050017650/1397050094605

APPENDIX 4: GEODUCK AND HORSE CLAM RECREATIONAL HARVEST PLAN

1. INTRODUCTION

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

http://www.dfo-mpo.gc.ca/fm-gp/policies-politiques/OPF-PC_E.pdf

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

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

More information is available on the Internet:

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

2. LICENSING

A British Columbia Tidal Waters Sport Fishing Licence is required for the recreational harvest of all species of fish including shellfish. You can purchase Tidal Waters Sport Fishing Licences online by using the Fisheries and Oceans Canada website:

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

3. 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).

4. CLOSURES

With some exceptions, the North Coast (Areas 1 to 11 inclusive) is closed for the harvest of intertidal bivalves.

4.1. Two Types of Contamination closures

The consumption of bivalves from areas closed due to contamination concerns can be life threatening.

Area-specific and fishery-specific testing may be conducted in collaboration with Environment Canada (sanitary) and the Canadian Food Inspection Agency (biotoxin).

Harvesters are strongly advised to check for sanitary and biotoxin contamination closures prior to harvesting any bivalves by:

- calling our toll-free line 1-866-431-3474
- checking the following website:
- http://www.pac.dfo-mpo.gc.ca/fm-gp/contamination/biotox/index-eng.html
- calling a local DFO office (see Contacts section of IFMP, the British Columbia Sport Fishing Guide (www.pac.dfo-mpo.gc.ca/fm-gp/rec/docs/SFG-GPS-2015-eng.pdf) or check blue pages of the phone book).

Remember to check for both types of contamination closures that may affect bivalves: sanitary closures and biotoxin closures (PSP/red tide, Domoic Acid Poisoning and DSP).

4.1.1. Sanitary Contamination Closures

Sanitary closures are in place in areas that have been tested and found to contain unacceptable levels of contaminants. Please visit the DFO website above to view maps and descriptions of these closures, prior to harvesting any shellfish:

Harvesters are advised that, unless other closures are specified, permanent bivalve harvesting closures (no harvesting for any purpose) are in place for all waters within:

1. 300 m radius around industrial, municipal and sewage treatment plant outfall discharges;
2. 125 m radius of any;
    i. marina
    ii. ferry wharf
    iii. any floating living accommodation facility, other than a floating living accommodation described in subsection (3);
    iv. any finfish net pen, other than a finfish net pen described in subsection (4);
3. 25 m radius of any floating living accommodation facility located within a shellfish aquaculture tenure where a zero-discharge and appropriate waste management plan is a

condition of the Aquaculture Licence and is approved by the Regional Interdepartmental Committee: and

4. 0 m 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

4.1.2. Biotoxin Contamination Closures

Closures due to biotoxin closure (Paralytic Shellfish Poisoning (PSP/Red Tide), Domoic Acid Poisoning and DSP) are frequent and often encompass large areas. These closures can occur on very short notice with the closure taking effect immediately. Consumption of shellfish that contain the toxins causing PSP and Domoic Acid Poisoning can cause paralysis, memory loss or death.

Check to ensure that the area where you intend to harvest is open prior to harvesting using the contact information above.

4.2. 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. The Canadian Food Inspection Agency (CFIA), Environment Canada (EC) and DFO introduced changes to the Canadian Shellfish Sanitation Program (CSSP) shellfish harvesting and handling requirements in 2008.

Human wastes, sewage or refuse shall not be discharged from harvest 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 the Prevention of Pollution from Ships and for Dangerous Chemicals*, entered into force on May 3, 2007 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, and portable toilets or other designated human waste receptacles shall be cleaned before being returned to the vessel. (Facilities used for cleaning food-processing equipment shall never be used for cleaning portable toilets or designated human waste receptacles.)

All persons must clean their hands after using or cleaning the receptacles described above.

4.3. 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 based 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 Elysha Gordon at (250) 756-7192.

4.4. 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. 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.

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 British Columbia.

Opportunities to enter into this industry are being provided in a phased approach. Three interim policy documents were developed with BC 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.

56 tenures are currently licenced under the *Pacific Aquaculture Regulations* (PAR) for Geoduck aquaculture. This totals approximately 774 hectares. This includes tenures licenced for aquaculture using intertidal, subtidal or deepwater suspended practices or any combination of the 3 types. The total number of tenures actively culturing Geoduck is unknown.

For more information go to:

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

1.1. Regulatory Regime

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

Within the BC Aquaculture Regulatory Program there is a Compliance and Enforcement Unit, dedicated to aquaculture compliance, as well as an Aquaculture Environmental Operations Unit, which monitors the activities of industry on an on-going basis. The Program provides oversight and works to ensure the orderly management of the industry, including planning and licencing, linkages with national and regional policy, as well as consultation and communications 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 IFMPs and the two are reviewed periodically to ensure consistency of management approaches.

1.3. Aquaculture Management Advisory Committees

Aquaculture Management Committee Meetings (AMACs) engage the aquaculture industry, First Nations, and other stakeholders in development of IMAPs and on-going feedback relevant to the management of Aquaculture. Information relating to AMAC meeting is posted on the DFO Consultations web pages: http://www.pac.dfo-mpo.gc.ca/consultation/aquaculture/index-eng.htm. 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 3,306 lbs of Geoduck may be collected as broodstock. Only licenced hatcheries are eligible to apply for broodstock collection licences.

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

2.2. Pre-Seed Harvest

The pre-seed harvest protocol was developed in 2006 and is currently under review. There may be supplemental harvest opportunities under the *DFO Policy for Access to Wild Aquatic Resources as it Applies to Aquaculture (2004).* The purpose of the pre-seeding 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"*. Any authorized pre-seed supplemental harvest is expected to be in addition to the TAC and IVQ allocated for the current season. When the pre-seed harvest policy is completed and approved, 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 pre-seed harvest, please contact a Pacific Fisheries Licencing Unit or a resource manager (see Contacts, Appendix 15).

3. CLOSURES

3.1. Contamination Closures

The Canadian Shellfish Sanitation Program (CSSP) is a federal food safety program jointly administered by the Canadian Food Inspection Agency (CFIA), Environment Canada (EC) and Fisheries and Oceans Canada (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:

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

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. All tenures must be clearly marked. Subtidal Geoduck tenures require marking on the sea floor, normally consisting of sinking ground line and concrete blocks.

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 sites require site marking, (intertidal and subtidal), pre-harvest notification, the use of serial numbered tags, and the provision of landing logs for each landing.

For more information, Shellfish Aquaculture Licence conditions are available at:

http://www.pac.dfo-mpo.gc.ca/aquaculture/licence-permis/shell-coq-eng.html

APPENDIX 6: GEODUCK AND HORSE CLAM COMMERCIAL HARVEST PLAN

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1. MANAGEMENT HIGHLIGHTS AND CHANGES FOR 2016/17

- **Change in Licence Year:** To facilitate an adjustment in licence year the 2016 fishery will run for 14 months from January 1, 2016 to February 28, 2017. No extra quota will be allocated to account for the 14 month fishery. Future fishing plans will run from March 1 to the end of February the following year.
- **Total Allowable Catch (changed from 2015):** The coast-wide Geoduck Total Allowable Catch (TAC) is 3,086,000 lb. (1,400 tonnes). 6,000 lb. of the TAC is allocated for biological samples and additional small harvests are authorized for biotoxin monitoring and broodstock collection. 3,080,000 lb. provides for 550 quota blocks of 5,600 lb. In addition, there may be a limited supplemental harvest opportunity of Geoduck on areas tenured for aquaculture conducted through amended licence conditions. (See Sections 4.5)
- **Additional Areas to be Fished Annually**: Geoduck Management Areas (GMA's) 18A and 19C will be fished on annual basis starting in the 2016 season.
- **Quota Blocks Transferability**: The Department approved a pilot in 2012, to allow quota transfers between vessels. This pilot program will continue in 2016 season. Transfers will be allowed permanently as well as temporarily in blocks of quota which equal 1/550 or approx 0.182% (5,600 lbs) of the Coastwide Commercial TAC. (See Section 4.3)
- **Landing Ports:** Three additional landing ports have been designated for the Geoduck Fishery; Bella Bella, Queen Charlotte City and Massett.
- **Transfer of Quota between Regions (unchanged from 2015):** To account for unforeseen circumstances, a maximum of 5 quota blocks (30,000 lbs) may be transferred between quota regions. The Total Allowable Catch (TAC) for the region/area will not exceed the maximum harvest option for the regions or any area within the region. (See Section 4.8.4.3)
- **Bed-by-Bed Management:** All areas will continue to be operated using bed-by-bed (and subbed) quotas. On-Ground Monitors (OGM) will be present on the North Coast and West Coast of Vancouver Island and will, with the full support of the Department, request that fish harvesters move when bed or subbed quotas are achieved. Non-compliance with the OGMs' request will result in a fishery closure pending resolution of the problem. Bed (and subbed) quotas for the Inside Waters 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 4.8)
- **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 5.
- **Season Extensions**: Ongoing high PSP 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 4.7.

- **Harvesting Bivalves near Waste Water Treatment Plants:** Plans are underway to improve the Canadian Shellfish Sanitation Program (CSSP), the management of bivalve shellfish harvest activities around waste water treatment plants and the response to potential failures. See Section 3.3.

2. LICENCE REQUIREMENTS

2.1. Licence Category

A category G or FG licence is required to harvest Geoduck and horse clam subtidally.

Category G or FG amended licence conditions are required to participate in any supplemental harvest opportunities.

2.2. Licence Fees

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

- The **product** of $252 multiplied by the number of tonnes of Geoduck authorised to be taken under the licence.
- That **product**, minus 40 percent of that **product,** or $1,000, whichever is less.

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.

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

2.3. Commercial Licensing

Fisheries and Oceans Canada's commercial licensing services are now provided through the National Online Licensing System (NOLS) located at https://fishing-peche.dfo-mpo.gc.ca. The NOLS enables secure and reliable online service delivery to both commercial and communal commercial users.

Fish harvesters are now able to perform all standard licensing transactions using the system. These transactions include:

- Renewing licences and paying licence fees, as well as renewing vessel registrations;
- Submitting licensing requests (such as vessel and quota transfers) and checking the status of requests;
- Submitting electronic documents in support of licensing requests;
- Printing licences, licence conditions, receipts, and other licensing documents;
- Appointing representatives to perform licensing transactions on a user's behalf.

The system provides fish harvesters with the ability to view their account information and manage their licensing requirements online, replacing traditional services previously offered over-the-counter or by regular mail. For instance, licence renewal notices are no

longer sent by mail; rather, clients are now notified through the online system when licences are ready for renewal.

Licence renewal and payment of fees are mandatory on an annual basis prior to the expiry date of each fishery 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, where applicable) 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.

2.3.1. Client Support

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, Monday to Friday).

For more information on how to register and use the system, visit the Department's website at www.dfo-mpo.gc.ca, or contact our client support.

2.3.2. Licence Renewal

In order to retain the privilege to be issued a commercial licence in the future, it is critical that you renew your 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 end of the season of the next year, the licence eligibility will cease to exist and DFO will be unable to consider any licence issuance requests in the future.

2.3.3. 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 4.5 may submit a 'Request for Amendment – Geoduck Supplemental Harvest" and obtain amended licence conditions to participate.

2.4. Fisher Identification Number (FIN)

A unique Fisher Identification Number (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 your Fisher Registration Card (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 Pacific Fishery Licencing Unit (PFLU) or a resource manager (see Contacts, Appendix 15).

2.5. 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.

2.6. Area Management

The Coast is divided into three regions, the North Coast, WCVI, and Inside Waters of Vancouver Island. 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 will be able to fish in multiple regions depending on its quota blocks.

The coast-wide distribution of 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: 75 quota blocks or 13.6% of the Coastwide commercial TAC.
- North Coast, portions of Areas 1 through 10, and related offshore areas: 410 quota blocks or 74.5% of the Coastwide commercial TAC.

2.7. 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 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.
- 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. In addition, 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. 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 Pacific Fishery Licence Unit or any of the Geoduck and Horse Clam resource managers (see Contacts, Appendix 15).

2.8. 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 CFIA Shellfish Operations Specialist in Burnaby at (604) 666-3737, Archipelago Marine Research at (800) 663-7152 or a resource manager (see Contacts, Appendix 15).

The collection of Geoduck for biotoxin monitoring samples is conducted by contractors and authorized through Scientific Licence. To maintain the open areas necessary to conduct the commercial fishery, a number of biotoxin monitoring stations are maintained throughout the season. In the Inside Waters and WCVI, these stations are operated collaboratively by a number of different bivalve harvesting groups including the UHA. In the North Coast, stations specifically for Geoduck harvest are maintained by the UHA and its contractors.

2.9. Collection of Geoduck for Broodstock

The collection of broodstock for enhancement and 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.

2.10. 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 a PFLU.

3. CLOSURES

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 Section 3.4 and 3.5 for information on all other seasonal and permanent closures.

3.1. 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, 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/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 the Appendix 15.

- In remote areas of the coast, the vessel master often needs to rely on a service provider or on-grounds monitors for transmission of information. However, while 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.

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*. 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

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 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;
   i. marina
   ii. ferry wharf
   iii. any floating living accommodation facility, other than a floating living accommodation described in subsection (c)
   iv. any finfish net pen, other than a finfish net pen described in subsection (d)

c) 25 m radius of any floating living accommodation facility located within a shellfish aquaculture tenure where a zero-discharge and appropriate waste management plan is a

condition of the Aquaculture licence and is approved by the Regional Interdepartmental Committee: and

d) 0 m 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 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/biotox/index-eng.html

3.2. 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. The Canadian Food Inspection Agency (CFIA), Environment Canada (EC) and DFO introduced changes to the Canadian Shellfish Sanitation Program (CSSP) shellfish harvesting and handling requirements in 2008.

Human wastes, sewage or refuse shall not be discharged from harvest 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 the Prevention of Pollution from Ships and for Dangerous Chemicals*, entered into force on May 3, 2007 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, and portable toilets or other designated human waste receptacles shall be cleaned before being returned to the vessel. (Facilities used for cleaning food-processing equipment shall never be used for cleaning portable toilets or designated human waste receptacles.)

All persons must clean their hands after using or cleaning the receptacles described above.

3.3. Harvesting Bivalves in the Vicinity of Wastewater Treatment Plants

Concerns have been raised regarding bivalve shellfish harvested in the vicinity of waste water treatment plants. Increased controls were implemented in 2009 to prevent shellfish

harvest in areas where a planned or unplanned release or discharge at a waste water treatment plant may potentially cause contamination.

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

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

For further information, contact Elysha Gordon at (250) 756-7192.

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

The following are seasonal closures to protect herring spawn and herring spawning grounds.

3.4.1. Inside Waters

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

- 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

3.4.2. West Coast Vancouver Island

Open times in the fishery will be scheduled to prevent conflict with herring fisheries and herring spawning activity in the South Coast districts. Fish harvesters will be notified of closures by the service provider, On-grounds Monitor (OGM) or fishery notices. For further information call a resource manager (see Contacts, Appendix 15).

- 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

3.4.3. 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.

3.5. 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.

3.5.1. Area 2

3.5.1.1. Burnaby Narrows: Subarea 2-16 and a portion of Subarea 2-13 west of a line running 328 degrees true through the northwest tip of Section Island (Section Cove). (Park)

3.5.1.2. Gwaii Haanas National Marine Conservation Area Reserve and Haida Heritage Site, Burnaby Narrows: Those waters of Subareas 2-13 and 2-16 inside a line commencing at 52º 23.071’ N and 131º 20.427’ W, east to a point at 52º 23.079’ N and 131º 22.790’ W, then following the southern shoreline of Kat Island east to a point at 52º 23.104’ N and 131º 22.193’ W, then east to a point at 52º 23.303’ N and 131º 22.277’ W, then following the western shoreline of Burnaby Island south to a point at 52º 20.982’ N and 131º 20.427’ W, then west to a point at 52º 20.733’ N and 131º 21.063’ W, then north following the eastern shoreline of Moresby Island back to the point of commencement. (National Marine Conservation Area)

3.5.1.3. Gwaii Haanas National Marine Conservation Area Reserve and Haida Heritage Site, **Louscoone Estuary**: Those waters of Subareas 2-33 and 2-34 north of a line drawn from 52º 11.828’ N and 131º 15.662’ W east to 52º 12.269’ N and 131º 14.579’ W. (National Marine Conservation Area)

3.5.1.4. Gwaii Haanas National Marine Conservation Area Reserve and Haida Heritage Site, **Flamingo Estuary**: Those waters of Subarea 2-37 north of a line drawn from 52º 14.523’ N and 131º 22.24’ W southeast to 52º 14.245’ N and 131º 21.481’ W. (National Marine Conservation Area)

3.5.1.5. Gwaii Haanas National Marine Conservation Area Reserve and Haida Heritage Site, **Gowgaia Estuary**: Those waters of Subarea 2-41 east of a line drawn from 52º 24.947’ N and 131º 32.13’ W southeast to 52º 24.233’ N and 131º 32.021’ W. (National Marine Conservation Area)

3.5.1.6. Gwaii Haanas National Marine Conservation Area Reserve and Haida Heritage Site, **Cape Saint James**: Those waters of Subareas 2-19, 102-3, 130-3 and 142-1 inside a line commencing at 51º56.509’ N and 131º01.547’ W, southwest to a point at 51º55.499’ N and 131º02.468’ W, then southeast to a point at 51º52.493’ N and 130º57.907’ W, then south to a point at 51º51.655’ N and 130º57.780’ W, then southeast to a point at 51º50.395’ N and 130º56.561’ W, then northeast to a point at 51º51.054’ N

and 130º54.702’ W, then north to a point at 51º53.826’ N and 130º55.640’ W, then northwest to a point at 51º58.517’ N and 130º59.468’ W, then west to a point at 51º58.727’ N and 131º00.620’ W then west following the southern shoreline of Kungit Island back to the point of commencement. (National Marine Conservation Area).

3.5.1.7. Gwaii Haanas National Marine Conservation Area Reserve and Haida Heritage Site, **SGang Gwaay**: Those waters of Subareas 2-31 and 142-1 inside a 3 km radius from the centre point on Anthony Island located at 52º 05.655’ N and 131º 13.178’ W. (National Marine Conservation Area)

3.5.2. Area 13

3.5.2.1. 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)

3.5.2.2. 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).

3.5.3. Area 13, 14, 15

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

3.5.4. Area 17

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

3.5.4.2. 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)

3.5.5. Area 23

3.5.5.1. 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)

3.5.5.2. Bamfield Marine Station Research Area Closure: Those waters of Subareas 23-4, 23-6 and 23-7 bounded by a line commencing at the light at Whittlestone Point and running directly to the southern tip of Haines Island; from the northwestern tip of Haines Island to the southern tip of Seppings Island; from the northwestern tip of Seppings Island to Kirby Point on Diana Island; from Kirby Point directly to the northwest tip of Fry Island; from the northwestern tip of Fry Island to the nearest adjacent point on Tzartus

Island; from Foucault Bluff on Tzartus Island to the northwest tip of Nanat Island; from the eastern tip of Nanat Island to the nearest adjacent point on Vancouver Island, and thence along the coastline of Vancouver Island to the point of commencement. (Research Area)

3.5.6. Area 24

3.5.6.1. 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)

3.5.6.2. 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)

3.5.6.3. 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 degrees01.849 minutes west longitude, 49 degrees11.137 minutes north latitude, thence due east to Vargas Island.

3.5.6.4. 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)

3.5.7. Area 26

3.5.7.1. 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 32.8west 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)

3.5.8. Area 28

3.5.8.1. 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)

3.5.8.2. 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)

3.5.8.3. 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)

4. GEODUCK MANAGEMENT MEASURES

4.1. Species

Geoduck (Panopea generosa)

4.2. 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).

4.3. Vessel Quotas

The Department approved a pilot, in 2012, to allow quota transfers between vessels. Transfers are allowed permanently as well as temporarily in blocks of quota which equal 1/550 of the Coastwide commercial TAC. The merits and feasibility of the quota transfers were reviewed through 2015. A third party review of the pilot was completed and the Department surveyed all licence holders. All respondents were in favor of continuing the pilot as a permanent part of the Geoduck fishery. For 2016 the pilot will continue while further consideration is given to making this a permanent 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 3,080,000 lb. For 2016 each quota block equals 5,600 lb.

4.3.1. 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 10.

- 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 January 1, 2016 to December 15, 2016 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.

4.4. Geoduck Experimental Enhancement

Enhancement policies and scientific advice will continue to be developed.

There will be harvest opportunities at Geoduck enhancement sites in the Inside Waters (Gulf) for the 2016 season. This harvest opportunity is included in the allocated quota for the Gulf and will be available for G or FG licensed vessels with quota blocks allocated to the Gulf. Any horse clams within the enhancement sites will be harvested at the same time as the Geoducks.

Harvest from enhancement sites occurred in 2015. The enhancement sites are scheduled to be harvested in 2016 for approximately 4,500 lb.

4.5. 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.

4.6. Fishing Areas and Openings

4.6.1. Growing Water Surveys (Environment 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/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.

4.6.2. Biotoxin Monitoring (Canadian Food Inspection Agency)

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

CFIA determines the area is safe for harvest the resource manager will prepare the documentation necessary for an area opening for approval by the Regional Director General. For further detail on the Canadian Shellfish Sanitation Program, see the Internet at:

http://www.inspection.gc.ca/food/fish-and-seafood/shellfish-sanitation/eng/1299826806807/1299826912745

4.6.3. Open Times (Fisheries & Oceans Canada)

A Geoduck Management Area (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 assigned to the current season's fishery will be opened as biotoxin monitoring permits. Fisheries may begin as weather and biotoxin monitoring permit. Subsequent openings, as requested by the UHA, will be conducted as biotoxin monitoring permits. See Section 3 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 6.1). 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.

4.7. 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 On-Grounds Monitor 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.

For the Department to consider a 15 day extension, owners of Geoduck licensed vessels who have quota remaining in the current season's fishery must demonstrate diligence in continuing to fish as soon as weather and/or biotoxin levels permit, in an attempt to complete the season within the prescribed timeframe of the IFMP.

4.8. Bed by Bed Management

4.8.1. Calculation of Bed Quotas

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 (and subbed) quotas are assigned through one of following methods.

4.8.1.1. 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. The lower 95% confidence interval and mean harvest options are calculated. Recommendations from the Area committees are considered up to a maximum of the mean harvest option on surveyed beds.

4.8.1.2. Unsurveyed Beds

For unsurveyed beds, estimates of current biomass are extrapolated from the Regional Density or from bed Density Categories 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 recommend lower/zero quotas based on quality or other factors.

4.8.1.3. Closed Beds

Beds that have been fished heavily in the past, with a reduction of 60 percent or more of the estimated original biomass (the limit reference point is 40%), are no longer available for fishing; zero quota is assigned. An exception has been made, for experimental purposes since 2009, for two GMAs on the WCVI where otter predation is documented. This experimental fishery is ongoing.

4.8.2. Assigning 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 will be recorded and considered for future survey or assessment.

4.8.3. Fishing Assigned Bed Quotas

The service provider, through the On-Grounds Monitor (OGM) on the North Coast and the West Coast, will notify the Geoduck vessel crews of the allocated quota in each Geoduck bed (or subbed) 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, 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.

4.8.4. Changing Assigned Quotas In-season

Changes to assigned quotas may occur in-season (to a maximum of the mean harvest option) 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 Branch.

4.8.4.1. Fallback Beds

For a variety of reasons (quality, remote location, exposure, impact by sea otters), 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.

A bed allocated quota, with or without fallback will be coded ‘green’. Beds with no allocated quota but with available quota (fallback) will be coded ‘yellow’. Beds that are closed, for any reason, will be coded ‘red’.

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. This is known 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 subbed. A new harvest site within the subbed 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 (see Section 4.8.4.2 (b)). The harvest of fallback quota will not be permitted from any recent (current season) harvest sites.

- Prior to fishing any fallback from ‘green’ beds it is requested that all ‘green’ beds within the open GMA are fished, or attempted to be fished, to the allocated quota first. Fallback on ‘yellow’ beds can be fished at any time following the rules above.

4.8.4.2. 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, 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. 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. Only areas scheduled for the current fishing season may be fished.

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.

4.8.4.3. 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 quota regions to mitigate access problems and/or harvest delays resulting from unforeseen circumstances, for example extended PSP closures, in-season sanitary closures or other 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. The maximum allowable transfer is five (5) quota blocks or 30,000 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 assigned to that year. This is, in effect, a temporary longer-term rotation and the annual harvest rate is adhered to over the two rotational cycles. It is simple to implement, since Growing Water Surveys and Biotoxin Monitoring Programs would be in place for these areas.

- 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. It is not as simple to implement, since Growing Water Surveys and Biotoxin Monitoring Programs must be in place prior to implementing the change to the management plan.

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

The OGM (see section 6) has the responsibility to request that vessels move when a bed or subbed quota has been taken:

- 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 immediately if there are problems in compliance.

4.8.6. 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 App. 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.

4.9. Inside Waters

4.9.1. 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.

4.9.2. Inside Waters Openings and Quotas

The 2016 Geoduck quota for the Inside Waters is 364,000 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 in 2016. **Harvest in eelgrass beds is not permitted.** Harvest at depths less than 10 feet below chart datum is not permitted.

The harvest of 4,500 lb. has been allocated to enhanced beds and is included in the allocated Inside Waters quota.

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.

The Inside quota area is scheduled to open February 1, 2016. The opening date may be adjusted based on discussions with industry, the service provider and approval from DFO.

Table 1: 2016 Geoduck Management Areas and Quotas - Inside Waters

GMA	Name	Description	Quota (lb.)
12A01	Northern Island	Subarea 12-11 and a portion of Subarea 12-16	29,096
12A02	Walker Group	Subareas 12-10 and 12-13	2,000
12B01a	East side Vansittart Island	Portion of Subarea 12-12	17,148
12B01b	West side Vansittart Island	Portion of Subarea 12-12	11,967
12B02	Northern Goletas Channel	Subarea 12-15	37,314
12B03a	Southern Goletas Channel	Portion of Subarea 12-16	66,575
14B01	Comox Bar	Portions of Subareas 14-7, 14-9 and 14-10	99,500

14C01	Comox Can Buoy to North Baynes Sound	Portion of Subarea 14-11	0
14C02	North Baynes Sound	Subarea 14-15	2,000
14C03	South Baynes Sound	Portion of Subarea 14-8	0
16D01	Thormanby Island	Portions of Subareas 16-1 and 16-2	20,800
17A01	Icarus Point/Lantzville Shore	Subarea 17-18	13,744
17A02	Nanoose Bay to Blunden Point	Subarea 17-19	0
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	30,356
17B02	Pylades Channel	Portion of Subareas 17-4 and 17-16, Subarea 17-17	0
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	3,700
18A	Boatswain Bank	Portion of Subarea 18-7	6,500
19C	Sydney and Cordova Channel	Subareas 19-3, 19-4, 19-5, 19-6	6,500
29	Outside Valdes Island	Portion of Subarea 29-5	12,300
	Enhancement Sites		4,500
Subtotal (lb.)			**364,000**
Biological Samples (lb.)			**1,000**
Total Allowable Catch (lb.)			**365,000**

GMA's with '0' quota allocated may be fished under the fallback protocol (see 4.8.4.1)
* Indicates a change in boundary, rotation, or name.
Note: Some areas of the coast are the subject of discussion about aquaculture tenure applications. Consultations on both the wild and potential aquaculture fishery continue.

See Section 3 for Closures within these areas, Appendix 9 for complete GMA descriptions and Appendix 11 for maps.

4.10. West Coast of Vancouver Island

4.10.1. Designated Landing Ports

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

4.10.2. West Coast Openings and Quotas

The 2016 Geoduck quota for the WCVI is 420,000 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-five (75) quota blocks has been designated to

these areas in 2016. **Harvest in eelgrass beds is not permitted.** Harvest at depths less than 10 feet below chart datum is not permitted.

The West Coast quota area is scheduled to open February 1, 2016. The opening date may be adjusted based on discussions with industry, the service provider and approval from DFO.

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

- Specific GMAs (highlighted with [1]) must be fished between November 15 and March 15.
- Sheltered areas of Area 24 (highlighted with [2]) will be available at the start of the season.
- As soon as Area 23 biotoxin sampling permits, this area will open and the quota completed before moving.
- Upon completion of Area 23 and as biotoxin sampling permits, Area 20 may open.
- Following Area 23, Area 25 to 27 will open and be fished. Vessels will work together with a packer to fish the areas.
- **Historically it has been difficult to complete the quota allocated in Areas 25-27. The remainder of Areas 24 <u>will not be opened</u> until Areas 25 through to 27 are complete, quota will not be transferred.**
- Finally, the remainder of Area 24 will open. Vessels will fish exposed areas during good weather, and sheltered areas to finish the season.

Table 2: 2016 Geoduck Management Areas and Quotas - West Coast Vancouver Island

GMA	Name	Description	Quota (lb.)
20A	Sooke	Subareas 20-4, 20-5 and 20-6	0
23A01	Maggie River	Portions of Subareas 23-10 and 23-11	21,782
23A02	Macoah Pass	Portions of Subareas 23-10 and 23-11	4,679
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	11,218
23D01	Pinkerton Islands	Portion of Subarea 23-8	2000
23D02	Canoe Island to Useless Inlet	Portions of Subareas 23-4, 23-6, 23-7 and 23-8	13,015
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	8,781
24A02a	Yarksis	Portion of Subarea 24-8	34,000

24A02b	East Side Father Charles Channel	Portion of Subarea 24-8	0
24A03	Tonquin/Wickaninnish	Portion of Subarea 24-8	0
24A04	Epper/Dunlap	Portions of Subareas 24-6 and 24-7	40,961
24A05	Lemmens Inlet	Subarea 24-9	5,000
24A06a	Yellow Bank [2]	Portion of Subarea 24-7	44,310
24A06b	East Maurus Channel [2]	Portion of Subarea 24-6	6,000
24A06c	Elbow Bank North [2]	Portion of Subarea 24-6	13,430
24A06d	Elbow Bank South [2]	Portion of Subarea 24-6	2,000
24B01a	Bartlett Island [2]	Portion of Subarea 24-6	54,000
24B01b	Blunden Island [2]	Portion of Subarea 24-6	20,500
24B02a	Coomes Bank	Portion of Subarea 24-6	6,500
24B02b	Calmus Pass [2]	Portion of Subarea 24-6	4,000
24B03	Millar Channel [1, 2]	Portions of Subareas 24-4 and 24-6	53,132
24B04	Russell Channel [1]	Portion of Subarea 24-6	33,667
24C01	Sydney Inlet [2]	Subarea 24-2	5,388
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 [2]	Subareas 24-3, a portion of Subarea 24-4, Subareas 24-13 and 24-14	5,312
24D01c	McKay Island [2]	Portion of Subarea 24-4, Subarea 24-5	1,325
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	8,000
25B	Nuchatlitz	Portion of Subarea 25-13, Subarea 25-14	0
25C	Rosa Harbour	Portion of Subarea 25-13	0
25D	Nootka	Subareas 25-3 to 25-8, Subarea 25-15	5,000
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	16,000
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

27A	Quatsino Inlet	Subarea 27-7	0
27B	Cliffe Point to Lawn Point	Portion of Subarea 27-2	0
27C	Forward Inlet	Subarea 27-3	0
27D	Kains Island	Portion of Subarea 27-2	0
27E	San Josef Bay	Portion of Subarea 27-1	0
27F	Sea Otter Cove	Portion of Subarea 27-1	0
27G	Exploratory	Portions of Subareas 27-1 and 27-2	0
27H	Klaskino Inlet	Subarea 27-5	0
27I	Klaskish Inlet	Subarea 27-6	0
Subtotal (lb.)			**420,000**
Biological Samples (lb.)			**1,000**
Total Allowable Catch (lb.)			**421,000**

GMA's with '0' quota allocated may be fished under the fallback protocol (see 4.8.4.1)
* Indicates a change in boundary, rotation, or name.
[1] Indicates these GMA's must be fished between November 15 and March 15
[2] Indicates **s**heltered areas to be fished at the beginning of the season.

See Section 3 for Closures within these areas, Appendix 9 for complete GMA descriptions and Appendix 12 for maps.

The OGM (see Section 6) 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.

4.11. North Coast

4.11.1. Designated Landing Ports

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

4.11.2. North Coast Openings and Quotas

The 2016 Geoduck quota, for the North Coast area is 2,296,000 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 (410) quota blocks have been designated to these areas in 2016. 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.

The North Coast quota area is scheduled to open February 1, 2016. The opening date may be adjusted based on discussions with industry, the service provider and approval from DFO.

Table 3: 2016 Geoduck Management Areas and Quotas – North Coast

GMA	Name	Description	Quota (lb.)
CCA01	McMullin Group	Portion of Subarea 7-18	6,606
CCA02	Stryker Island	Portion of Subareas 7-18 and 7-23	36,722
CCA03	Tribal Group	Portion of Subarea 7-18	60,508
CCA04	Admiral Group	Portion of Subarea 7-18	26,047
CCA05	Prince Group	Portion of Subarea 7-25	26,164
CCA06a	Latta Island	Portion of Subarea 7-25	39,592
CCA06b	Hunter Channel	Portion of Subareas 7-17, 7-18, 7-25	13,551
CCA07a	McNaughton Group North	Portion of Subarea 7-25	42,738
CCA07b	McNaughton Group - Kinsmen	Portion of Subarea 7-25	22,499
CCA07c	McNaughton Group South	Portion of Subarea 7-25	35,861
CCA07ex	Superstition Point Experimental Area	Portion of Subarea 7-25	5,292
CCA08	Simmonds Group	Portion of Subarea 7-25	83,673
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	72,272
CCA12a	Typhoon Island	Portion of Subarea 7-27	0
CCA12b	South Edna Island	Portion of Subarea 7-27	7,209
CCA12c	Triquet Island	Portion of Subarea 7-27	68,680
CCA13	Spider Anchorage (Ronald)	Portion of Subarea 7-27	61,442
CCA14	Serpent Group	Portion of Subarea 7-27	15,782
CCA15a	Kittyhawk Group North	Portion of Subarea 7-28	37,125
CCA15b	Kittyhawk Group South	Portion of Subareas 7-27, 7-28	36,432
CCB01	Mathieson Channel	Portion of Subarea 7-9	39,462
CCB02	Moss Passage	Portion of Subarea 7-3, Subarea 7-4, a portion of Subarea 7-9	52,467
CCB03	Ivory Island	Portion of Subarea 7-9	42,377
CCB04	Berry Inlet	Subarea 7-8, a portion of Subarea 7-12	47,762
CCB05a	Seaforth Channel West	Portion of Subarea 7-12 and portion of 7-21	47,729
CCB05b	Seaforth Channel East	Portion of Subareas 7-12, 7-17, Subarea 7-22, a portion of Subarea 7-23	23,333

CCB06	St. John Harbour	Portion of Subarea 7-32	7,688
CCB07	Cape Mark (Bowling Alley)	Portion of Subarea 7-32	8,800
CCB08	Godfrey Rock	Portion of Subareas 7-1, 7-32	0
CCB09	Princess Alice Island	Subarea 7-20	0
CCB10	Thompson Bay	Portion of Subarea 7-21	13,651
CCB11	Houghton Islands	Subarea 7-19	12,031
CCB12	Joassa Channel/Raymond Passage	Portion of Subarea 7-23, Subarea 7-24	31,218
CCC01	Nalau Passage	Portion of Subarea 8-2, Subarea 8-4	78,295
CCC02	Stirling Island West	Subarea 7-26, a portion of Subarea 7-27	14,525
CCC03	Choked Passage	Portion of Subareas 8-1, 8-2	128,724
CCC04	South Hakai Passage	Portion of Subarea 8-2, Subarea 8-3,	48,434
CCC05	Fitz Hugh Sound	Subarea 8-16, Subarea 9-12	11,004
CCC06	Rivers Inlet	Portion of Subarea 9-1, Subareas 9-2, 9-3, 9-4, 9-11	17,317
CCC07	Calvert Island North	Portion of Subarea 9-1	7,010
CCC08	Calvert Island South (Grief Bay)	Portion of Subarea 9-1, Subareas 10-1, 10-2	15,073
CCC09	Smith Inlet North	Portion of Subareas 10-3, 10-4	19,013
CCC10	Smith Inlet South	Portion of Subareas 10-3, 10-4	16,239
CCD01a	Rennison Island	Portion of Subarea 6-11 , Portion of 6-10	26,000
CCD01b	West Laredo Channel (north of Baker Point)	Portion of Subarea 6-11,	43,602
CCD01c	West Laredo Channel (south of Baker Point)	Portion of Subarea 6-14	41,490
CCD02	East Laredo Channel	Portion of Subarea 6-14	40,356
CCD03	Laredo Inlet	Portion of Subareas 6-16, 6-19	114,343
CCD04	Kitasu Bay	Subarea 6-18	104,766
CCD05	Larkin Point	Portion of Subarea 6-16	32,802
CCD06	Laredo Channel	Subarea 6-15, a portion of Subarea 6-16	24,455
CCD07	East Aristazabal Island South	Portion of Subareas 6-13, 6-17	54,094
CCD08	Rudolf Bay	Portion of Subarea 6-17	4,138
CCD09a	West Higgins Passage (a)	Portion of Subareas 6-16, 6-17	33,292
CCD09b	West Higgins Passage (b)	Portion of Subareas 6-16, 6-17	32,428
CCD10	SW Price Island (Day Point)	Portion of Subareas 7-1, 7-2, 7-31	74,549
CCD11	West Price Island	Portion of Subarea 7-31	34,049
CCD12	Milbanke Sound South	Portion of Subarea 7-3	15,788

CCD13	Milbanke Sound North (East Higgins)	Portion of Subarea 7-3	51,090
PRG01	Conel Island	Portion of Subarea 4-1	42,500
PRG02b	Baron Island North	Portion of Subarea 4-1	33,400
PRA10	Arriaga Islands	Portion of 6-13	79,850
PRA11	Weeteeam Bay West	Portion of Subarea 6-13	17,610
PRA12	Weeteeam Bay Mid	Portion of Subarea 6-13	15,051
Subtotal (lb.)			**2,296,000**
Biological Samples (lb.)			**4,000**
Total Allocated Quota (lb.)			**2,300,000**

GMA's with '0' quota allocated may be fished under the fallback protocol (see 4.8.4.1)

* Indicates a change in boundary, rotation, or name.

See Section 3 for Closures within these areas, Appendix 9 for complete GMA descriptions and Appendix 12 for maps.

The OGM (see Section 6) 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. HORSE CLAM MANAGEMENT MEASURES

5.1. Species

Horse clam (Tresus capax and T. nuttallii)

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. 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 3 Closures.

5.4. 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.

5.5. 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 6.2.6. 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.

5.6. 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.

5.7. 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.

6. 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 (and subbed) 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 WCVI areas.

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 or subbed 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 in 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 (800) 663-7152 or (250) 383-4535.

6.1. 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.

6.1.1. 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 at (800) 663-7152 or (250) 383-4535, or through the service provider's representatives (On-Grounds Monitor or Dockside Observer). For telephone numbers of Observers, contact the service provider.

6.1.2. 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.

6.2. Catch Validation

6.2.1. 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.

6.2.2. 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.

6.2.3. 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.

6.2.4. 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.

6.2.5. 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, either a coast-wide average net weight of 50 pounds per cage or a calculated vessel average cage weight, determined by a resource manager, 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.

6.2.6. 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.

6.2.6.1. 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 be designated to the same licence 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."

6.2.6.2. 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.

6.2.7. 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.

6.3. 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).

6.3.1. 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 bedcode.
- 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 4.8.6).

6.3.2. Fishing Location Information (Charts and GIS data)

6.3.2.1. 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.

6.3.2.2. WCVI Management Area

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

6.3.2.3. North Coast Management Area

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

6.3.3. 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 or (250) 756-7306

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.

6.3.4. 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.

6.3.5. 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.

6.3.6. 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.

6.3.7. 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 BC V6C 3S4

Fish slips may be downloaded and printed at http://www.pac.dfo-mpo.gc.ca/stats/fishslips-carnets/index-eng.html.

Fish slip books may also be ordered from the printer at user cost at http://www.pac.dfo-mpo.gc.ca/stats/fishslips-carnets/index-eng.html. Phone (604) 666-2716 for more information.

7. GENERAL INFORMATION

7.1. Worksafe BC

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

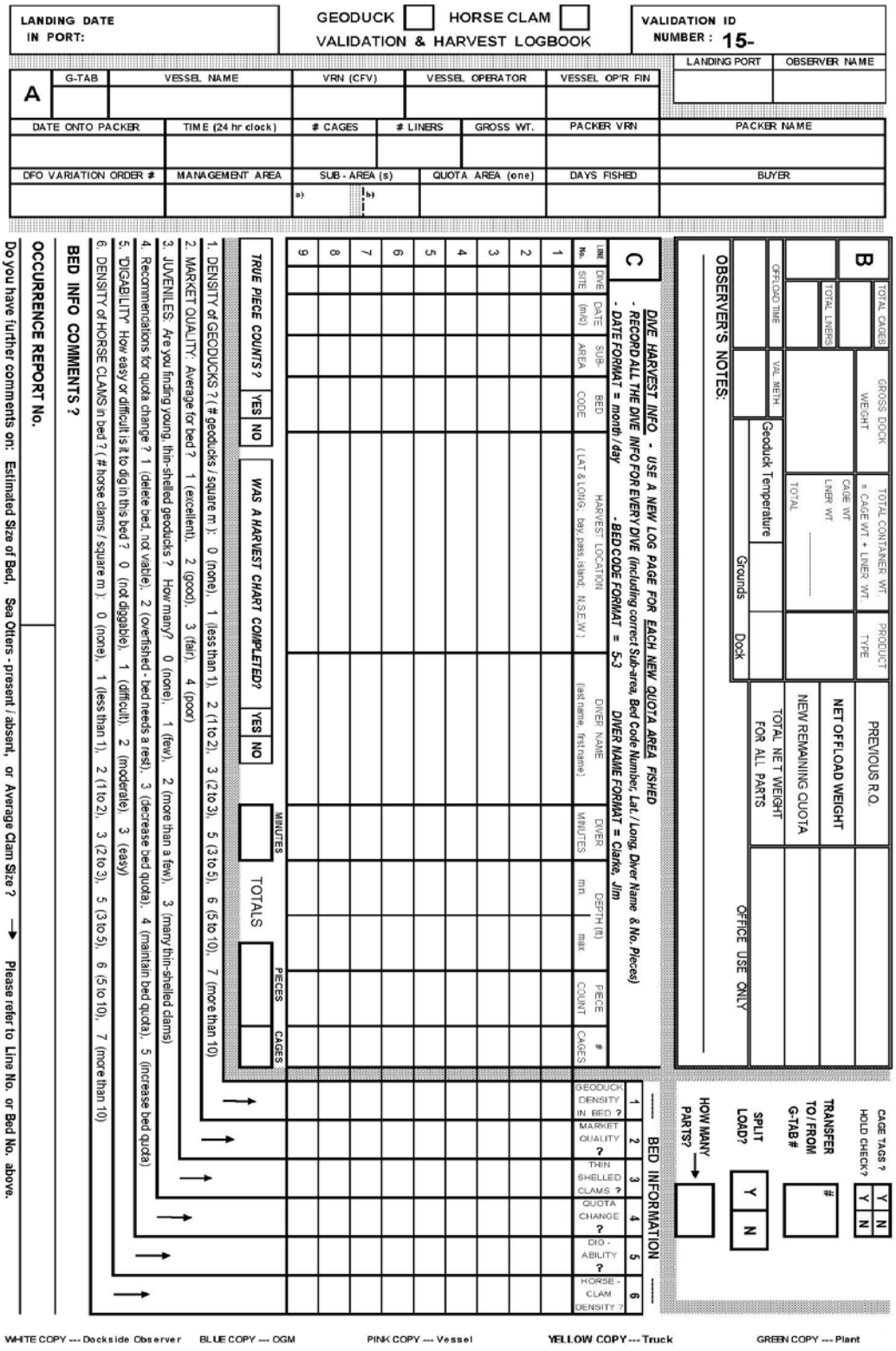
www.worksafebc.com

See Appendix 16 for more information.

7.2. Sales of Geoduck and Horse Clam

The *B.C. Fish Inspection Act* Section 12 (1.1) states: “No person shall sell or attempt to sell any harvested bivalve molluscs unless the molluscs were, before the sale or attempted sale, processed in an establishment that at the time of processing held a valid certificate of registration issued by the CFIA”. Geoduck and horse clam harvesters may sell their clams only to a duly licensed fish buyer.

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 use bed code 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**.

VESSEL NAME **VRN xxxxx**

G-Tab: _____ **Harvest Date:** _____

Quota Area (Geoduck Management Area, GMA): _____

Area-Subarea-Bedcode [e.g. 24-6-4(2)] : _____

Location of Catch: _____
(e.g., Point, Cove, Bank, Inlet, Island)

Product Type: ☐ Geoduck ☐ Horse Clam

Example of a shellfish cage tag for a specific vessel

INFINITY SEAFOODS INC
460 Distant Pl., Vancouver, B.C. V1P 2L4, 284-6632

Vessel: _____ **VRN:** _____

G-Tab: _____ **Harvest Date:** _____

Quota Area (Geoduck Management Area, GMA): _____

Area-Subarea-Bedcode [e.g. 24-6-4(2)] : _____

Location of Catch: _____
(e.g., Point, Cove, Bank, Inlet, Island)

Product Type: ☐ Geoduck ☐ Horse Clam ☐ Sea Urchin
☐ Sea Cucumber ☐ Other _____

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”

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

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Harvesters must ensure there is no harvest within a sanitary closure. A copy of the complete list 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/index-eng.html

1. INSIDE WATERS (GULF) QUOTA REGION 2016

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.

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 point south of the Noble Islets light, thence to Boxer Point on Nigei Island.

GMA 12A02, Walker Group: Subareas 12-10 and 12-13.

GMA 12B01a, East Vansittart Island: A portion of Subarea 12-12:
1. east of a line drawn from a point on Vansittart Island at 50 degrees 55.241 minutes north latitude, 127 degrees 47.950 minutes west longitude, due north to the Subarea 12-12 boundary and
2. southeast of a line drawn from a point on Vansittart Island at 50 degrees 54.605 minutes north latitude, 127 degrees 48.417 minutes west longitude, to Pivot Point on Hope Island at 50 degrees 54.360 minutes north latitude, 127 degrees 50.164 minutes west longitude.

GMA 12B01b, West Vansittart Island: A portion of Subarea 12-12:
1. west of a line drawn from a point on Vansittart Island at 50 degrees 55.241 minutes north latitude, 127 degrees 47.950 minutes west longitude, due north to the Subarea 12-12 boundary and
2. northwest of a line drawn from a point on Vansittart Island at 50 degrees 54.605 minutes north latitude, 127 degrees 48.417 minutes west longitude, to Pivot Point on Hope Island at 50 degrees 54.360 minutes north latitude, 127 degrees 50.164 minutes west longitude.

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 point south of the Noble Islets light at 50 degrees 48.369 minutes north latitude, 127 degrees 35.195 minutes west longitude, thence to Boxer Point

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 point due east of Duval Point at 50 degrees 45.654 minutes north latitude, 127 degrees 28.419 minutes west longitude , then west to Duval Point.

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 degrees 41.52 minutes north latitude, 124 degrees 49.72 minutes west longitude to the P54 buoy at 49 degrees 38.75 minutes north latitude, 124 degrees 51.5 minutes west longitude 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 Point on Hornby Island.

GMA 14B03, North Comox Bar (inside portion): That portion of Subarea 14-11 inside a line drawn from the road entrance gate to HMCS Quadra on Goose Spit at 49 degrees 39.75 minutes north latitude, 124 degrees 54.21 minutes west longitude, thence to the P52 buoy at 49 degrees 39.31 minutes north latitude, 124 degrees 51.89 minutes west longitude, 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 degrees 36.88 minutes north latitude, 124 degrees 54.18 minutes west longitude, thence northward to the point of commencement.

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 degrees 39.31 minutes north latitude, 124 degrees 51.89 minutes west longitude, 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 degrees 36.88 minutes north latitude, 124 degrees 54.18 minutes west longitude.

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 Point in Deep Bay at 49 degrees 28.081 minutes north latitude, 124 degrees 43.600 minutes west longitude northwesterly to a point on Denman Island north of Repulse Point at 49 degrees 29.369 minutes north latitude, 124 degrees 45.391 minutes west longitude.

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

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

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

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

GMA 17B01, North Gabriola Island to Neck Point: 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 Point and the most northwesterly point of Link Island drawn to Danger Reefs thence west to Blackberry Point on Valdes Island;
2. Subarea 17-17.

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 Point near Chemainus Bay and south of a line drawn from Danger Reefs to Blackberry Point on Valdes Island;
3. Subareas 17-8 and 17-9.

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.

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.

GMA 19C, Sydney and Cordova Channel: Subareas 19-3, 19-4, 19-5, 19-6.

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

2. WEST COAST VANCOUVER ISLAND QUOTA REGION 2016

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

GMA 23A01, Maggie River: Those portions of Subarea 23-10 and Subarea 23-11:
1. southerly of a line across Toquart Bay from Harris Point on Vancouver Island to an unnamed point on Vancouver Island at 49 degrees 01.76 minutes north latitude, 125 degrees 21.48 minutes west longitude;
2. westerly of a line from a point on the line across Toquart Bay approximately 300m offshore at 49 degrees 01.11 minutes north latitude, 125 degrees 21.30 minutes west longitude 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; and
3. northwest of a line in Newcombe Channel and Macoah Passage running from 48 degrees 59.59 minutes north latitude, 125 degrees 21.96 minutes west longitude to 48 degrees 54.08 minutes north latitude, 125 degrees 29.52 minutes west longitude.

GMA 23A02, Macoah Pass: Those portions of Subarea 23-10 and Subarea 23-11:
1. southeast of a line in Newcombe Channel and Macoah Passage running from 48 degrees 59.59 minutes north latitude, 125 degrees 21.96 minutes west longitude to 48 degrees 54.08 minutes north latitude, 125 degrees 29.52 minutes west longitude, and
2. 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 an unnamed point on Vancouver Island at 49 degrees 0.89 minutes north latitude, 125 degrees 19.2 minutes west longitude to an unnamed point on Vancouver Island at 49 degrees 01.76 minutes north latitude, 125 degrees 21.48 minutes west longitude.

GMA 23C, Mayne Bay, Stopper, Bryant & Curwen Islands:

1. Subarea 23-9;
2. A portion of Subarea 23-10 southerly of a line across Toquart Bay from an unnamed point on Vancouver Island at 49 degrees 0.89 minutes north latitude, 125 degrees 19.2 minutes west longitude to an unnamed point on Vancouver Island at 49 degrees 01.76 minutes north latitude, 125 degrees 21.48 minutes west longitude and easterly of a line from a point on the line across Toquart Bay approximately 300m offshore at 49 degrees 01.11 minutes north latitude, 125 degrees 21.30 minutes west longitude, southerly 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, Pinkerton Islands: A portion of Subarea 23-8:
1. north of the northern boundary of the Broken Islands Closure and
2. west of a line drawn due south from an unnamed point on Vancouver Island northeast of Canoe Island at 48 degrees 57.425 minutes north latitude, 125 degrees 15.679 minutes west longitude.

GMA 23D02, Canoe Island to Useless Inlet:
1. Portions of Subarea 23-4, 23-6 and 23-7 west of a line drawn from Baeria Rocks to Hornby Rocks (at 48 degrees 48.792 minutes north latitude, 125 degrees 17.694 minutes west longitude) and north of a line from Baeria Rocks easterly to an unnamed point on Seddall Island at 48 degrees 57.744 minutes north latitude, 125 degrees 03.995 minutes west longitude.
2. A portion of Subarea 23-8 north of the northern boundary of the Broken Islands Closure and east of a line drawn due south from an unnamed point on Vancouver Island northeast of Canoe Island at 48 degrees 57.425 minutes north latitude, 125 degrees 15.679 minutes west longitude.

GMA 23E01, Trevor Channel to Alberni Inlet:
1. Subareas 23-3; and
2. A portion of Subarea 23-4 excepting that portion of Subarea 23-4 included in the Bamfield Study Area.

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 degrees 48.792 minutes north latitude, 125 degrees 17.694 minutes west longitude), south of a line from Baeria Rocks easterly to an unnamed point on Seddall Island at 48 degrees 57.744 minutes north latitude, 125 degrees 03.995 minutes west longitude, and excluding portions of these Subareas included in the Bamfield Study Area, and
2. Subarea 23-5.

GMA 24A02a, Yarksis: A portion of Subarea 24-8:
1. bounded by a line on the north from Rassier Point to Schindler Point and
2. bounded on the west by the shoreline of Vargas Island and
3. bounded on the east by a line drawn between Moser Point on Vargas Island to an unnamed point northwest of Kakawis (at 49 degrees 11.4 minutes north latitude, 125 degrees 55 minutes west longitude).

GMA 24A02b, East Side Father Charles Channel: A portion of Subarea 24-8:
1. bounded on the west by a line from an unnamed point near Kakawis (at 49 degrees 11.4 minutes north latitude,125 degrees 55 minutes west longitude) to Moser Point and
2. bounded on the south, east and north by a line from Moser Point 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 Point, thence to Schindler Point, thence to Rassier Point.
NOTE: Contamination closure number 24.1.

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. bounded on the west and southwest by a line from the western most point of Wickaninnish Island, thence due south to the southern boundary of Subarea 24-8, which is a line from Cox Point to the south western most point Vargas Island, near Ahous Point, thence along the Subarea 24-8 southern boundary line to Cox Point, thence along the shore of Vancouver Island to the point on Esowista Peninsula due east of the mid-channel buoy Y3.

GMA 24A04, Epper/Dunlap
1. That portion of Subarea 24-6 bounded on the west by a straight line from a prominent unnamed point on Vancouver Island approximately 1/2 mile northwest of the western most point of Morfee Island (at 49 degrees 13.6 minutes north latitude, 125 degrees 58.1 minutes west longitude) southeast to the western most point of Morphee Island, along the south shore of Morphee Island to the light on the south end of Morphee Island, thence to the western most point on Dunlap Island, thence southeast along the shore of Dunlap Island to the southernmost point of Dunlap Island, thence due east to Meares Island, thence northerly along the shore of Meares Island to Roberts Point, thence to the eastern most point on Kraan Head thence to the point of commencement;
2. 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 Point, thence back to the point of commencement at Kraan Head.
Note: A portion of Subarea 24-6 included in a line from Robert Point on Meares Island westerly to the northern point on Dunlap Island, thence following the eastern shore of Dunlap Island to the southernmost point, thence due east to Meares Island, thence along the shore to the point of commencement is closed as a Research Area.

GMA 24A05, Lemmens Inlet: Subarea 24-9 excluding a portion south of a line from a point on the shore of Vancouver Island at 49 degrees 07.2 minutes north latitude, 125 degrees 49.0 minutes west longitude, thence to a point on an unnamed islet in the McBey Islets at 49 degrees 07.4 minutes north latitude, 125 degrees 49.1 minutes west longitude, thence easterly to a point on an unnamed islet in the McBey islets at 49 degrees 07.4 minutes north latitude, 125 degrees 48.6 minutes west longitude, thence to a point on the shore of Vancouver Island at 49 degrees 07.2 minutes north latitude, 125 degrees 48.3 minutes west longitude.
Note: McBey Islets are closed as they are included in the Pacific Rim National Park.

GMA 24A06a, Yellow Bank : A portion of 24-7 inside a line drawn from: eastern most point of Kraan Head northeast to the Northern most point of Saranac Island thence to the southernmost point of Saranac Island, thence to an unnamed point on Meares Island on the northern shore of Ritchie Bay at 49 degrees, 14.18 minutes north latitude, 125 degrees, 53.99 minutes west longitude, thence along the shoreline to an unnamed point at 49 degrees, 13.92 minutes north latitude, 125 degrees, 53.87 minutes west longitude thence to Robert Point thence to the point of

commencement at the eastern most point of Kraan Head. Note: The waters of Ritchie Bay are closed as a Research Area.

GMA 24A06b, East Maurus Channel: A portion of Subarea 24-6 along the Meares Island shore between Schindler Point and an unnamed point on Meares Island due east of the southern tip of Dunlap Island, out to the 20 metre depth contour.

GMA 24A06c, Elbow Bank North: A portion of Subarea 24-6 east of a line commencing at the western most point of Dunlap Island, thence southwest to an unnamed point on Vargas Island at 49 degrees 12.445 minutes north latitude, 125 degrees 57.140 min west longitude, thence southeast along the shore of Vargas Island to an unnamed point at 49 degrees 12.321 minutes north latitude, 125 degrees 57.128 minutes west longitude, 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 point on Meares Island, thence westerly to the southernmost point of Dunlap Island, thence to the point of commencement.

GMA 24A06d, Elbow Bank South: A portion of Subarea 24-6 south of a line from to an unnamed point at 49 degrees 12.321 minutes north latitude, 125 degrees 57.128 minutes west longitude, 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 Point and Rassier Point, thence northwesterly along the line between Schindler Point and Rassier Point, 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 Point and following the shore to an unnamed point on the eastern side of Siwash Cove at 49 degrees 15.737 minutes north latitude, 126 degrees 11.285 minutes west longitude, thence to Monks Islet light, thence southwest through the southeast point of Lawrence Island to the Subarea 124-3 boundary, thence northwest along the Subarea boundary to the point of commencement.

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 an unnamed point on Vargas Island at 49 degrees 13.0 minutes north latitude, 126 degrees 01 minutes west longitude.

Note: Ahous Bay is closed as a whale sanctuary.

GMA 24B02a, Coomes Bank: A portion of Subarea 24-6 bounded on the east by a straight line from a prominent unnamed point on Vancouver Island approximately 1/2 nautical mile northwesterly of the western most point of Morfee Island at 49 degrees 13.619 minutes north latitude, 125 degrees 58.393 minutes west longitude, thence to the western most point on Morfee Island, thence west to a light at Eby Rock at 49 degrees 13.143 minutes north latitude, 126 degrees 01.189 minutes west longitude, thence to Monks Island light, thence northerly to the unnamed point immediately south of Chetarpe I.R. at 49 degrees 14.7 minutes north latitude, 126 degrees 09 minutes west longitude, thence to the point of commencement.

GMA 24B02b, Calmus Pass: A portion of Subarea 24-6 bounded by a line drawn near Eby Rock at 49 degrees 13.143 minutes north latitude, 126 degrees 01.189 minutes west longitude 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 unnamed point on Vargas Island at 49 degrees 12.445 minutes north latitude, 125 degrees 57.140 minutes west longitude thence west along the shore of Vargas Island to an unnamed point on Vargas Island at 49 degrees 12.984 minutes north latitude, 126 degrees 01.0433 minutes west longitude, thence to the point of commencement near Eby Rock.

GMA 24B03, Millar Channel: Portions of Subarea 24-4 and 24-6:
- bounded on the north by a line from Clifford Point to an unnamed point on Flores Island at 49 degrees 17.622 north latitude, 126 degrees 03.521 minutes west longitude; and
- bounded on the south by a straight line from a prominent point to the south of Chetarpe I.R. at 49 degrees 14.7 minutes north latitude, 126 degrees 09 minutes west longitude bearing 302 degrees true in a northwest direction to a prominent point of land located 0.7 nautical miles southwest of Yates Point on Flores Island. **NOTE**: GMA only open between November 15 and March 15.

GMA 24B04, Russell Channel: A portion of Subarea 24-6 south of a line drawn from a point 0.7 nautical miles southwest of Yates Point on Flores Island to the unnamed point south of Chetarpe Indian Reserve on Vancouver Island at 49 degrees 14.7 minutes north latitude, 126 degrees 09 minutes west longitude, thence southerly to Monks Islet light, thence westerly to the unnamed point on the west side of Siwash Cove on Flores Island, thence along the shore of Flores Island to the point of commencement. **NOTE**: portions of GMA only open between November 15 and March 15.

GMA 24C01, Sydney Inlet
1. Subarea 24-2.
2. A portion of 24-3 westerly of a line from drawn from an unnamed point on Flores Island at 49 degrees 23.65 minutes north latitude, 126 degrees 13.85 minutes west longitude to an unnamed point on Vancouver Island at 49 degrees 24.27 minutes north latitude, 126 degrees 13.57 minutes west longitude.

NOTE: Contamination closure number 24.7.

GMA 24C02, Exposed
1. Subareas 24-1;
2. A portion of Subarea 24-8 southerly of a line from Moser Point 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. Subarea 24-3 excluding the portion westerly of a line from drawn from an unnamed point on Flores Island at 49 degrees 23.65 minutes north latitude, 126 degrees 13.85 minutes west longitude to an unnamed point on Vancouver Island at 49 degrees 24.27 minutes north latitude, 126 degrees 13.57 minutes west longitude;
2. A portion of Subarea 24-4 north of a line drawn from an unnamed point on Flores Island at 49 degrees 20.991 minutes north latitude, 126 degrees 04.912 minutes west longitude to an unnamed point on Vancouver Island at 49 degrees 20.440 minutes north latitude, 126 degrees 03.535 minutes west longitude;
3. Subareas 24-13 and 24-14.

GMA 24D01c, McKay Island

1. A portion of Subarea 24-4 south of a line drawn from an unnamed point on Flores Island at 49 degrees 20.991 minutes north latitude, 126 degrees 04.912 minutes west longitude to an unnamed point on Vancouver Island at 49 degrees 20.440 minutes north latitude, 126 degrees 03.535 minutes west longitude and north of a line drawn from Clifford Point at 49 degrees 17.144 minutes north latitude, 126 degrees 01.877 minutes west longitude to an unnamed point on Flores Island at 49 degrees 17.622 minutes north latitude, 126 degrees 03.521 minutes west longitude;
2. Subarea 24-5.

GMA 24D02, Indian Island: A portion of Subarea 24-11 excluding waters south of a line from a point on Indian Island at 49 degrees 06.963 minutes north latitude, 125 degrees 46.890 minutes west longitude thence southwest to a point on the Vancouver Island shore at 49 degrees 06.662 minutes north latitude, 125 degrees 47.358 minutes west longitude and west of a line from the eastern most point of Indian Island due south to Vancouver Island.

GMA 25A, Esperanza: Subareas 25-9 to 25-12 and a portion of Subarea 25-13 north and west of a line from Ferrer Point 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: A portion of Subarea 25-13 east of a line from Ferrer Point to the southeast most point of a peninsula on Nootka Island at 49 degrees 47.922 minutes north latitude, 126 degrees 56.431 minutes west longitude; and Subarea 25-14.

GMA 25C, Rosa Harbour: A portion of Subarea 25-13: - bounded on the north and west by a line from Ferrer Point to the light at Middle Reef thence to the north tip of Flower Islet thence to most westerly point of Centre Island thence due south to Nootka Island; and - bounded on the south and east by a line from Ferrer Point to the southeast most point of a peninsula on Nootka Island at 49 degrees 47.922 minutes north latitude, 126 degrees 56.431 minutes west longitude.

GMA 25D, Nootka: Subareas 25-3 to 25-8 and Subarea 25-15.

GMA 26A, North Inlets
Those portions of 26-7 thorough 26-10, except the Checleset Bay Ecological Reserve described as those portions of Areas 26 and 126 enclosed by a line drawn from:
- a point on the Brooks Peninsula at 50 degrees 05.18 minutes north latitude, 127 degrees 49.58 minutes west longitude,
- thence due south to the 50 degrees parallel,
- thence due east to Alert Point on Lookout Island,
- thence northeast to a point on Vancouver Island near McLean Island at 50 degrees 2.1 minutes north latitude, 127 degrees 25.03 minutes west longitude,
- thence northeast along the shore of Vancouver Island to Malksope Point at 50 degrees 05.53 minutes north latitude, 127 degrees 28.95 minutes west longitude,
- thence due west to a point mid-channel on the southeast end of Gay Passage at 50 degrees 05.53 minutes north latitude, 127 degrees 30.1 minutes west longitude,
- thence mid-channel through Gay Passage to a point mid-channel on the northwest end of Gay Passage at 50 degrees 06.7 minutes north latitude, 127 degrees 31.8 minutes west longitude,
- thence northwest to the shore of Vancouver Island, just west of Theodore Point at 50 degrees 07.7 minutes north latitude, 127 degrees 32.8 minutes west longitude,

- thence westerly along the Vancouver Island shore to an unnamed point on the east side of Nasparti Inlet at 50 degrees 08.75 minutes north latitude, 127 degrees 38.6 minutes west longitude,
- thence westerly across Nasparti Inlet to an unnamed point on Vancouver Island at 50 degrees 08.7 minutes north latitude, 127 degrees 37.8 minutes west longitude,
- thence along the Vancouver Island shore to the point of commencement.

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 running from a point on the east side of McLean Island at 50 degrees 01.7 minutes north latitude, 127 degrees 23.5 minutes west longitude, 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 Point on Union 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 Point true south to the boundary;
2. That portion of Subarea 26-2 south of a line from the eastern most point of Surprise Island to Hohoae Point on Hohoae Island, thence along the southern shore of Hohoae Island to an unnamed point on the east side of Hohoae Island at 50 degrees 02.032 minutes north latitude, 127 degrees 12.811 minutes west longitude, thence southeast to a point on the Vancouver Island shore at 50 degrees 01.404 minutes north latitude, 127 degrees 11.762 minutes west longitude and north of a line from Unsworth Point 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 degrees 01.7 minutes north latitude, 127 degrees 23.5 minutes west longitude, 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, SW Union Island: Those portions of Subareas 26-1, 26-2 and 26-6: - east of a line running from Racoon Point due south to the surfline; and - westerly of a line running mid-channel between Union Island and Whiteley Island between a line running from Unsworth Point on Union Island due east to a point on Vancouver Island on the north and a line running between an unnamed point on Union Island at 50 degrees 0.299 north latitude, 127 degrees 14.298 minutes west longitude due east to a point in a bay on Vancouver Island at 50 degrees 0.312 minutes north latitude, 127 degrees 09.096 minutes west longitude on the south, - thence mid-channel in Kyuquot Channel out to the surfline.

GMA 26D02, Amai & Cachalot Inlets: Portions of Subareas 26-2 and 26-3: - east of a line running mid-channel between Union Island and Whiteley Island; - south of a line running from Unsworth Point on Union Island due east to a point on Vancouver Island on the north; and - north of a line running between an unnamed point on Union Island at 50 degrees 0.071 minutes north latitude, 127 degrees 15.043 minutes west longitude due east to a point in a bay on

Vancouver Island at 50 degrees 0.078 minutes north latitude, 127 degrees 11.202 minutes west longitude.

GMA 26D03, North of Rugged Point: Portions of Subareas 26-1 and 26-2:
- east of a line drawn mid-channel in Kyuquot Channel out to the surfline; - south of a line running between an unnamed point on Union Island at 50 degrees 0.071 minutes north latitude, 127 degrees 15.043 minutes west longitude due east to a point in a bay on Vancouver Island at 50 degrees 0.078 minutes north latitude, 127 degrees 11.202 minutes west longitude; and
- west of a line drawn southwest 232 degrees from a point near Rugged Point at 49 degrees 57.773 minutes north latitude, 127 degrees 15.097 minutes west longitude out to the boundary.

GMA 26D04, South of Rugged Point: A portion of Subarea 26-1 east of a line drawn southwest 232 degrees from a point near Rugged Point at 49 degrees 57.773 minutes north latitude, 127 degrees 15.097 minutes west longitude 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 Point on Hohoae Island, thence along the southern shore of Hohoae Island to an unnamed point on the east side of Hohoae Island at 50 degrees 02.032 minutes north latitude, 127 degrees 12.811 minutes west longitude, thence southeast to a point on the Vancouver Island shore at 50 degrees 01.404 minutes north latitude, 127 degrees 11.762 minutes west longitude;
2. Subareas 26-4 and 26-5.

GMA 27A, Quatsino Inlet: Subarea 27-7.

GMA 27B, Cliffe Point to Lawn Point: A portion of Subarea 27-2 southerly and easterly of a line from Cliffe Point to the Kains Island light, thence to Lawn Point on Vancouver Island.

GMA 27C, Forward Inlet: Subarea 27-3.

GMA 27D, Kains Island: A portion of Subarea 27-2 bounded:
- on the east by a line true north from Cliffe Point to the opposite shore;
- on the north by a line from Montgomery Point to Kains Point;
- on the west by a line from Cape Parkins to Kains Island light; and
- on the south by a line from the Kains Island light to Cliffe Point.

GMA 27E, San Josef Bay: A portion of Subarea 27-1 east of a line from Hanna Point southeast to the unnamed point at the southern entrance to San Josef Bay.

GMA 27F, Sea Otter Cove: A portion of Subarea 27-1 inside or north of a line from Hanna Point to the most southerly point of Winifred Island to the most southerly point of Cape Russell.

GMA 27G, Exploratory
1. Portions of Subareas 27-1 and 27-2 outside or westerly of a line from Lawn Point to Kains Island light, thence to Cape Parkins, thence northwest along the shore of Vancouver Island to Topknot Point;
2. That portion of Subarea 27-1 inside a line from Topknot Point north to the most southerly point of Winifred Island then east to Hanna Point and then south to the unnamed point at the southern entrance to San Josef Bay;
3. That portion of Subarea 27-1 from the most northwest point of Cape Russell along the Subarea boundary to the most southwest point of Cape Scott.

GMA 27H, Klaskino Inlet: Subarea 27-5.

GMA 27I, Klaskish Inlet: Subarea 27-6.

3. NORTH COAST QUOTA REGION 2016

GMA CCA01, McMullin Group: That portion of Subarea 7-18 west of a line running from the northern tip of Goose Island at 52 degrees 0.25 minutes north latitude, 128 degrees 25.28 minutes west longitude to the most southeasterly tip of Stryker Island at 52 degrees 5.05 minutes north latitude, 128 degrees 19.66 minutes west longitude, and south of a line running from a point on the 7-18 subarea boundary line at at 52 degrees 5.52 minutes north latitude, 128 degrees 24.66 minutes west longitude to 52 degrees 3.08 minutes north latitude, 128 degrees 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 degrees 0.25 minutes north latitude, 128 degrees 25.28 minutes west longitude to the most southeasterly tip of Stryker Island at 52 degrees 5.05 minutes north latitude, 128 degrees 19.66 minutes west longitude, and north of a line running from a point on the 7-18 subarea boundary line at at 52 degrees 5.52 minutes north latitude, 128 degrees 24.66 minutes west longitude to 52 degrees 3.08 minutes north latitude, 128 degrees 21.94 minutes. 2) That portion of Subarea 7-23 south of a line running through 52 degrees 06.88 minutes north latitude.

GMA CCA03, Tribal Group: That portion of Subarea 7-18 east of a line running from the northern tip of Goose Island at 52 degrees 0.25 minutes north latitude, 128 degrees 25.28 minutes west longitude to the most southeasterly tip of Stryker Island at 52 degrees 5.05 minutes north latitude, 128 degrees 19.66 minutes west longitude, and west of the meridian passing through 128 degrees 17.5 minutes west longitude.

GMA CCA04, Admiral Group: That portion of Subarea 7-18 east of the meridian passing through 128 degrees 17.5 minutes west longitude, 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 degrees 20min west long., north of the parallel passing through 51 degrees 58.9 minutes north latitude, and west of a line running from the southwestern tip of Campbell Island to the northwestern tip of Dodwell Island and from Stubbs Point on Dodwell Island southwesterly to the northwestern point of the McNaughton Group at 51 degrees 58.6 minutes north latitude, 128 degrees 13.9 minutes west longitude.

GMA CCA06a, Latta Island: That portion of Subarea 7-25 east of a line running from Stubbs Point on Dodwell Island southwesterly to the northwestern point of the McNaughton Group at 51 degrees 58.6 minutes north latitude, 128 degrees 13.9 minutes west longitude, north of the parallel passing through 51 degrees 57.8 minutes north latitude, and south of a line bearing 101 degrees true from Stubbs Point on Dodwell Island to a point on Hunter Island at 51 degrees 59.42 minutes north latitude, 128 degrees 10.92 minutes west longitude.

GMA CCA06b, Hunter Channel: 1. That portion of Subarea 7-17 south of a line running across Lama Passage at the Napier Point light at 52 degrees 07.9 minutes north latitude.

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 degrees true from Stubbs Point on Dodwell Island east to a point on Hunter Island at 51 degrees 59.42 minutes north latitude, 128 degrees 10.92 minutes west longitude.

GMA CCA07a, McNaughton Group North: That portion of Subarea 7-25 south of the parallel passing through 51 degrees 57.8 minutes north latitude, west of a line running from the outermost point on the north shore of the entrance to Kinsmen Inlet at 51 degrees 56.14 minutes north latitude, 128 degrees 11.82 minutes west longitude southerly to the outermost point on the south shore of the entrance to Kinsmen Inlet at 51 degrees 55.25 minutes north latitude, 128 degrees 11.54 minutes west longitude and east of a line commencing on the eastern shore of the northern island of the McNaughton Group at 51 degrees 57.8 minutes north latitude, 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 southwestern-most point 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 degrees 55.65 minutes north latitude 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 degrees 56.14 minutes north latitude, 128 degrees 11.82 minutes west longitude southerly to the outermost point on the south shore of the entrance to Kinsmen Inlet at 51 degrees 55.25 minutes north latitude, 128 degrees 11.54 minutes west longitude.

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 degrees 54.27 minutes north latitude, 128 degrees 14.34 minutes west longitude, to 51 degrees 53.97 minutes north latitude, 128 degrees 14.29 minutes west longitude, west of a line running from the outermost point on the north shore of the entrance to Kinsmen Inlet at 51 degrees 56.14 minutes north latitude, 128 degrees 11.82 minutes west longitude southerly to the outermost point on the south shore of the entrance to Kinsmen Inlet at 51 degrees 55.25 minutes north latitude, 128 degrees 11.54 minutes west longitude, and south of the parallel passing through 51 degrees 55.65 minutes north latitude to its intersect with the Kinsmen Inlet boundary.

GMA CCA07(experimental), Superstition Point: That portion of Subarea 7-25 south of a line from Superstition Point on Hunter Island at 51 degrees 53.40 minutes north latitude, 128 degrees 15.34 minutes west longitude north-easterly to a point at 51 degrees 53.98 minutes north latitude, 128 degrees 14.31 minutes west longitude.

GMA CCA08, Simmonds Group: That portion of Subarea 7-25 east of the meridian passing through 128 degrees 20 minutes north latitude, south of the parallel passing through 51 degrees 58.9 minutes north latitude and west of the line from Stubbs Point on Dodwell Island to a point on the northern island of the McNaughton Group at 51 degrees 58.6 minutes north latitude, 128 degrees 13.9 minutes west longitude, 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 degrees 54.27 minutes north latitude, 128 degrees 14.34 minutes west longitude, then south to 51 degrees 53.97 minutes north latitude, 128 degrees 14.29 minutes west longitude on Hunter Island and north of a line running from Superstition Point on Hunter Island north-easterly to a point at 51 degrees 53.97 minutes north latitude, 128 degrees 14.29 minutes west longitude.

GMA CCA09, Goose Island North: That portion of Subarea 7-25 north of the parallel passing through 51 degrees 56.6 minutes north latitude and west of the meridian passing through 128 degrees 20 minutes west longitude.

GMA CCA10, Goose Island South: That portion of Subarea 7-25 south of the parallel passing through 51 degrees 56.6 minutes north latitude and west of the meridian passing through 128 degrees 20 minutes west longitude.

GMA CCA11, Spider Island: That portion of Subarea 7-27 north of the parallel passing through 51 degrees 50.0 minutes north latitude 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 degrees 50 minutes north latitude, and north and west of a line commencing at 51 degrees 50 minutes north latitude, 128 degrees 14.44 minutes west longitude, 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 degrees 49.42 minutes north latitude, 128 degrees 15.27 minutes west longitude and running 230 degrees to the subarea boundary.

GMA CCA12b, South Edna Island: That portion of Subarea 7-27 south of the parallel passing through 51 degrees 50 minutes north latitude, south and east of a line commencing at 51 degrees 50 minutes north latitude, 128 degrees 14.44 minutes west longitude, 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 degrees 49.42 minutes north latitude, 128 degrees 15.27 minutes west longitude and running 230 degrees to the surfline, and west of a line commencing at 51 degrees 50 minutes north latitude, 128 degrees 14.0 minutes west longitude, and running due south to northernmost of the Anne Islands at 51 degrees 49.73 minutes north latitude, 128 degrees 14.0 minutes west longitude, 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 degrees 49.25 minutes north latitude, 128 degrees 13.99 minutes west longitude, then to the northern point of the Lyte Group at 51 degrees 49.06 minutes north latitude, 128 degrees 14.33 minutes west longitude, then following the northern shore to 51 degrees 49.0 minutes north latitude, 128 degrees 14.42 minutes west longitude, then westerly to 51 degrees 48.94 minutes north latitude, 128 degrees 14.73 minutes west longitude on Island "120" of the Lyte Group, then following the northern shore to 51 degrees 48.92 minutes north latitude, 128 degrees 14.86 minutes west longitude 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 point of the Anne Islands at 51 degrees 49.25 minutes north latitude, 128 degrees 13.99 minutes west longitude, then running to the northern point of the Lyte Group at 51 degrees 49.06 minutes north latitude, 128 degrees 14.33 minutes west longitude, then following the northern shore to 51 degrees 49.0 minutes north latitude, 128 degrees 14.42 minutes west longitude, then westerly to 51 degrees 48.94 minutes north latitude, 128 degrees 14.73 minutes west longitude on Island "120" of the Lyte Group, then following the northern shore to 51 degrees 48.92 minutes north latitude, 128 degrees 14.86 minutes west longitude 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 degrees 49.21 minutes north latitude, 128 degrees 13.92 minutes west longitude to the north shore of Island "135" of the Anne Islands at 51 degrees 49.09 minutes north latitude, 128 degrees 13.92 minutes west longitude, then following the western shore to the southern tip at 51 degrees 48.81 minutes north latitude, 128 degrees 13.86 minutes west longitude, and then southeasterly to Island "175" at 51 degrees 48.56 minutes north latitude, 128 degrees 13.73 minutes west longitude, then following the western shore to the south shore at 51 degrees 48.50 minutes north latitude, 128 degrees 13.63 minutes west longitude, 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 degrees 50 minutes north latitude, and east of a line commencing at 51 degrees 50 minutes north latitude, 128 degrees 14.0 minutes west longitude, and running due south to northernmost of the Anne Islands at 51 degrees 49.73 minutes north latitude, 128 degrees 14.0 minutes west longitude, 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 degrees 49.21 minutes north latitude, 128 degrees 13.92 minutes west longitude, then to the north shore of Island "135" of the Anne Islands at 51 degrees 49.9 minutes north latitude, 128 degrees 13.92 minutes west longitude, then following the western shore to the southern tip at 51 degrees 48.81 minutes north latitude, 128 degrees 13.86 minutes west longitude, and then southeasterly to Island "175" at 51 degrees 48.56 minutes north latitude, 128 degrees 13.73 minutes west longitude, then following the western shore to the south shore at 51 degrees 48.50 minutes north latitude, 128 degrees 13.63 minutes west longitude, 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 degrees 48.46 minutes north latitude, 128 degrees 11.47 minutes west longitude 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 northeastern-most point of Manley Island to the northwestern-most tip of Camel Island, east of a line running from 51 degrees 48.46 minutes north latitude, 128 degrees 11.47 minutes west longitude on the southeastern shore of Manley Island true south to the subarea boundary, and west of the meridian passing through 128 degrees 9 minutes west longitude.

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 degrees 50.03 minutes north latitude, 128 degrees 08.43 minutes west longitude

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 degrees 50.03 minutes north latitude, 128 degrees 08.43 minutes west longitude. 2) That portion of Subarea 7-27 east of a line across the narrowest point 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 northeastern-most 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 Point to Lang Point, and east of the meridian passing through 128 degrees 24.11 minutes west longitude.

GMA CCB02, Moss Passage: 1) That portion of Subarea 7-3 east of the meridian passing through 128 degrees 30 minutes west longitude. 2) Subarea 7-4. 3) That portion of Subarea 7-9 in Moss Passage west of the meridian passing through 128 degrees 24.11 minutes west longitude

GMA CCB03, Ivory Island: That portion of Subarea 7-9 south of a line running from Schubert Point on Don Peninsula to Lang Point 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 Point near Berry Inlet southerly to 52 degrees 15.26 minutes north latitude, 128 degrees 20.87 minutes west longitude, then easterly to 52 degrees 15.26 minutes north latitude,128 degrees 14.64 minutes west longitude 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 Point near Berry Inlet southerly to 52 degrees 15.26 minutes north latitude, 128 degrees 20.87 minutes west longitude, then easterly to 52 degrees 15.26 minutes north latitude, 128 degrees 14.64 minutes west longitude and true north to the subarea boundary, and west of a line running from Idol Point true north to the boundary of Berry Inlet. 2) That portion of 7-21 north of line running from 52 degrees 12.70 minutes north latitude, 128 degrees 23.34 minutes west longitude, then easterly to 52 degrees 12.69 minutes north latitude,128 degrees 23.30 minutes west longitude.

GMA CCB05b, Seaforth Channel East: 1) That portion of Subarea 7-12 south of a line running from Fisher Point near Berry Inlet southerly to 52 degrees 15.26 minutes north latitude, 128 degrees 20.87 minutes west longitude, then easterly to 52 degrees 15.26 minutes north latitude, 128 degrees 14.64 minutes west longitude and true north to the subarea boundary, and east of a line running from Idol Point 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 Point light (52 degrees 07.9 minutes north latitude). 3) Subarea 7-22. 4) That portion of Subarea 7-23 north of the parallel passing through 52 degrees 12.39 minutes north latitude

GMA CCB06, St. John Harbour: That portion of Subarea 7-32 north of the parallel passing through 52 degrees 10.7 minutes north latitude

GMA CCB07, Cape Mark (Bowling Alley): That portion of Subarea 7-32 south of the parallel passing through 52 degrees 10.7 minutes north latitude and west of a line running southwesterly through a chain of islets from 52 degrees 10.17 minutes north latitude, 128 degrees 29.92 minutes west longitude, to 52 degrees 09.55 minutes north latitude, 128 degrees 30.85 minutes

west longitude, 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 degrees 06.51 minutes north latitude, 128 degrees 32.45 minutes west longitude, 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 degrees 10.17 minutes north latitude, 128 degrees 29.92 minutes west longitude to 52 degrees 09.55 minutes north latitude, 128 degrees 30.85 minutes west longitude, 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 degrees 12.70 minutes north latitude, 128 degrees 23.34 minutes west longitude, then easterly to 52 degrees 12.69 minutes north latitude,128 degrees 23.30 minutes west longitude.

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 degrees 12.39 minutes north latitude and north of a line running through 52 degrees 06.88 minutes north latitude. 2) Subarea 7-24.

GMA CCC01, Nalau Passage: 1) That portion of Subarea 8-2 north of a line bearing 248 degrees true from Koeye Point 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 degrees 9 minutes west longitude 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 degrees 10 minutes west longitude, then north to a point on the meridian of 128 degrees 10 minutes west longitude due west of Odlum Point, then to Odlum Point. 2) That portion of Subarea 8-2 south and west of a line commencing at the northwestern-most tip of Calvert Island at 51 degrees 41.27 minutes north latitude, 128 degrees 6 minutes west longitude, and running to the westernmost tip of Rattenbury Island, then to Odlum Point on Odlum Island.

GMA CCC04, South Hakai Pass: 1) That portion of Subarea 8-2 north and east of a line commencing at the northwestern-most tip of Calvert Island at 51 degrees 41.27 minutes north latitude, 128 degrees 6 minutes west longitude, and running to the westernmost tip of Rattenbury Island, then to Odlum Point on Odlum Island, and south of a line bearing 248 degrees true from Koeye Point through Hakai Pass. 2) Subarea 8-3.

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 degrees 50 minutes west longitude 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 degrees 50 minutes west longitude, and north of a line running east from Harold Point to 127 degrees 50 minutes west longitude

GMA CCC08, Calvert Island South (Grief Bay): 1. That portion of Subarea 9-1 west of the meridian passing through 127 degrees 50 minutes west longitude, and south of a line running east from Harold Point to 127 degrees 50 minutes west longitude. 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 Point to its intersection with the western boundary of Subarea 10-3 at 51 degrees 18 minutes north latitude

GMA CCC10, Smith Inlet South: Those portions of Subareas 10-3 and 10-4 south of a line bearing westerly from Barb Point to its intersection with the western boundary of Subarea 10-3 at 51 degrees 18 minutes north latitude

GMA CCD01a, Rennison Island: 1) That portion of Subarea 6-11 west of a line running from Ulric Point on Aristazabal Island true north to the subarea boundary. 2) That portion of 6-10 South of a line from 52 degrees 51.70 minutes north latitude, 129 degrees 21.44 minutes west longitude to the point of intersection of the subarea boundary line between 6-10 and 6-11 true north from Ulric Point on Aristazabal Island.

GMA CCD01b, West Laredo Channel (North of Baker Point): 1) That portion of Subarea 6-11 east of a line running from Ulric Point on Aristazabal Island true north to the subarea boundary.

GMA CCD01c, West Laredo Channel (South of Baker Point): That portion of Subarea 6-14 west of a line commencing at 52 degrees 50 minutes north latitude, 129 degrees 10.8 minutes west longitude, and running 148 degrees true.

GMA CCD02, East Laredo Channel: That portion of Subarea 6-14 east of a line commencing at 52 degrees 50 minutes north latitude, 129 degrees 10.8 minutes west longitude, and running 148 degrees true.

GMA CCD03, Laredo Inlet: 1) That portion of Subarea 6-16 east of a line running from Dallian Point to Wingate Point. 2) That portion of Subarea 6-19 south of a line running from Waser Point true east.

GMA CCD04, Kitasu Bay: Subarea 6-18.

GMA CCD05, Larkin Point: That portion of Subarea 6-16 west of a line running from Dallian Point to Wingate Point, east of the meridian passing through 128 degrees 51 minutes west longitude, and north of the parallel passing through 52 degrees 29.80 minutes north latitude.

GMA CCD06, Laredo Channel: 1) Subarea 6-15. 2) That portion of Subarea 6-16 northwest of a line running from Dallian Point on Princess Royal Island to Tildesley Point on Aristazabal Island.

GMA CCD07, East Aristazabal Island South: 1) That portion of Subarea 6-13 south and east of a line running 226 degrees from 52 degrees 29.3 minutes north latitude, 129 degrees west longitude. 2) That portion of Subarea 6-17 west of the meridian passing through 128 degrees 51 minutes west longitude.

GMA CCD08, Rudolf Bay: That portion of Subarea 6-17 east of the meridian passing through 128 degrees 51 minutes west longitude, 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 degrees 51 minutes west longitude, north of a line bearing true east and west through the light on Jaffrey Rock, south of the parallel passing through 52 degrees 29.80 minutes north latitude, and west and north of a line running from a point at 52 degrees 28.76 minutes north latitude, 128 degrees 45.56 minutes west longitude on Swindle Island, west to a point on an island at 52 degrees 28.78 minutes north latitude, 128 degrees 46.10 minutes west longitude, then running southerly around the eastern shoreline to the southwestern-most point, then true south to Island "185", southerly around the eastern shoreline to a southwestern point at 52 degrees 28.04 minutes north latitude, 128 degrees 46.68 minutes west longitude and thence southwest 225 degrees 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 point at 52 degrees 28.76 minutes north latitude, 128 degrees 45.56 minutes west longitude on Swindle island, west to a point on an island at 52 degrees 28.78 minutes north latitude, 128 degrees 46.10 minutes west longitude, then running southerly around the eastern shoreline to the southwestern-most point, then true south to Island "185", southerly around the eastern shoreline to a southwestern point at 52 degrees 28.04 minutes north latitude, 128 degrees 46.68 minutes west longitude, and thence southwest 225 degrees to the parallel passing true east and west through the light on Jaffrey Rock.

GMA CCD10, Price Island Southwest (Day Point): 1) That portion of Subareas 7-1 and 7-2 north of the parallel passing through 52 degrees 14.5 minutes north latitude. 2) That portion of Subarea 7-31 south of the parallel passing through 52 degrees 19 minutes north latitude.

GMA CCD11, Price Island West: That portion of Subarea 7-31 north of the parallel passing through 52 degrees 19 minutes north latitude.

GMA CCD12, Milbanke Sound South: That portion of Subarea 7-3 west of the meridian passing through 128 degrees 30 minutes west longitude, and south of a line running from Keith Point 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 degrees 30 minutes west longitude, and north of a line running from Keith Point on Dowager Island true west.

GMA PRG01, Connel Island: That portion of Subarea 4-1 south of a line running approximately 225 degrees true from position 54 degrees 28.51 minutes north latitude, 130 degrees 53.716 minutes west longitude (through Hudsons Bay Passage), and that portion north of a line running 222 degrees true from a position on Dunira Island at 54 degrees 26.59 minutes north latitude, 130 degrees 49.32 minutes west longitude, and that portion west of a line running 116 degrees 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 degrees 27.12 minutes north latitude, 130 degrees 51.38 minutes west longitude, thence northwest to 54 degrees 29.08 minutes north latitude, 130 degrees 54.63 minutes west longitude.

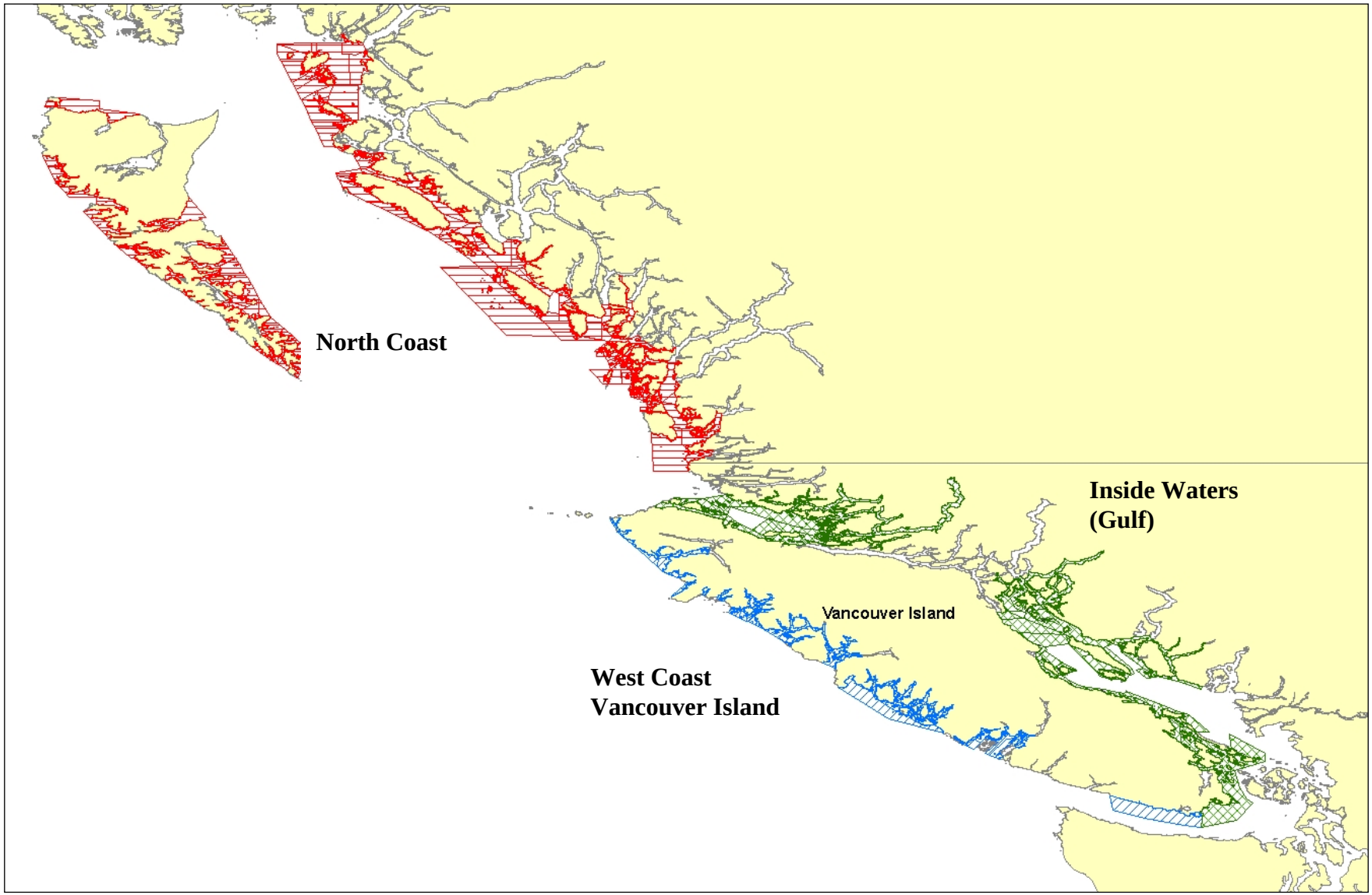
GMA PRA10, Arriaga Islands: That portion of Subarea 6-13 south of a line running 226 degrees true from position 52 degrees 32.69 minutes north latitude, 129 degrees 06.89 minutes

west longitude, and north of a line running 211 degrees from 52 degrees 30.97 minutes north latitude, 129 degrees 04.17 minutes west longitude.

GMA PRA11, Weeteeam Bay West: That portion of Subarea 6-13 east of a line running 211 degrees from 52 degrees 30.97 minutes north latitude, 129 degrees 04.17 minutes west longitude, and west of a line running 195 degrees from 52 degrees 31.66 minutes north latitude, 129 degrees 01.27 minutes west longitude.

GMA PRA12, Weeteeam Bay Mid: That portion of Subarea 6-13 east of a line running 195 degrees from 52 degrees 31.66 minutes north latitude, 129 degrees 01.27 minutes west longitude, and west of a line running 226 degrees from 52 degrees 28.80 minutes north latitude, 129 degrees 0.94 minutes west longitude.

APPENDIX 10: MAP OF QUOTA REGIONS



APPENDIX 11: MAPS OF 2016 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 3.4 and 3.5 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, 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 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 Fisheries and Oceans Canada Internet 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 inseason and will be announced by Fishery Notice.

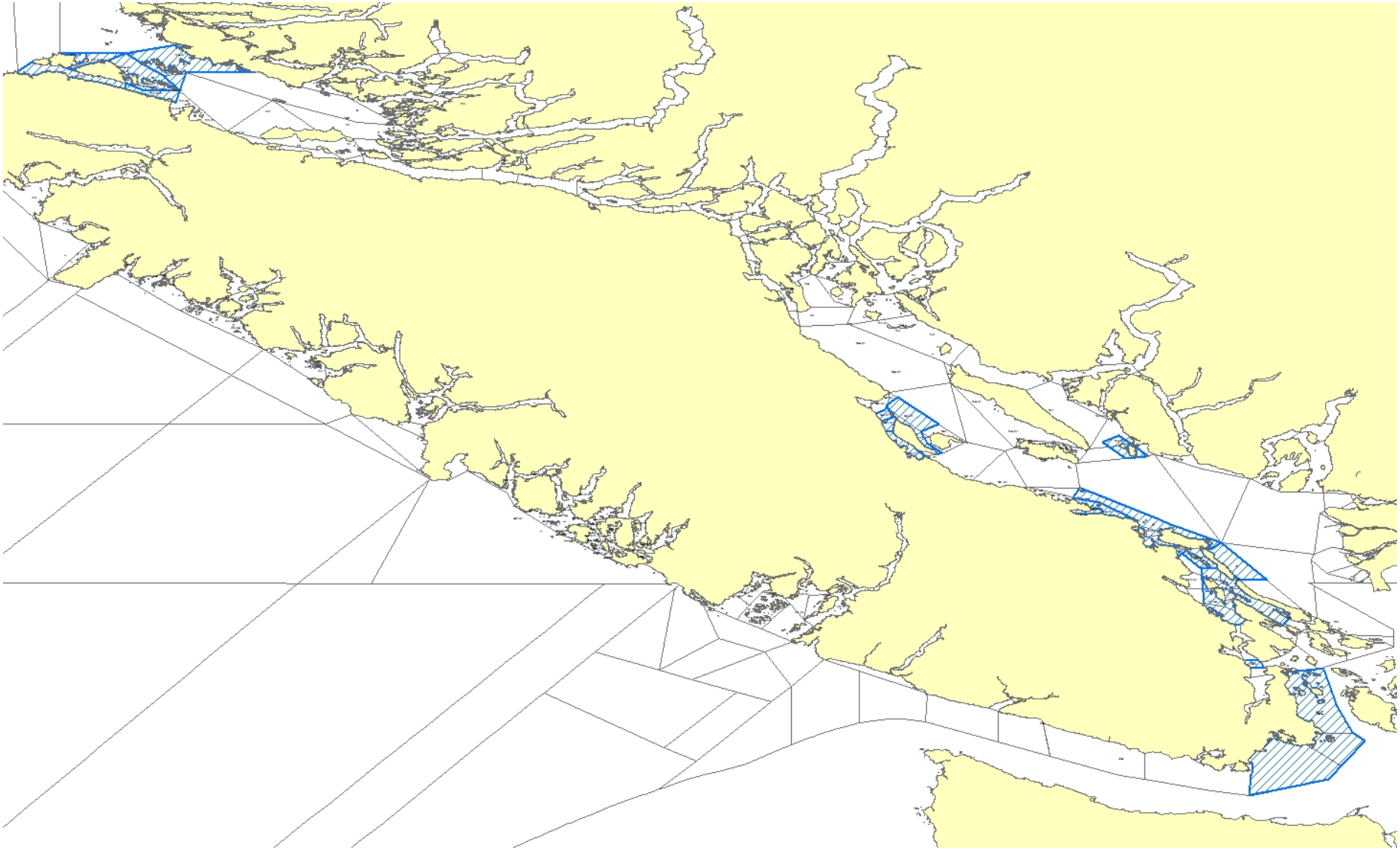
b) 125 m radius of any marina, ferry wharf, finfish net pen, and, subject to bullet (c), any floating living accommodation facility; and

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

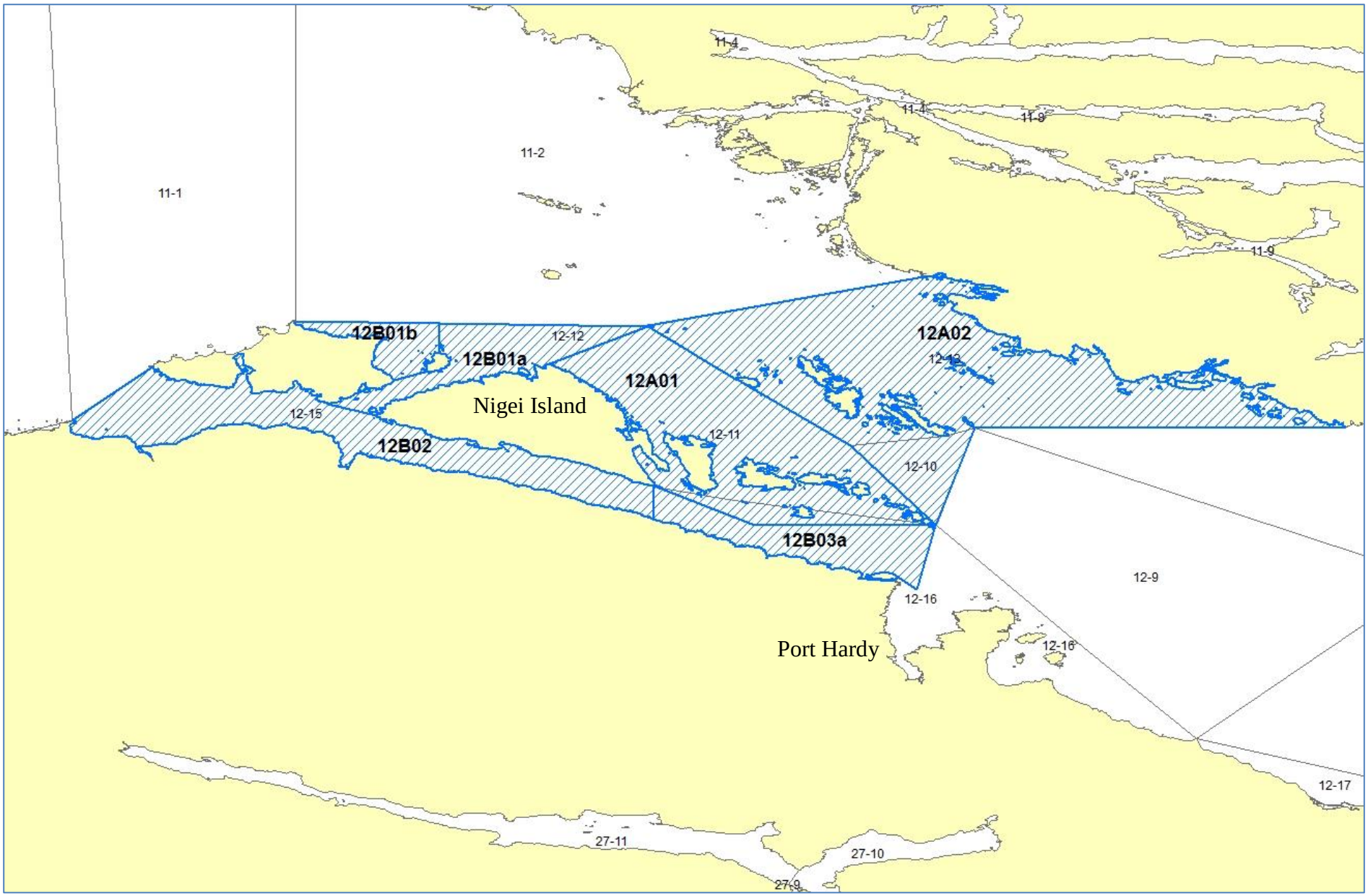
Shellfish may not be harvested from closed areas except by special permit licence issued under the Management of Contaminated Fisheries Regulations. Shellfish may not be harvested for consumption from any area closed due to biotoxin contamination. Descriptions of biotoxin closures may be found at the following Fisheries and Oceans Canada Internet site:

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



2016 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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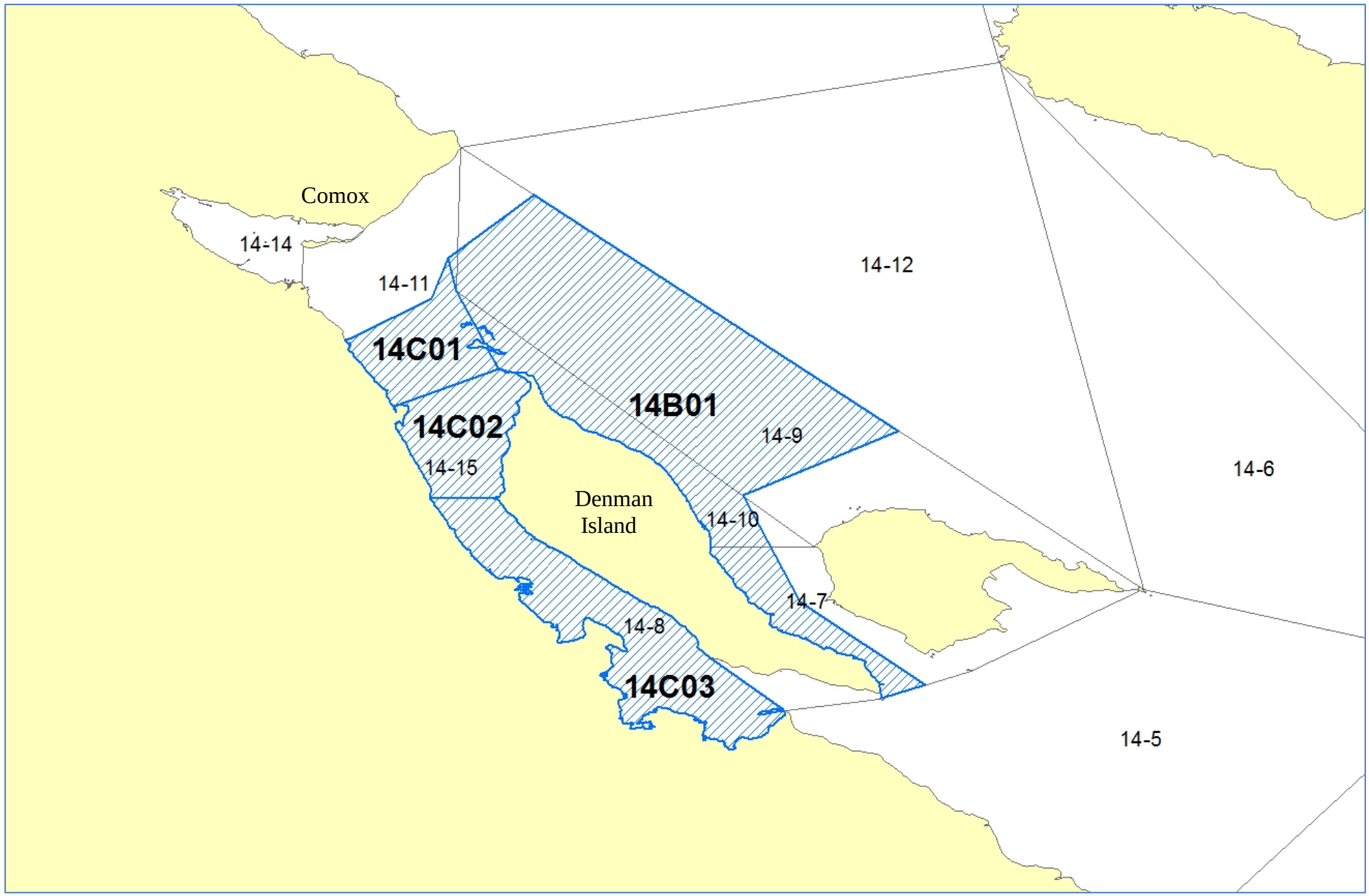
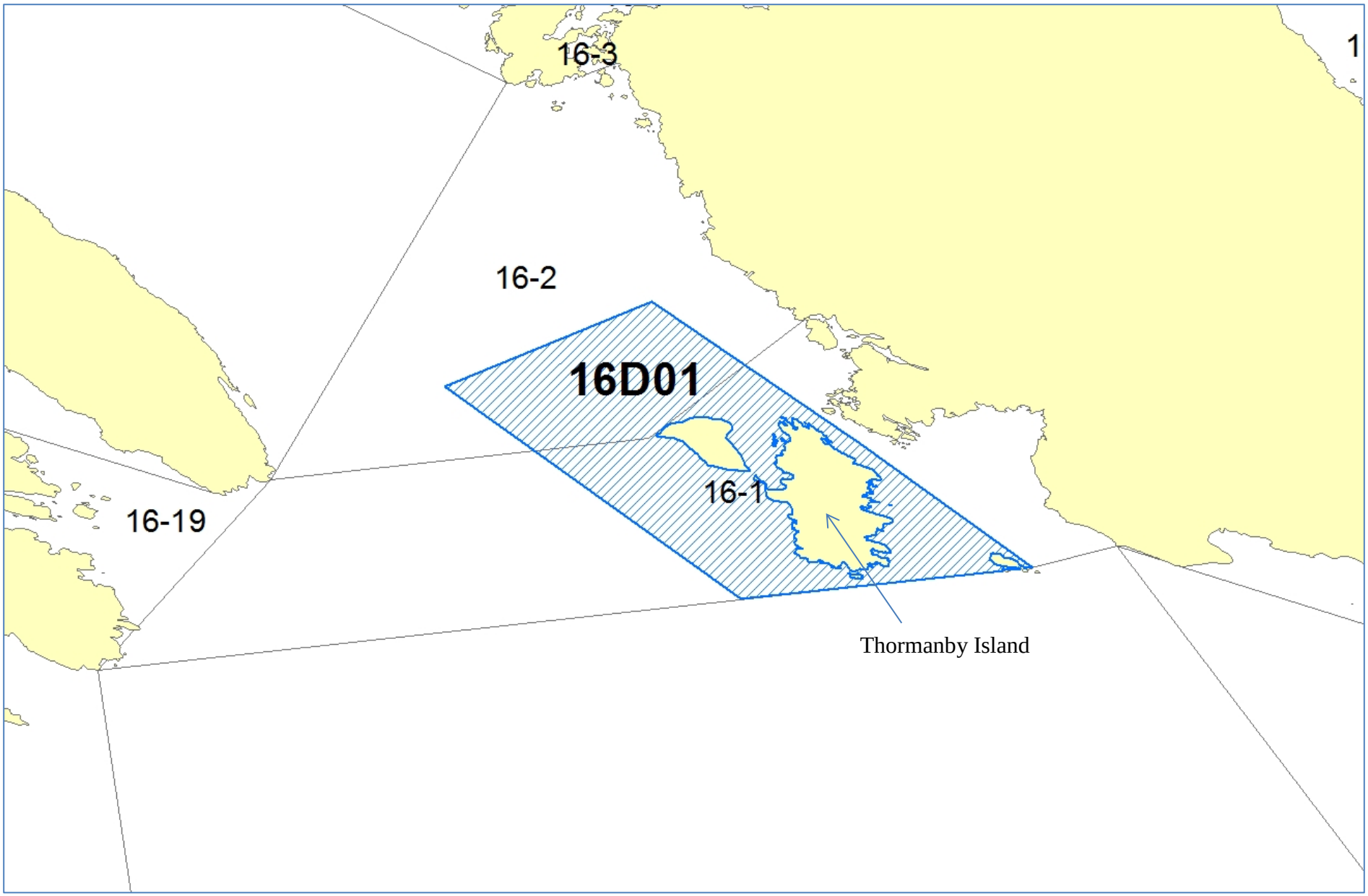
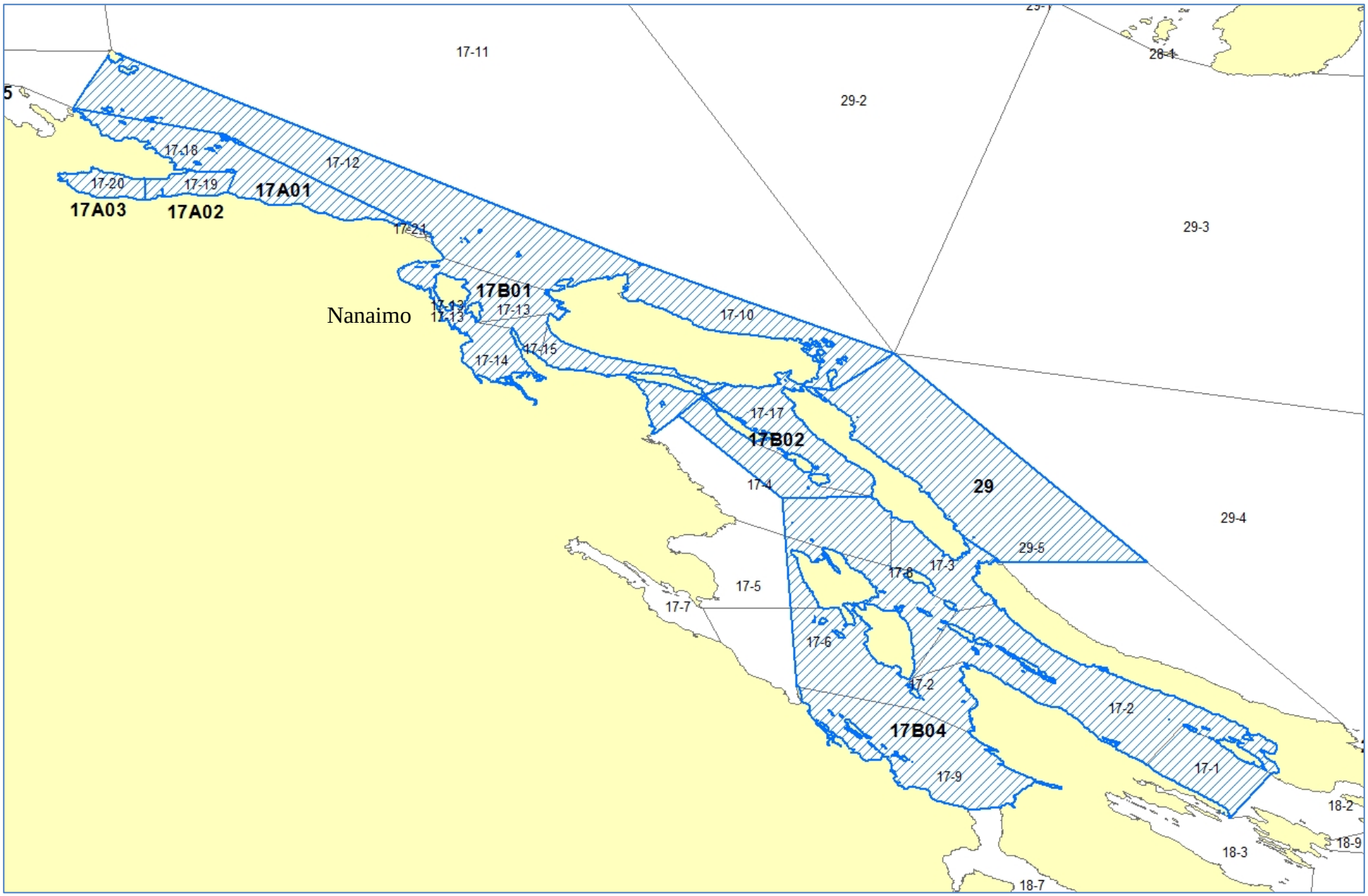


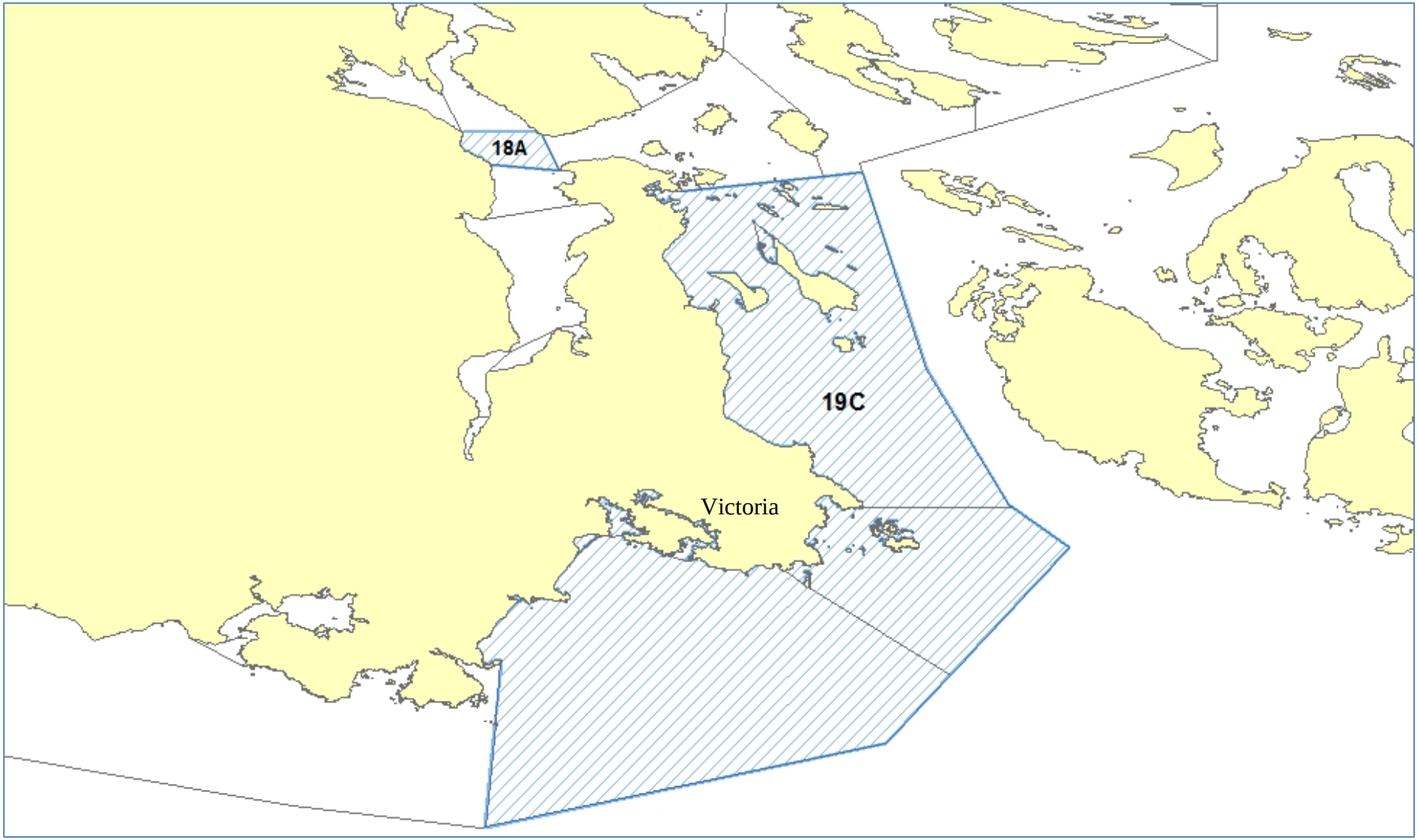
GMAs: 14B01, 14C01, 14C02, 14C03



GMAs: 16D01 (annual).



GMAs: 17A01, 17A02, 17A03, 17B01, 17B02, 17B04 and 29.



GMAs: 18A and 19C (annual).

APPENDIX 12: MAPS OF 2016 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 3.4 and 3.5 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, 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 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 Fisheries and Oceans Canada Internet site:

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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 inseason and will be announced by Fishery Notice.

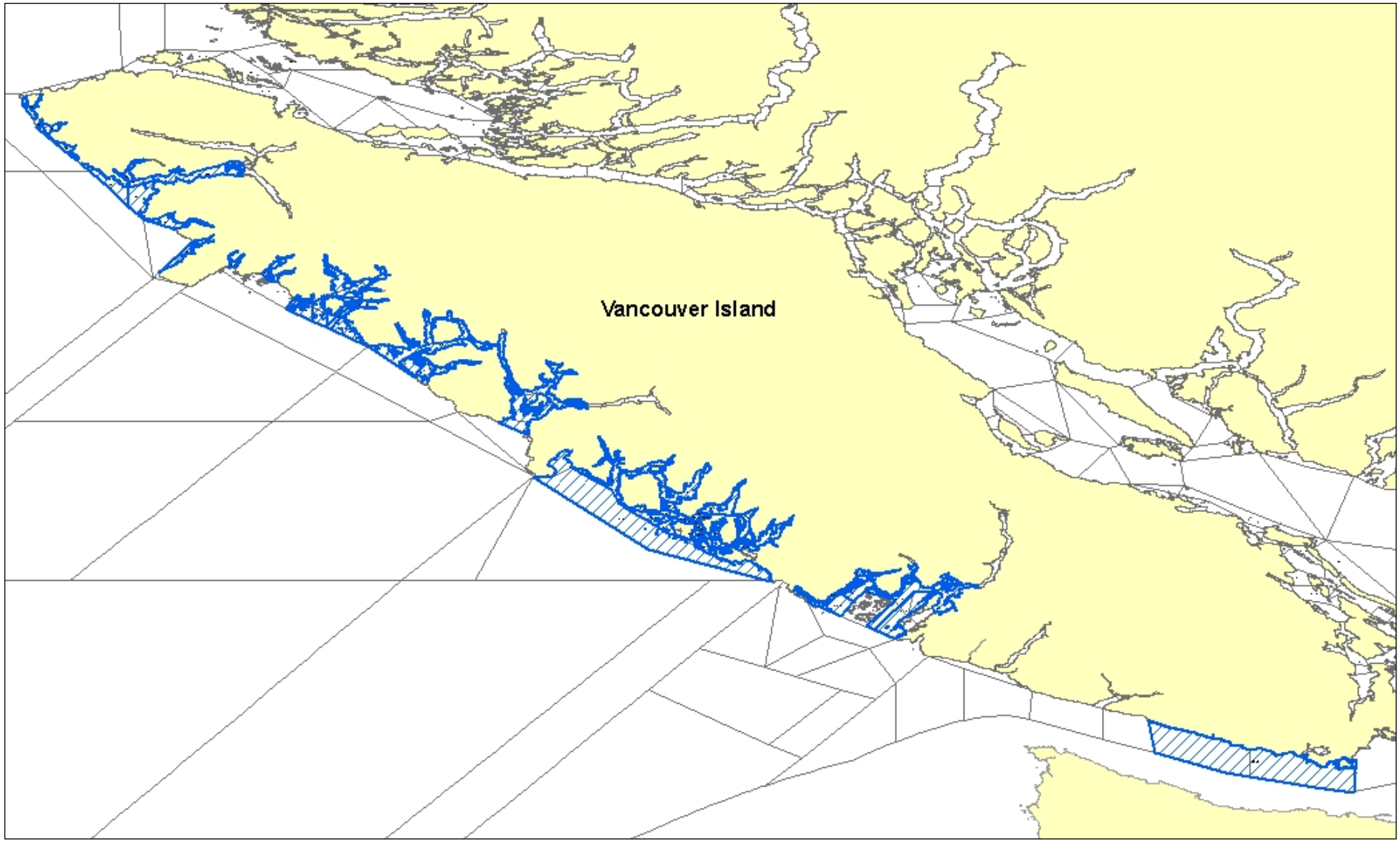
b) 125 m radius of any marina, ferry wharf, finfish net pen, and, subject to bullet (c), any floating living accommodation facility; and

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.

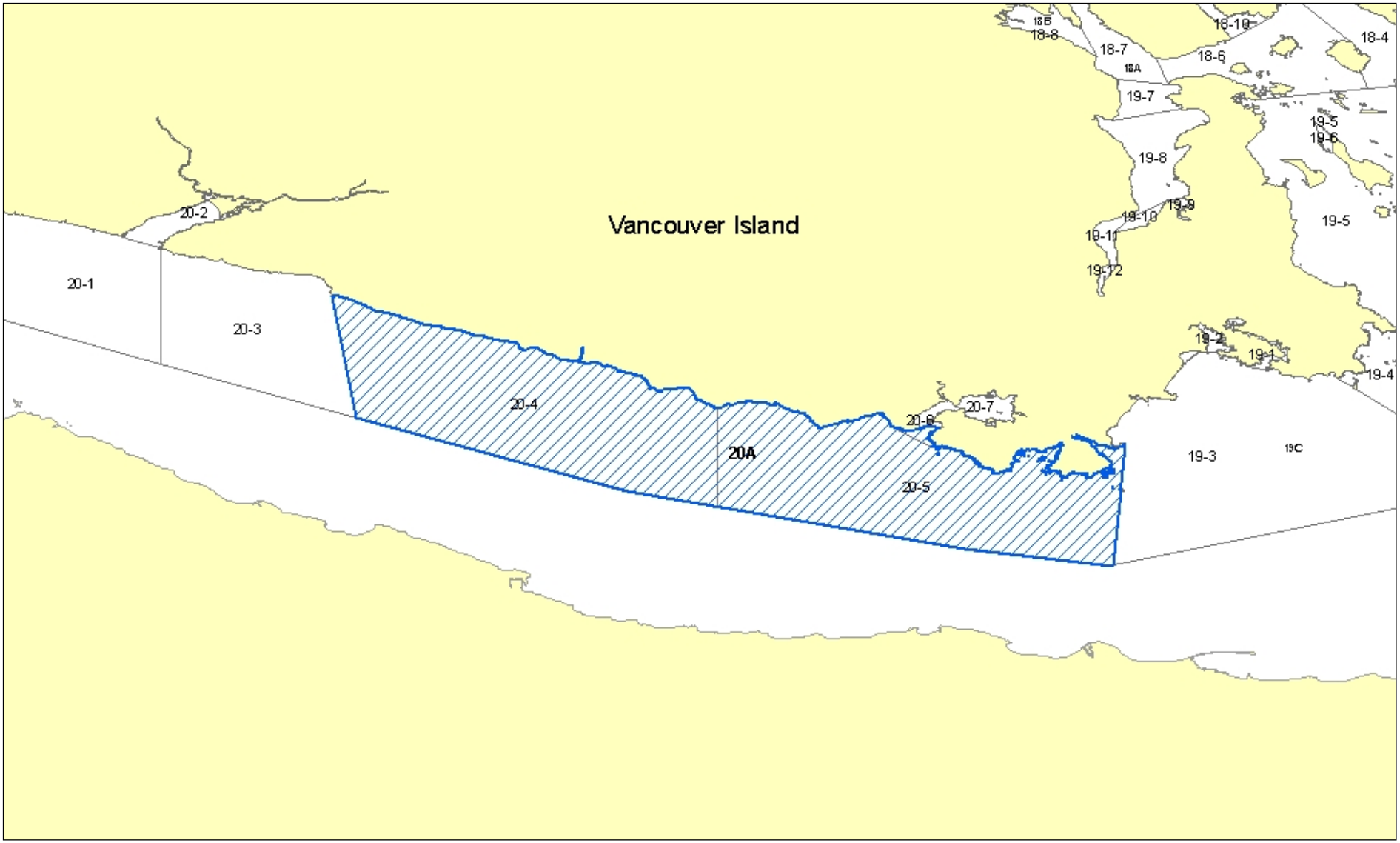
2.3. Biotoxin Closures

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



British Columbia South Coast Geoduck Management Areas –West Coast Vancouver Island


Vancouver Island
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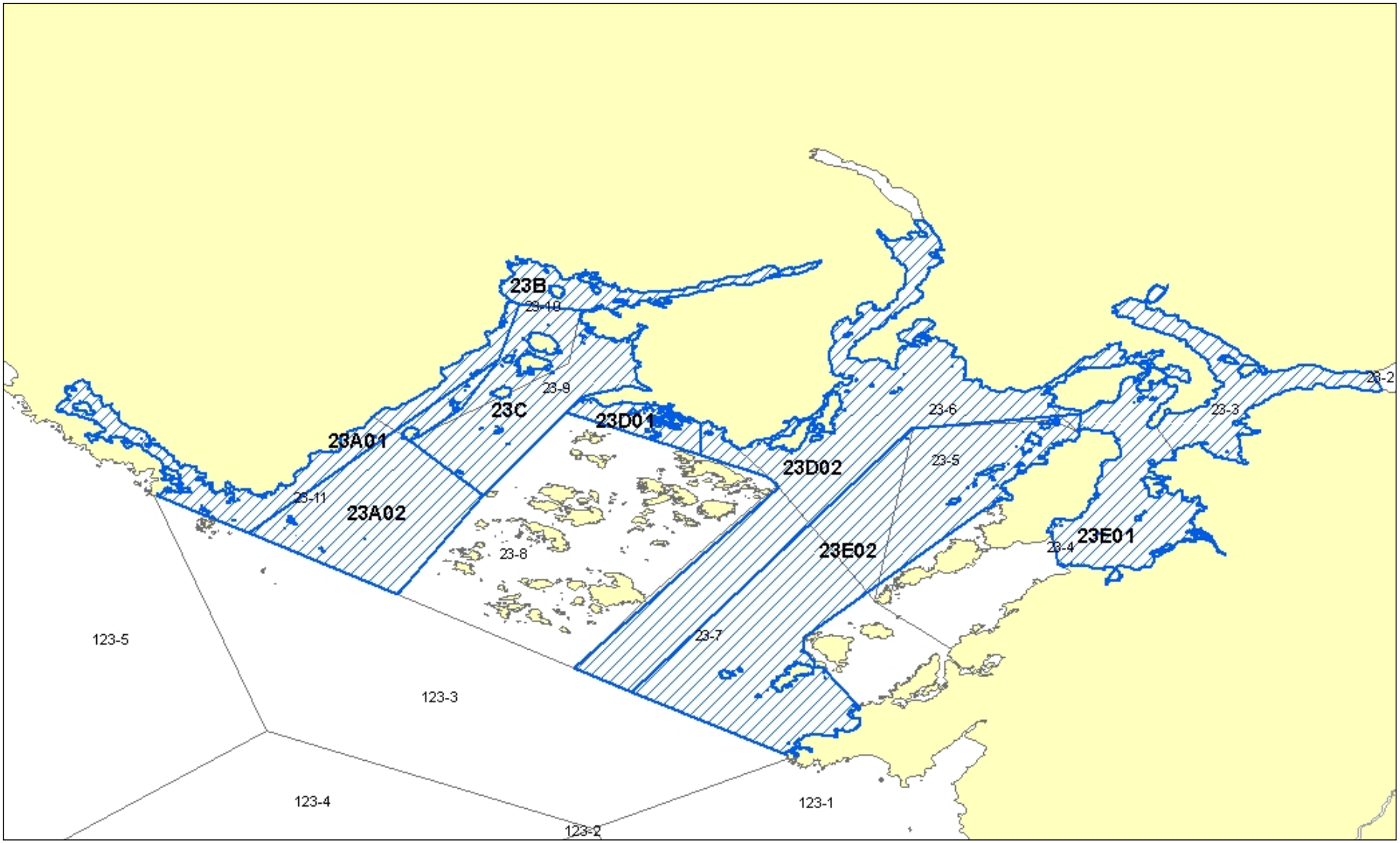
19-4
19-3
19C

GMA: 20A



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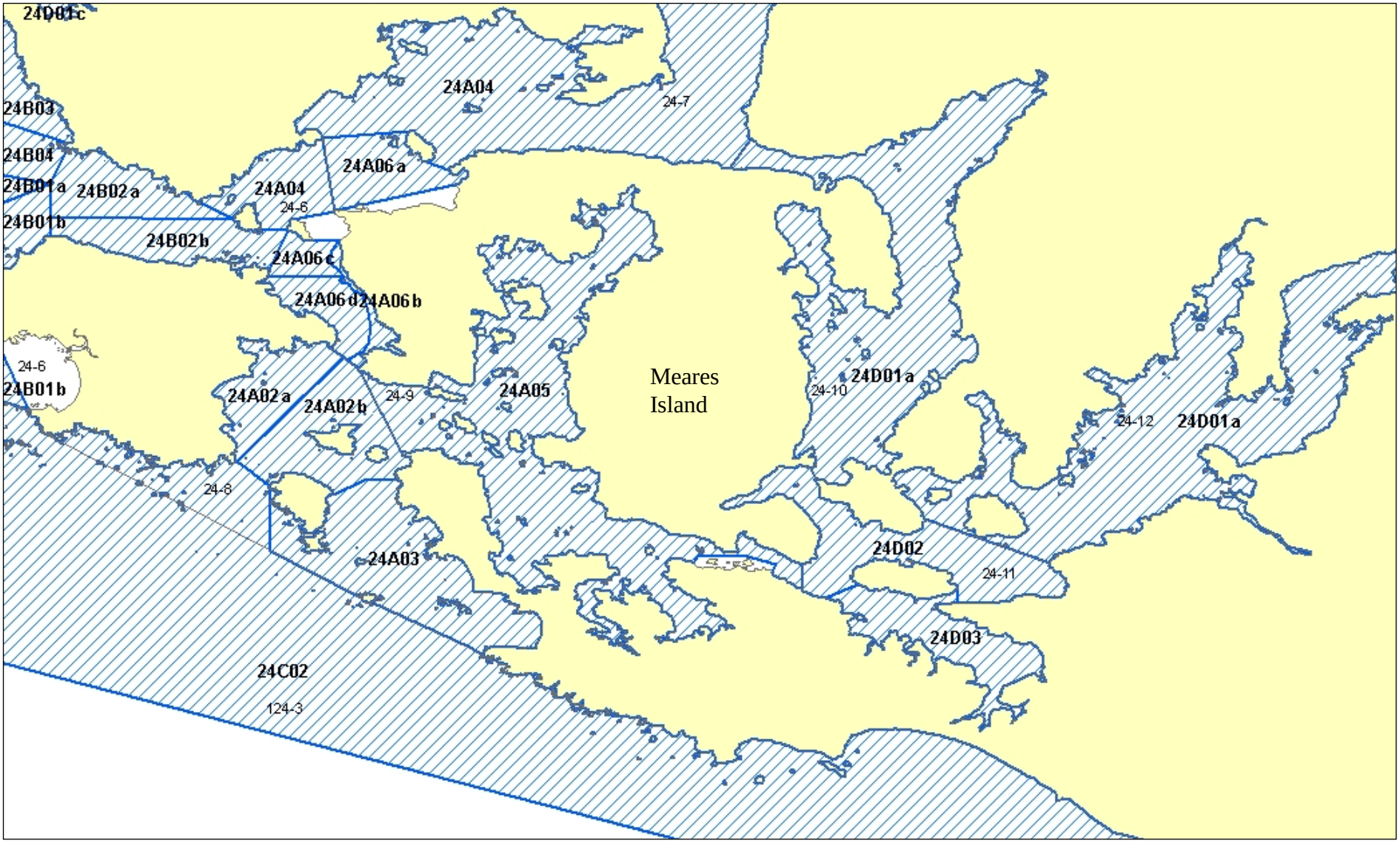
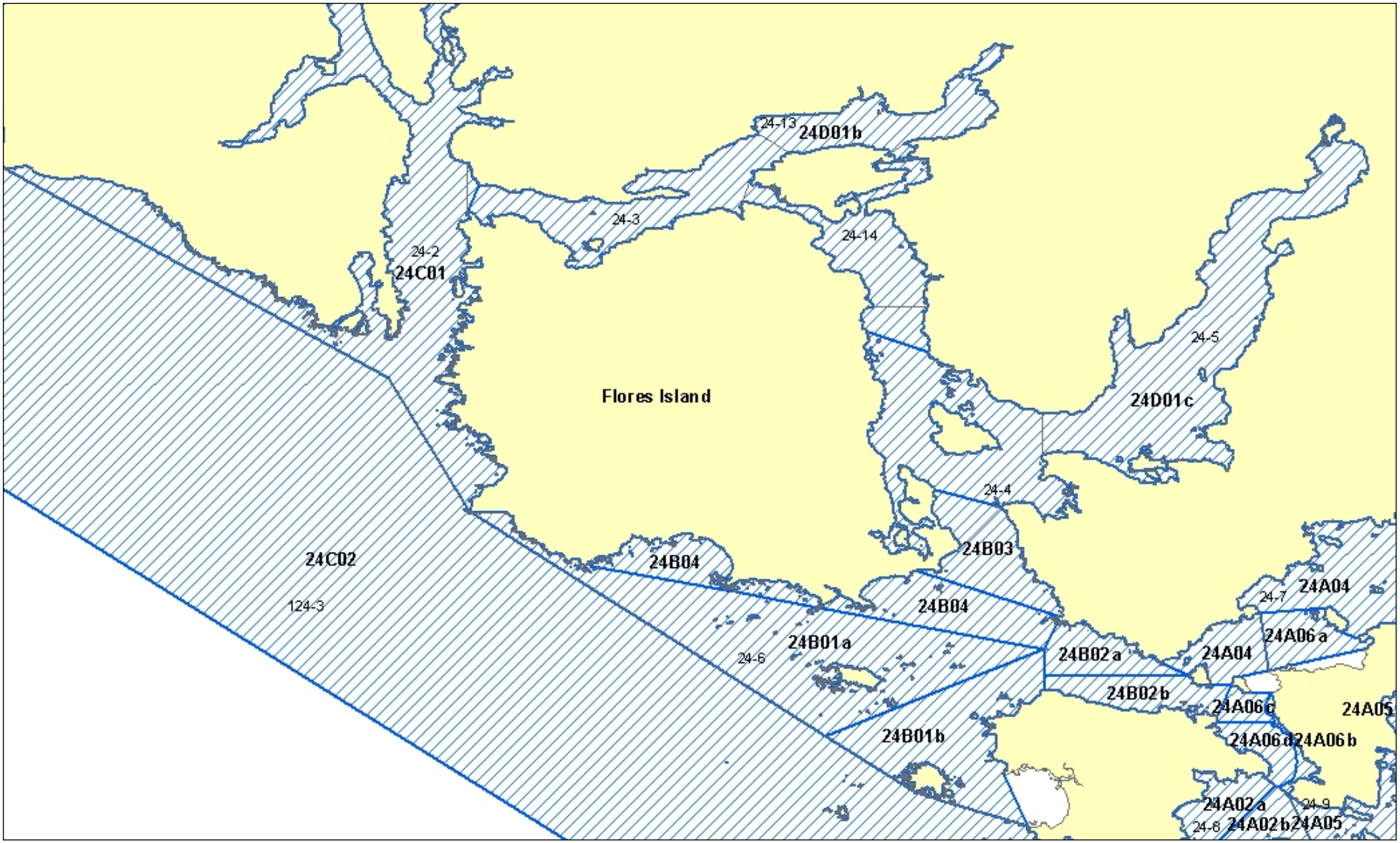


GMAs: 24A02a, 24A02b, 24A03, 24A04, 24A05, 24A06a, 24A06b, 24A0c, 24A06d, 24B02a, 24B02b, 24D01a, 24D02, 24D03



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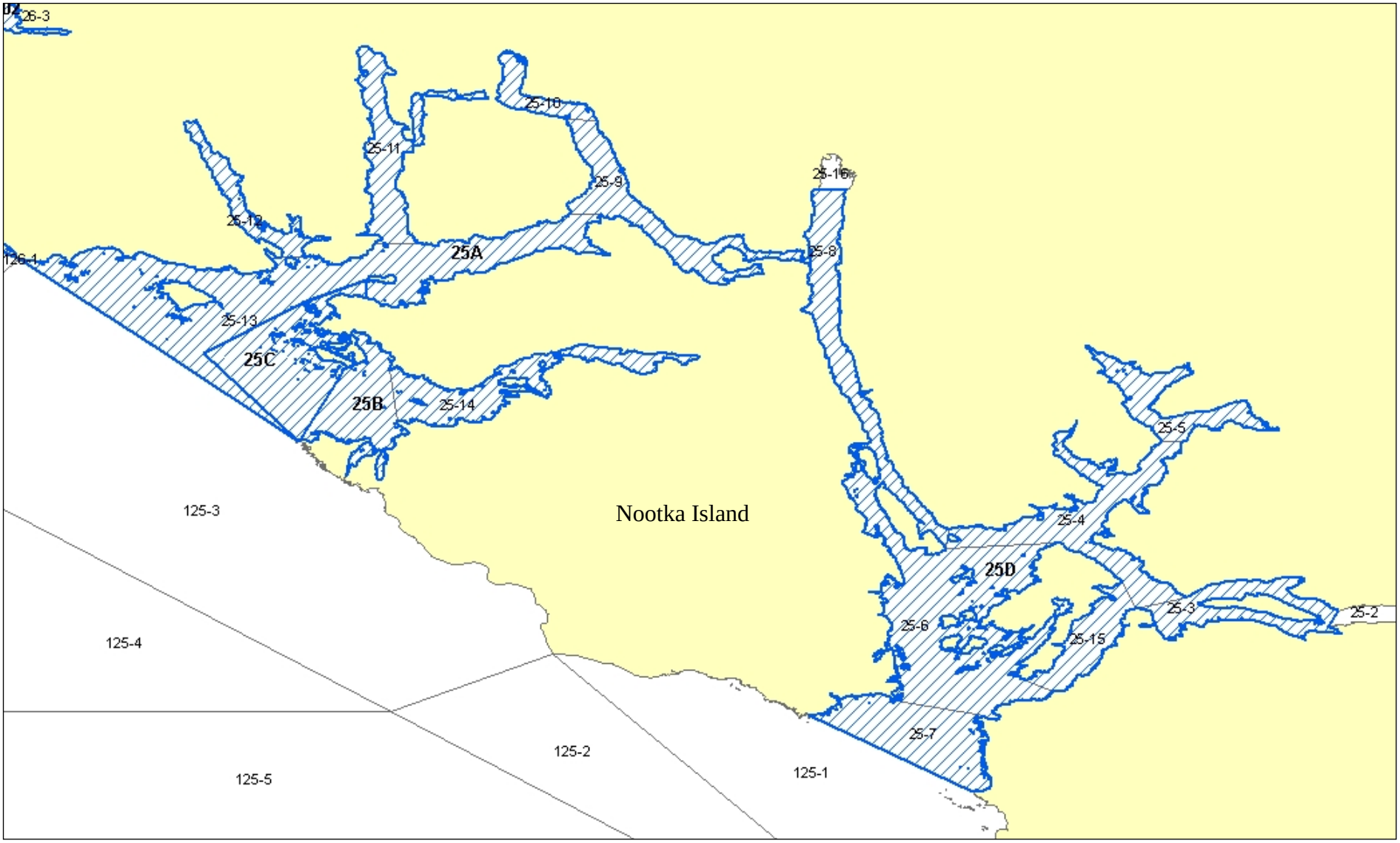
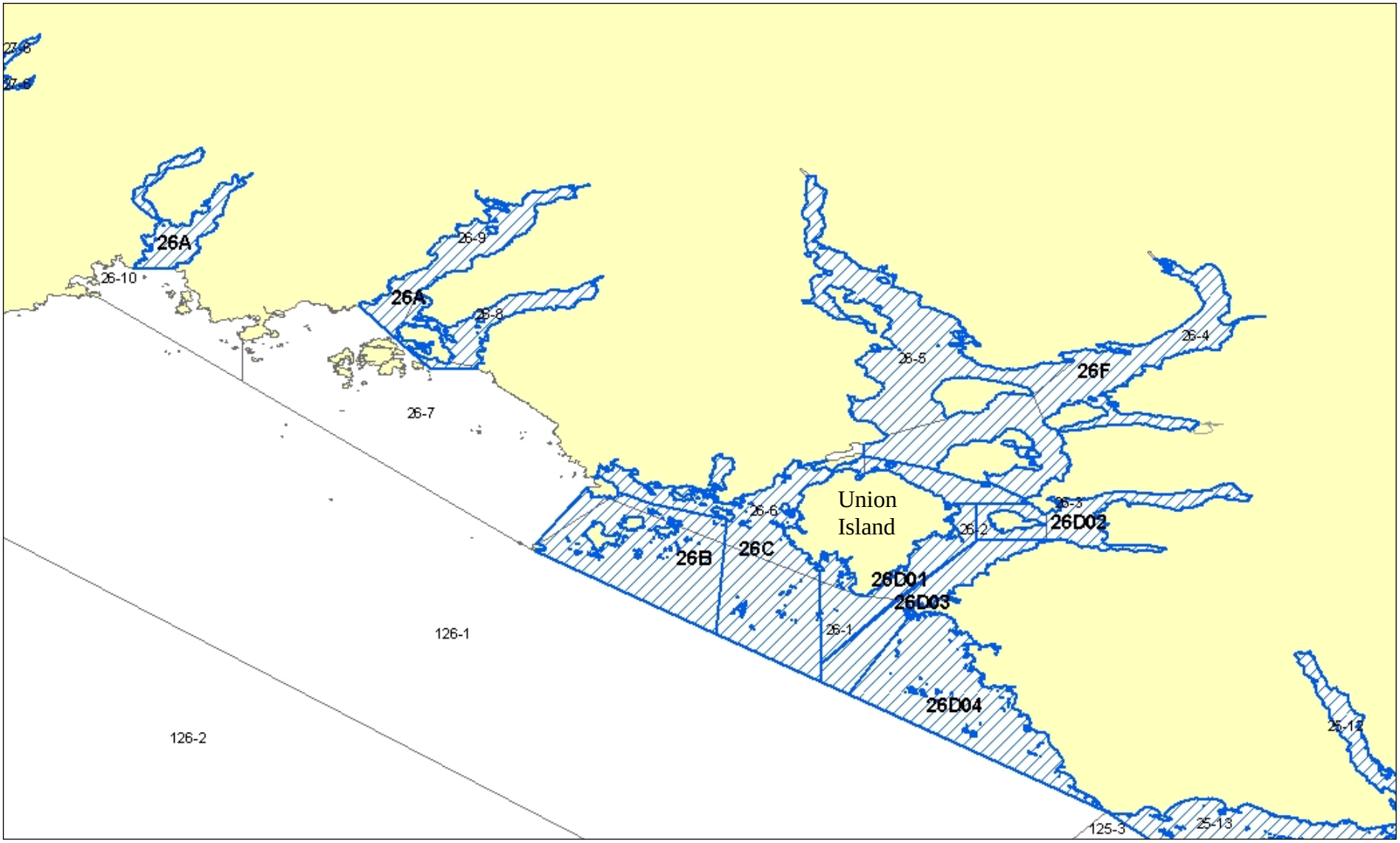
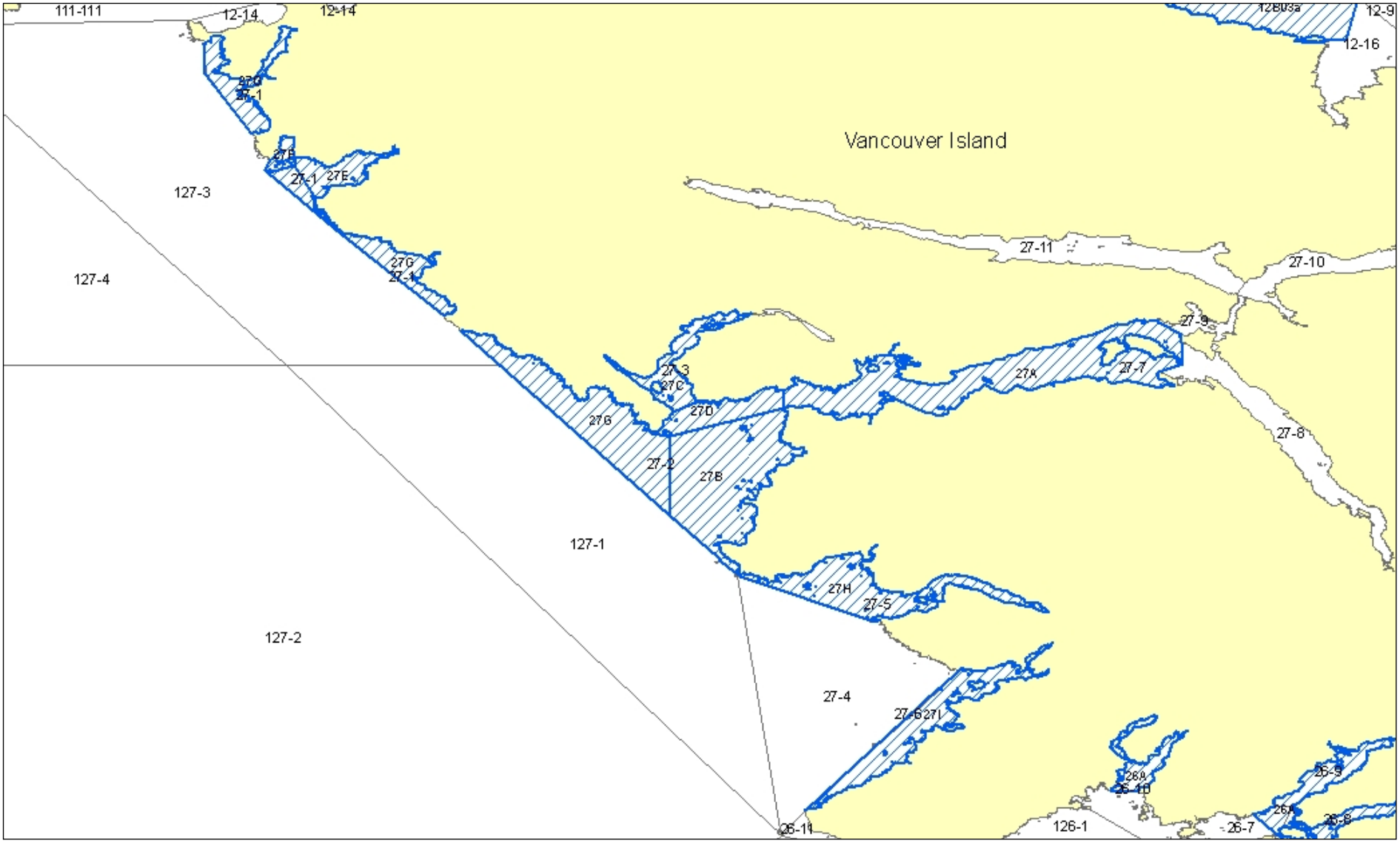


GMAs: 25A, 25B, 25C, 25D



GMAs:, 26A, 26B, 26C, 26D01, 26D02, 26D03, 26D04 and 26F



GMAs: 27A, 27B, 27C, 27D, 27E, 27F, 27G, 27H, 27I

APPENDIX 13: MAPS OF 2016 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*.

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 3.4 and 3.5 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, 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.
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b) 125 m radius of any marina, ferry wharf, finfish net pen, and, subject to bullet (c), any floating living accommodation facility; and

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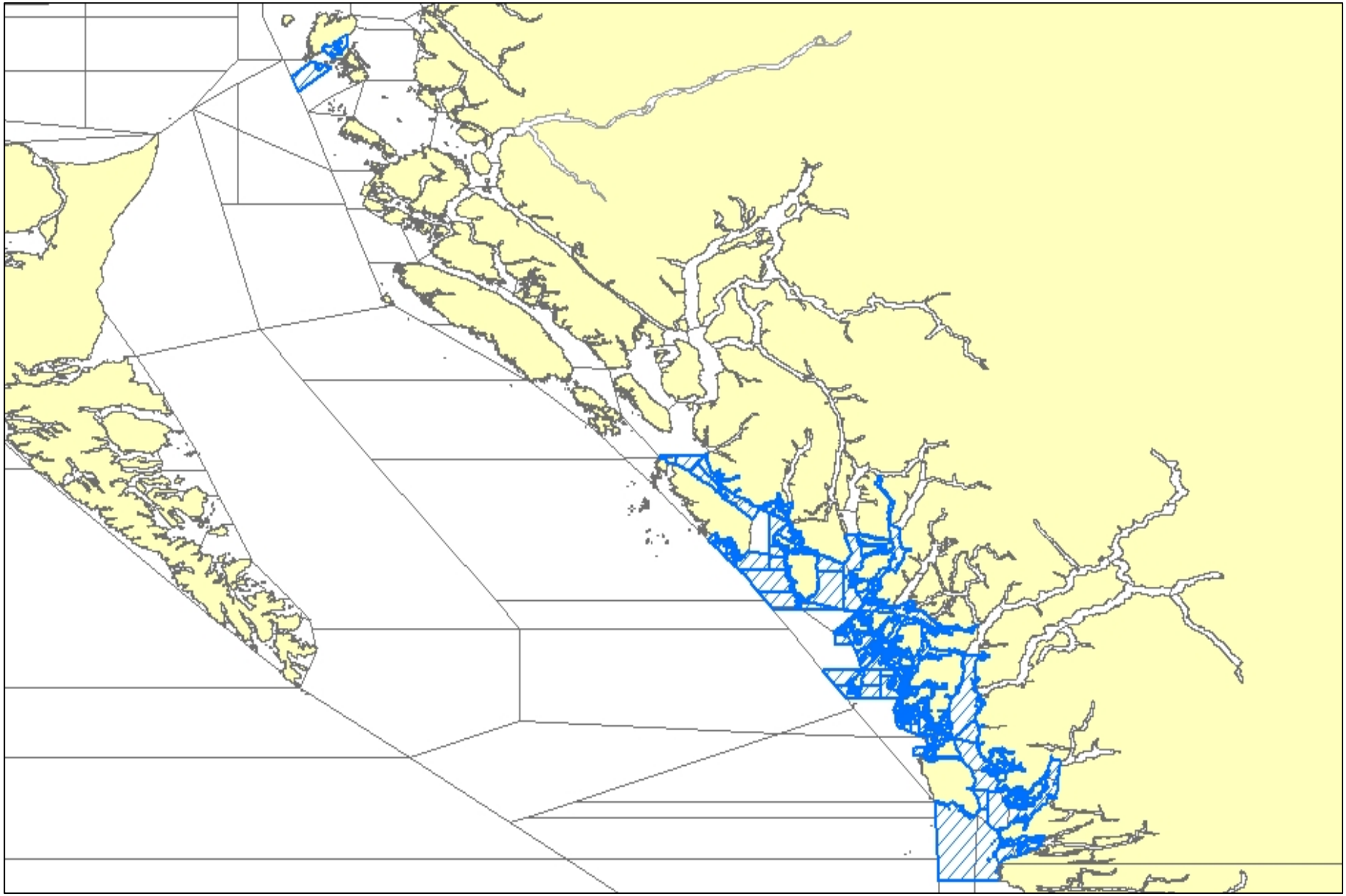
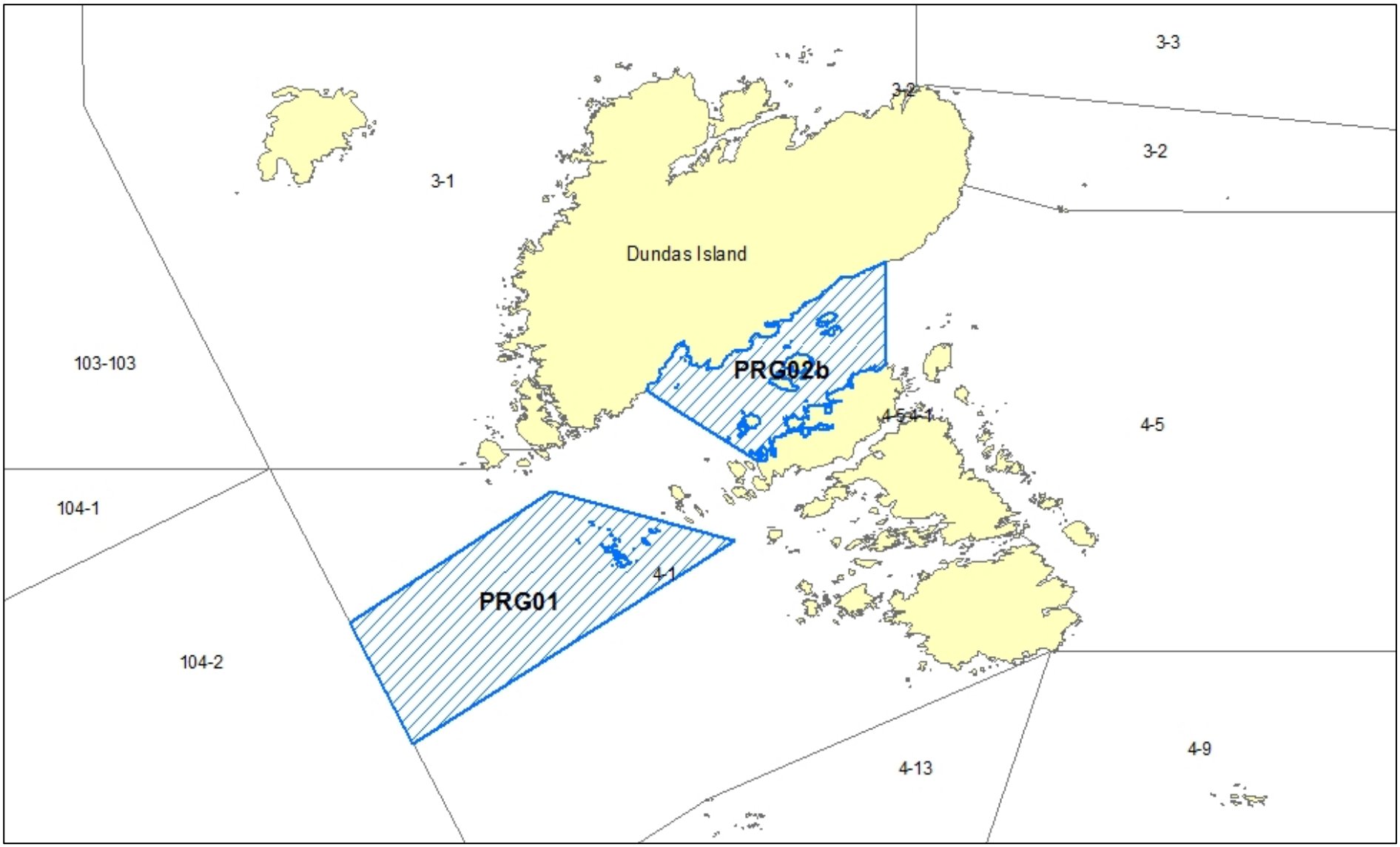
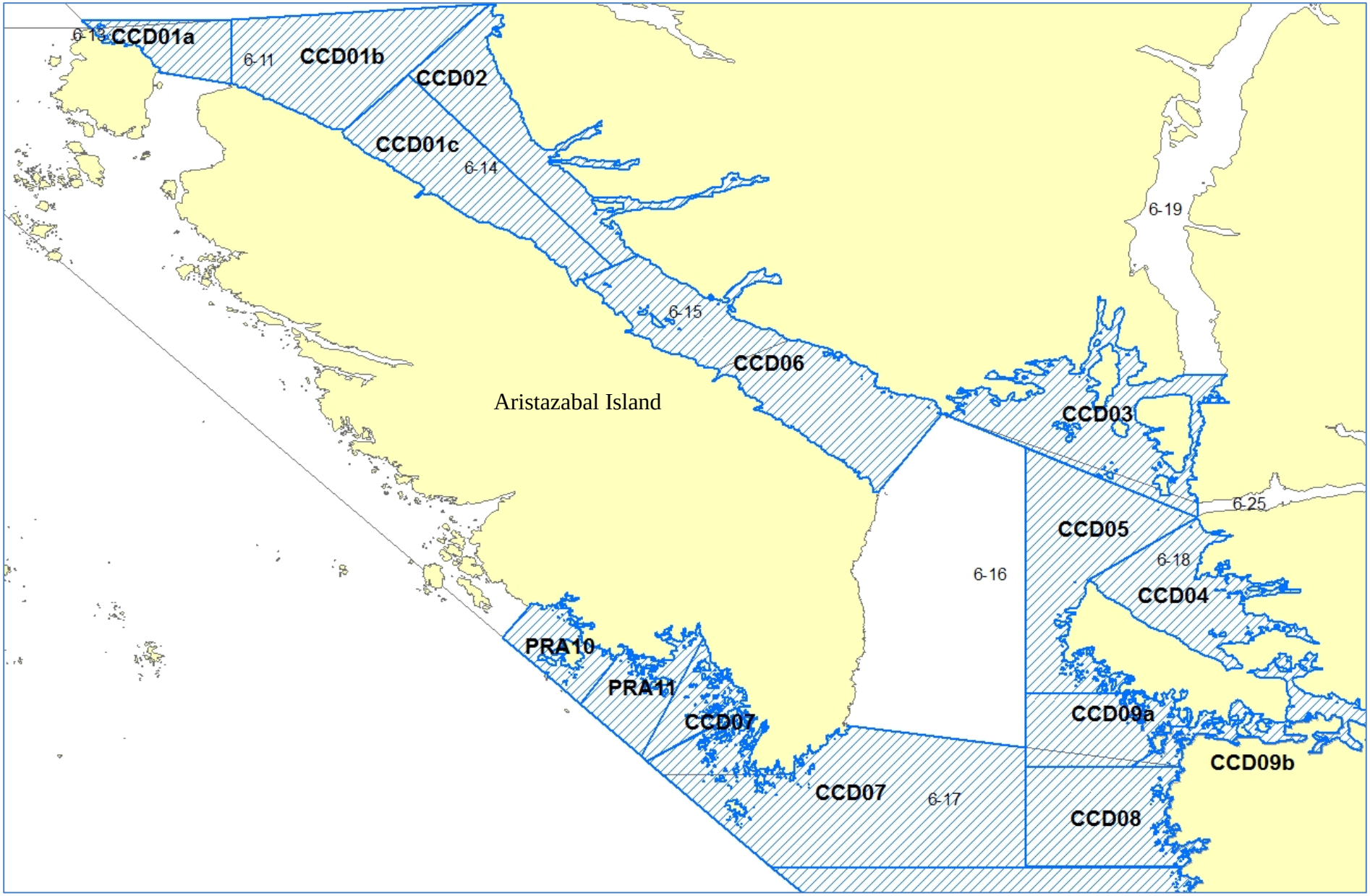


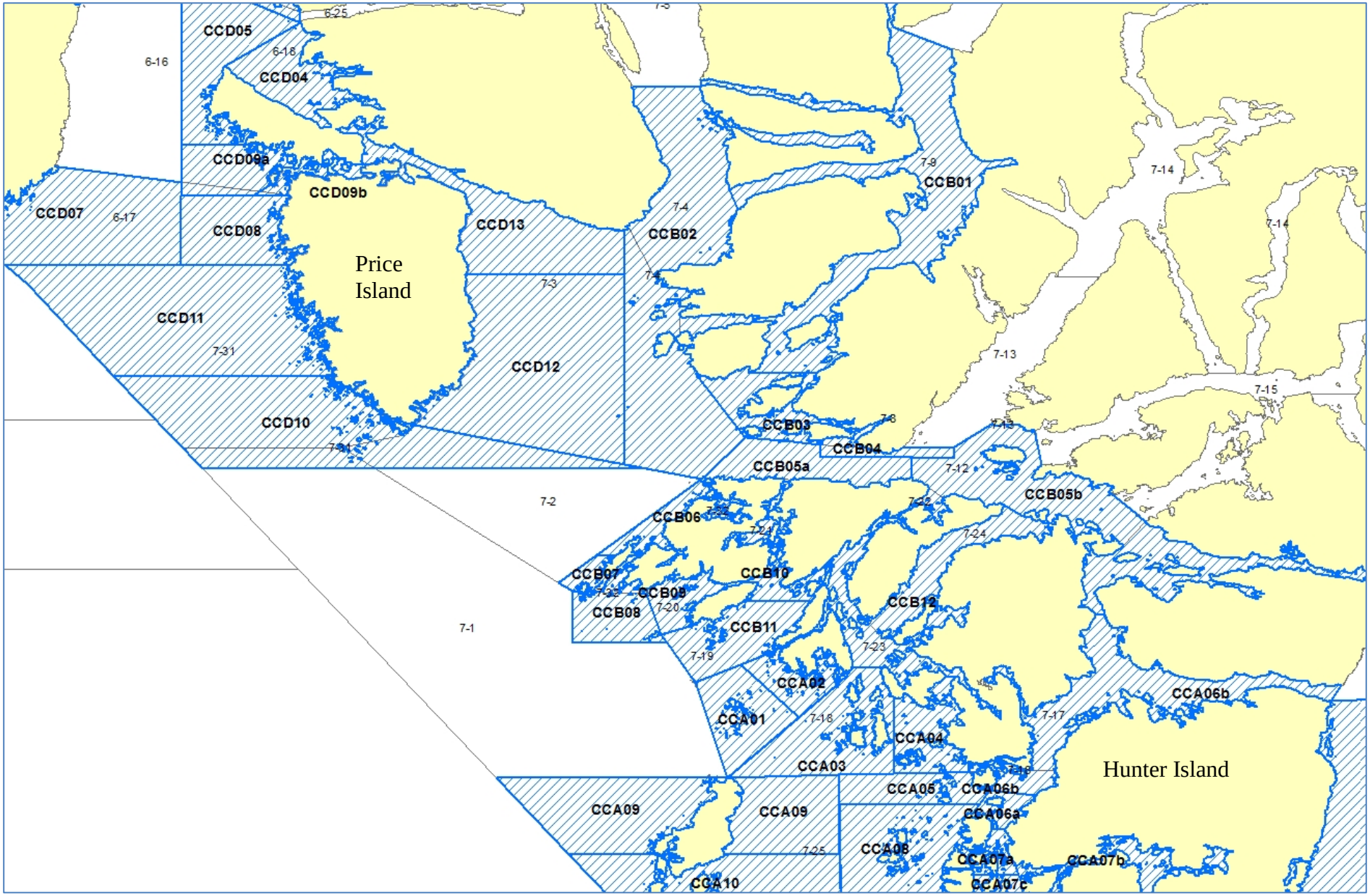
2016 North Coast Geoduck Management Areas (GMAs)



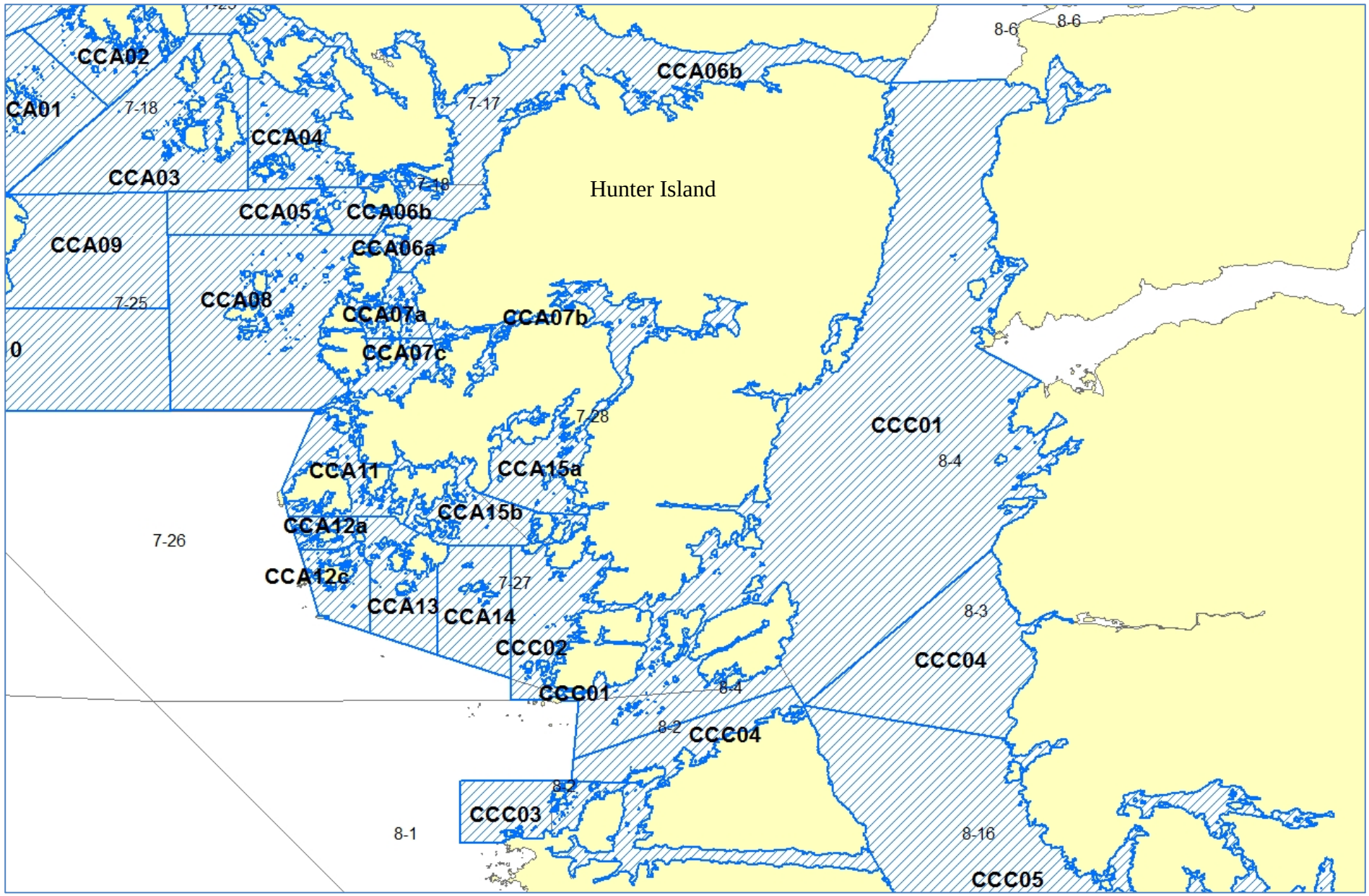
GMAs PRG01 and PRG02b.



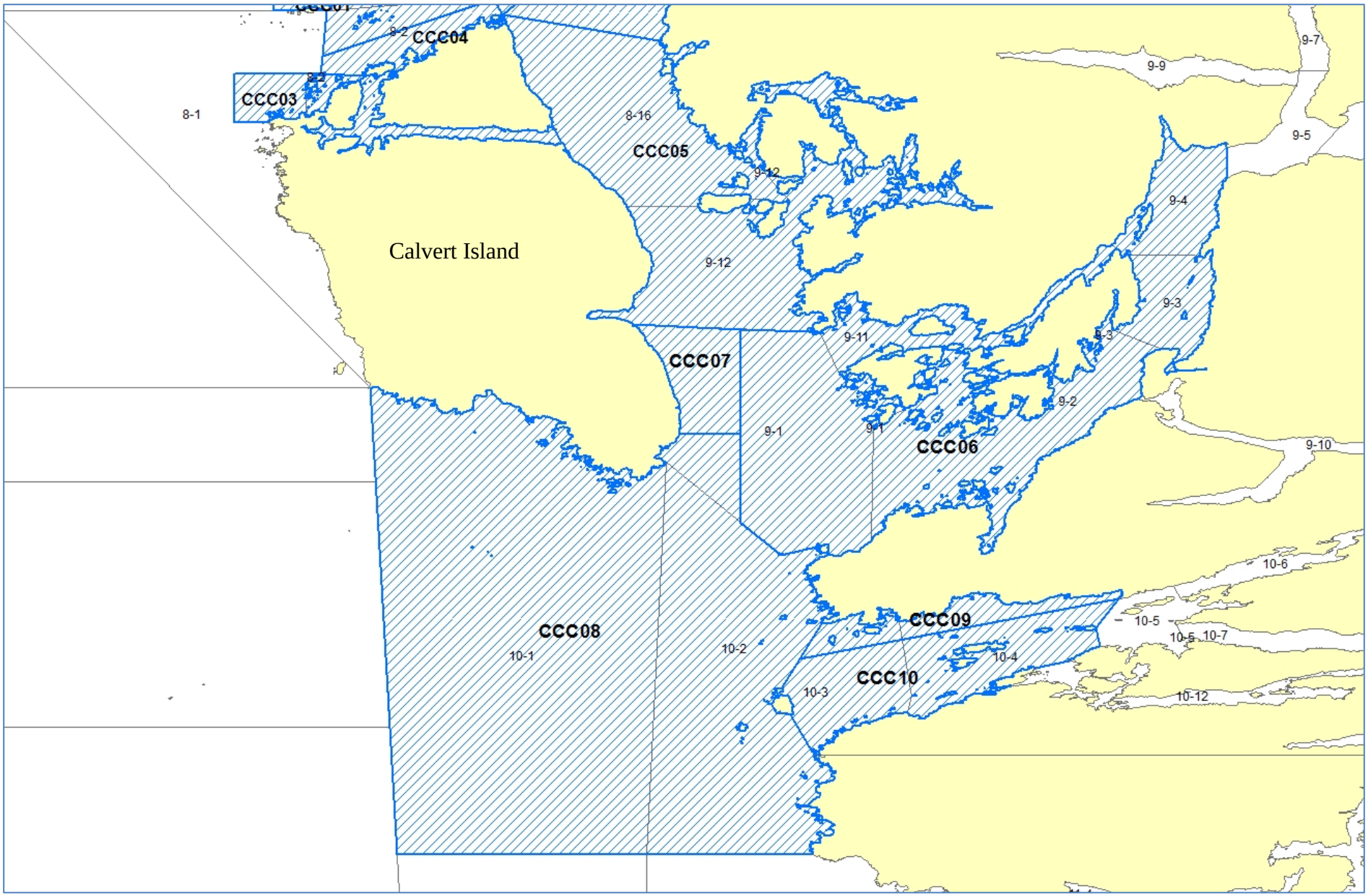
GMAs: PRA10, PA11, PRA12, CCD01 to CCD09b



GMA: CCB01 to CCB12, CCD07 to CCD12, CCA01 to CCA06b



GMAs: CCA04 to CCA15b, CCC02 to CCC04



GMAs: CCC03, CCC05 to CCC10

Appendix 14: Example of Conditions of Geoduck & Horse Clam 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: January 1, [Year] to February 28 (or 29), [Year + 1]

Authority

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

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

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

For information on management of the Geoduck and Horse Clam fishery obtain a copy of the [Year] Geoduck and Horse Clam Integrated Fisheries Management Plan from a Pacific Fishery Licensing Unit Office. The Management Plan is intended for general information purposes only. Where there is a discrepancy between the Plan and the 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.

“container” means a mesh harvest bag or a plastic tote used for the gathering, handling, or transportation of Geoduck or Horse Clam.

“Department” 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, by any means, Geoduck or Horse Clam 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 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.

"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" or "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 Region as set out in this licence.

(2) All harvesting of Geoduck and Horse Clam shall be conducted from the seabed in waters at least 10 feet below chart datum (i.e. deeper than 10 feet at the lowest low tide).

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.

(3) All Geoduck and Horse Clam or portions of Geoduck and Horse Clam which have been removed from the substrate of the ocean floor are considered to have been harvested and must be landed and validated. (See section 8) The following steps must 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 must be immediately placed in a container;
(b) Geoduck and Horse Clam must 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 must 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 GEODUCKS OR HORSE CLAM AND THE MARKING OF SUCH CONTAINERS:

(1) All Geoduck or Horse Clam shall be packed in cages with a maximum weight (while empty) of 5 lbs. per cage. The cages 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 cages which are tagged. The tags must be waterproof and provide the following information written in water resistant ink:
(a) vessel name and vessel registration number;
(b) Geoduck licence number;
(c) harvest date;
(d) harvest Subarea and Geoduck Management Area;
(e) location of catch; and
(f) common name of the product, i.e. Geoduck or Horse Clam.

An example of a tag is illustrated in the [Year] 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. LOCATIONS PERMITTED FOR THE LANDING OF GEODUCK AND HORSE CLAM:

Geoduck and Horse Clam must be landed at one of the following ports:

(1) For fisheries off the east coast of Vancouver Island: Port Hardy, Port McNeill, Comox, Deep Bay, French Creek, Nanaimo, Ladysmith, and Sidney. 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: Port Alberni, Ucluelet, Tofino, Gold River, Zeballos, Fair Harbour, Winter Harbour and Coal Harbour.

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

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

8. 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 must 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 must 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, the owner and/or operator of 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 cages 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.

9. ORAL REPORTS:

(1) The vessel master shall, under the circumstances set out in subsections 9(2), report the information set out therein by notifying in person an observer or by telephoning (800) 663-7152. Where feasible, as least 24 hours 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, 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.

10. HARVEST LOGS AND CHART RECORDS:

(See explanatory note after section 12)

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

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

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

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

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

(6) The vessel master must enter latitude and longitude co-ordinates for each dive in the log.

(7) For Geoduck and Horse Clam harvested from Areas 12 to 19 or 29, the vessel master must provide a chart record of the locations fished to the Department.

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

The validation I.D. number is the unique page number assigned to each validation page of the 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 must 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 must correspond to the dive numbers in the log.

(c) The information for each day's harvest operations shall be recorded on the chart record no later than midnight of that day.

(8) The completed log pages (original copy), electronic copy of the log and, for Geoduck and Horse Clam harvested in Areas 12 to 19 or 29, the chart record of locations fished, must be forwarded within 28 days following the end of each month in which fishing occurred to:

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

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

11. FISH SLIPS:

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 must be made even if the fish or shellfish landed 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
Regional Data Unit
Suite 200 – 401 Burrard Street
Vancouver, BC V6C 3S4

This report must be made within seven days of the offloading regardless of whether or not the catch has been sold within that period.

Fish slip books may be purchased at most Departmental Offices. Phone (604) 666-2716 for more information.

12. WORKSAFEBC REQUIREMENTS:

All Geoduck and Horse Clam divers shall be in possession of a WorkSafeBC (Workers' Compensation Board) 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 bureau 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	Jeff Johansen	(604) 666-3869
Lead Geoduck Resource Manager	Erin Wylie	(250) 756-7271
Regional Recreational Fisheries Co-ordinator	Devona Adams	(604) 666-3271
North Coast Area, Areas 1 to 10	General Inquiries	(250) 627-3499
417 2nd Avenue West	Fax	(250) 627-3427
Prince Rupert, BC V8J 1G8		
Resource Management Biologist	Pauline Ridings	(250) 756-7118
Resource Manager - First Nations Fisheries	Kristen Wong	(250) 799-5620
Resource Manager - Recreational Fisheries	John Webb	(250) 627-3409
South Coast Area, Areas 11 to 26	General Inquiries	(250) 756-7270
3225 Stephenson Point Road	Fax	(250) 756-7162
Nanaimo, BC V9T 1K3		
Resource Management Biologist (Lead Manager)	Erin Wylie	(250) 756-7271
Resource Manager - First Nations Fisheries	Paul Preston	(250) 720-8941
	Kevin Conley	(250) 756-7196
Resource Manager - Recreational Fisheries	Brad Beaith	(250) 756-7190
Lower Fraser Area, Areas 28 and 29	General Inquiries	(604) 666-8266
Unit 3, 100 Annacis Parkway	Fax	(604) 666-7112
Delta, BC V3M 6A2		
Resource Management Biologist	Anna Magera	(604) 666-6390
Resource Manager - First Nations Fisheries	Brian Matts	(604) 666-2096
Resource Manager - Recreational Fisheries	Barbara Mueller	(604) 666-2370

Conservation and Protection

Enforcement Plan	Linda Higgins	(250) 754-0221

Science Branch

Pacific Biological Station		(250) 756-7139
Hammond Bay Road	Dominique Bureau	(250) 756-7114
Nanaimo, BC V9R 5K6		

Fisheries Protection 1-866-845-6776

Treaty and Aboriginal Policy Directorate

401 Burrard Street
Vancouver, BC V6C 3S4

Sarah Murdoch (604) 666-7478

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 Officer (250) 754-0210

Other DFO Area Offices	**Telephone**	**Fax**	**Area of responsibility**
NORTH COAST			
Queen Charlotte City	(250) 559-4413	(250) 559-4678	1, 2, 101, 102, 130, 142
Prince Rupert District	(250) 627-3433	(250) 627-3495	3-6 (north), 103-106
CENTRAL COAST			
Bella Coola	(250) 799-5345	(250) 799-5540	6 (south), 7 – 10, 107 - 110
Port Hardy	(250) 949-6422	(250) 949-6755	11, 12 (north), 27, 111, 127
Campbell River	(250) 850-5701	(250) 286-5854	12 (south), 13
SOUTH COAST			
Nanaimo	(250) 754-0235	(250) 754-0309	14 – 17, 29 (west)
Victoria	(250) 363-3252	(250) 363-0191	18 - 20
Port Alberni	(250) 724-0195	(250) 724-2555	21 - 26, 121 - 126
FRASER RIVER			
Steveston	(604) 664-9250	(604) 664-9255	28, 29 (east)

Environment Canada

Growing Water Quality Classification and Surveys Walter Hajen (604) 666-2947

Canadian Food Inspection Agency

Molluscan Shellfish Program Specialist (604) 666-3578
Molluscan Shellfish Operations (604) 666-3737

BC Ministry of Agriculture and Lands

Aquaculture Development			(250) 387-9574

BC Ministry of Environment

Oceans and Marine Fisheries Division		Dennis Chalmers	(250) 714-9887

WorkSafe BC

Occupational Safety Officer	Courtenay	Mark Lunny	(250) 334-8732
	Courtenay	Pat Olsen	(250) 334-8777
	Victoria	David Clarabut	(250) 881-3469
	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

Grant Dovey, Executive Director	(250) 245-1037
North Coast Area Committee	
John Palychuk, Chairperson	(250) 338-9690
Mike Dudek	(250) 248-2245
Mike Featherstone	(604) 932-4559
Dan Larsen	(604) 945-0456
Paul Hackert	(250) 339-2616
Chris Sorensen	(250) 753-3436
Inside Waters Area Committee	
Darrell Thomas, Chairperson	(250) 208-6252
Jamie Austin	(250) 752-7205
Clint Ridgway	(250) 668-2414
Steve Renshaw,	(250) 592-0882
West Coast Vancouver Island Area Committee	
Les Tulloch, Chairperson	(604) 986-5170
Terry Keith	(250) 725-2168
Ron Hais	(250) 390-3134
Glenn Hicke	(250) 743-8211
Jesse Devine	(250) 213-5981

Geoduck Service Provider

Archipelago Marine Research Ltd.	Jen Toole	(250) 383-4535
525 Head Street	Fax	(250) 383-0103
Victoria, BC V9A 5S1	Commercial Fishery Hail Line	(800) 663-7152

Geoduck Processors

Clear Bay Fisheries Inc.	Julian Ng	(604) 276-2515
Evergreen International Food Stuffs Ltd.	Paulo Demée	(604) 253-8835
Pacific Rim Shellfish (2003) Ltd.	Ed Sang	(604) 687-4228
Sea World Fisheries Ltd.	Tony Wong	(604) 254-0525
Tri-Star Seafood Supplier Ltd.	Claude Tchao	(604) 273-3324
Vancouver Int. Enterprises Ltd.	Fion Mak	(604) 231-3703

Appendix 16: 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 Transport Canada (TC); emergency response with the Canadian Coast Guard (CCG) and DFO has responsibility for management of the fisheries resources. In B.C., WorkSafeBC also regulates health and safety issues in commercial fishing. This includes requirements to ensure the health and safety of the crew and safe operation of the vessel. DFO (Fisheries and Aquaculture Management (FAM) and CCG) and TC through an MOU have formalized cooperation to establish, maintain and promote a safety culture within the fishing industry.

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

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

Education and Training Programs
Marine Emergency Duties
Fish Safe – Stability Education Course
Fish Safe – Safe on the Wheel Course
Fish Safe – Safest Catch Program
First Aid
Radio Operators Course
Fishing Masters Certificates
Small Vessel Operators Certificate

Publications:

- Transport Canada Publication TP 10038 *Small Fishing Vessel Safety Manual* (can be obtained at Transport Canada Offices from their website at: http://www.tc.gc.ca/eng/marinesafety/tp-tp10038-menu-548.htm
- Gearing Up for Safety – WorkSafeBC
- Safe At Sea DVD Series – Fish Safe
- Stability Handbook – Safe at Sea and Safest Catch – DVD Series
- Safest Catch Log Book
- Safety Quik

For further information see: www.tc.gc.ca/eng/marinesafety/menu.htm
www.fishsafebc.com
www.worksafebc.com

1. IMPORTANT PRIORITIES FOR VESSEL SAFETY

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

1.1. Fishing Vessel Stability

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

Fishing vessel owners are required to develop detailed instructions addressing the limits of stability for each of their vessels. The instructions need to be based on a formal assessment of the vessel by a qualified naval architect and include detailed safe operation documentation kept on board the vessel. Examples of detailed documentation include engine room procedures, maintenance schedules to ensure watertight integrity, and instructions for regular practice of emergency drills.

The *Small Fishing Vessel Inspection Regulations* currently require, with certain exceptions, a full stability assessment for vessels between 15 and 150 gross tons that do not exceed 24.4 metres in length and are used in the herring or capelin fisheries. Once the proposed new *Fishing Vessel Safety Regulations* take effect, more vessels will be required to have a stability booklet.

In 2006, Transport Canada Marine Safety (TC) issued Ship Safety Bulletin (SSB) 04/2006 ("Safety of Small Fishing Vessels: Information to Owners/Masters About Stability Booklets"), which provides a standard interpretation of the discretionary power available under Section 48 and the interim requirements prior to the implementation of the proposed *Fishing Vessel Safety Regulations*. The bulletin calls for vessels more than 15 gross tons to have a stability booklet where risk factors that negatively affect stability are present. The bulletin also suggests vessels less than 15 gross tons assess their risk factors. Every fishing vessel above 15 GRT built or converted to herring or capelin after 06 July 1977 and engaged in fishing herring or capelin must have an approved stability book. Additionally Transport Canada has published a Stability Questionnaire (SSB 04/2006), and Fishing Vessel Modifications Form which enable operators to identify the criteria which will trigger a stability assessment. A stability assessment is achieved by means of an inclining experiment, which has to be conducted by a naval architect. Please contact the nearest Transport Canada office if you need to determine whether your vessel requires one.

In 2008, TC issued SSB 01/2008, which sets out a voluntary record of modifications for the benefit of owners/masters of any fishing vessels. For vessels of more than 15 gross tons, the record of modifications was to be reviewed by TC inspectors during regular inspections and entered on the vessel's inspection record. However, information gathered during the Transportation Safety Board's (TSB) Safety Issues Investigation into the fishing industry showed minimal recording of vessel modifications prior to this date.

The TSB has investigated several fishing vessel accidents since 2002 and found that vessel modifications and loading of traps have been identified as contributing factors in vessel capsizings, such as: M02W0102 - *Fritzi-Ann*, M05W0110 - *Morning Sunrise*, M07M0088 - *Big Sisters*, M08W0189 - *Love and*

Anarchy, M09L0074 – *Le Marsouin I*, M10M0014 - *Craig and Justin*, M12W0054 – *Jessie G and* M12W0062 - *Pacific Siren.*

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.

1.2. Emergency Drill Requirements

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

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

1.3. Cold Water Immersion

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

1.4. Other Issues

1.4.1. Weather

Vessel owners and masters are reminded of the importance of paying close attention to current weather treads and forecasts during the voyage. Marine weather information and forecasts can be obtained on VHF channels 21B, Wx1, Wx2, Wx3, or Wx4. Weather information is also available from Environment Canada website at: http://www.weatheroffice.gc.ca/marine/index_e.html

1.4.2. Emergency Radio Procedures

Vessel owners and masters should ensure that all crew are able to activate the Search and Rescue (SAR) system early rather than later by contacting the Canadian Coast Guard (CCG). It is strongly recommended that all fish harvesters carry a registered 406 MHz Emergency Position Indicating Radio Beacon (EPIRB). These beacons should be registered with the National Search and Rescue secretariat. When activated, an EPIRB transmits a distress call that is picked up or

relayed by satellites and transmitted via land earth stations to the Joint Rescue Co-ordination Centre (JRCC), which will task and co-ordinate rescue resources.

Fish harvesters should monitor VHF channel 16 or MF 2182 KHz and make themselves and their crews familiar with other radio frequencies. All crew should know how to make a distress call and should obtain their restricted operator certificate from Industry Canada. However, whenever possible, masters should contact the nearest Canadian Coast Guard (CCG) Marine Communications and Traffic Services (MCTS) station (on VHF channel 16 or MF 2182 kHz) prior to a distress situation developing. Correct radio procedures are important for communications in an emergency. Incorrect or misunderstood communications may hinder a rescue response.

Since August 1, 2003 all commercial vessels greater than 20 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: www.ccg-gcc.gc.ca/e0003901 or go directly to the Industry Canada web page: www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf01032.html.

A DSC radio that is connected to a GPS unit will also automatically include your vessel's current position in the distress message. More detailed information on MCTS and DSC can be obtained by contacting a local Coast Guard MCTS centre (located in Vancouver**,** Victoria**,** Prince Rupert**,** Comox and Tofino**)** or from the Coast Guard website: www.ccg-gcc.gc.ca/Pacific.

1.4.3. Collision Regulations

Fish harvesters must be knowledgeable of the *Collision Regulations* and the responsibilities between vessels where risk of collision exists. Navigation lights must be kept in good working order and must be displayed from sunset to sunrise and during all times of restricted visibility. To help reduce the potential for collision or close quarters situations which may also result in the loss of fishing gear, fish harvesters are encouraged to monitor the appropriate local Vessel Traffic Services (VTS) VHF channel, when travelling or fishing near shipping lanes or other areas frequented by large commercial vessels. Vessels required to participate in VTS include:

a) every ship twenty metres or more in length,
b) every ship engaged in towing or pushing any vessel or object, other than fishing gear,
c) where the combined length of the ship and any vessel or object towed or pushed by the ship is forty five metres or more in length; or
d) where the length of the vessel or object being towed or pushed by the ship is twenty metres or more in length.

Exceptions include:

a) a ship towing or pushing inside a log booming ground,
b) a pleasure yacht *less than* 30 metres in length, and
c) a fishing vessel that is *less than* 24 metres in length and not *more than* 150 tons gross.

More detailed information on VTS can be obtained by calling (250) 363 8904 or from the Coast Guard website: http://www.ccg-gcc.gc.ca/e0003901.

1.4.4. 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 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.

2. WORKSAFEBC

Commercial fishing is legislated by the requirements of the Workers Compensation Act (WCA) and for diving, fishing and other marine operations Part 24 of the Occupational Health and Safety Regulation (OHSR) applies. Many general hazard sections of the OHSR also apply to commercial fishing and other marine operations. For example, Part 8: Personal Protective Clothing and Equipment addresses issues related to safety headgear, safety foot wear and personal floatation devices. Part 15 addresses issues on rigging, Part 5 addresses issues of exposure to chemical and biological substances, and Part 3 addresses training of young and new workers, first aid, and accident investigations. Part 3 of the WCA also defines the roles and responsibilities of owners, employers, supervisors and workers. The OHSR and the WCA are available from the Provincial Crown Printers or by visiting the WorkSafeBC website: www.worksafebc.com

For further information, contact an Occupational Safety Officer:

Bruce Logan	Lower Mainland	(604) 244-6477
Wayne Tracey	Lower Mainland	(604) 232-1960
Pat Olsen	Courtenay	(250) 334-8777
Mark Lunny	Courtenay	(250) 334-8732
Jessie Kunce	Victoria	(250) 881-3461

or the Manager of Interest for Marine and Fishing, Mike Ross (250) 881-3419.

For information on projects related to commercial fishing contact Ellen Hanson (604) 233-4008 or Toll Free 1-888-621-7233 ext. 4008 or by email: Ellen.Hanson@worksafebc.com.

3. 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 fishermen in this goal. The Fish Safe Stability Education Course, is available to all fishermen who want to improve their understanding of stability and find practical application to their vessel's operation. The Safe on the Wheel Course is designed to equip crewmen with the skills they need to safely navigate during their wheel watch. The Safest Catch Program along with fishermen trained Safety Advisors is designed to give fishermen the tools they need to create a vessel specific safety management system.

Fish Safe is managed by Gina McKay, Project Coordinator John Krgovich, Program Assistant, Connor Radil, and fishermen Safety Advisors. All activities and program development is directed by the Fish Safe Advisory Committee (membership is open to all interested in improving safety on board). The advisory committee meets quarterly to discuss safety issues and give direction to Fish Safe in the development of education and tools for fish harvesters.

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

Gina McKay	Phone: 604-261-9700
Program Manager	Cell: 604-339-3969
Fish Safe	Fax: 604-275-7140
#100, 12051 Horseshoe Way	Email: fishsafe@fishsafebc.com
Richmond, BC V7A 4V4	www.fishsafebc.com

4. 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 2012, the TSB released the results of a three-year investigation into fishing safety in Canada. This report identifies 10 key factors and makes several suggestions to address the problems that persist throughout the industry. In 2013 the TSB released investigation reports on two prawn fishing vessels the Jessie G and the Pacific Siren. In 2014 the TSB released the investigation report on the collision between fishing vessel Viking Storm and US fishing vessel Maverick.

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

To view a brief video about some of the issues on the TSB's recent safety Watchlist, visit: http://www.tsb.gc.ca/eng/medias-media/photos/index.asp.

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

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

APPENDIX 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 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, Treaty and Aboriginal Policy Directorate, 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.