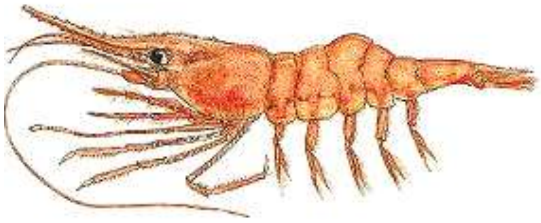
PACIFIC REGION

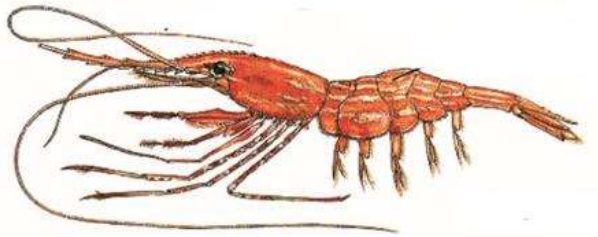
INTEGRATED FISHERIES MANAGEMENT PLAN

SHRIMP TRAWL

APRIL 1, 2021 TO MARCH 31, 2022



Smooth Pink Shrimp: ***Pandalus jordani***



Sidestripe Shrimp: ***Pandalopsis dispar***

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

FOREWORD

The purpose of this Integrated Fisheries Management Plan (IFMP) is to identify the main objectives and requirements for the shrimp trawl 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 Department of Fisheries and Oceans (DFO) staff, legislated co-management boards and other stakeholders. This IFMP provides a common understanding of the basic "rules" for the sustainable management of the fisheries resource.

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

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

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1. OVERVIEW

1.1. Introduction

The 2021/22 Pacific Region Shrimp Trawl Integrated Fisheries Management Plan (IFMP) encompasses the period April 1, 2021 to March 31, 2022.

Shrimp are harvested by two different methods in the Pacific Region, trawl nets and traps. This IFMP covers the harvest of Pacific shrimp species by trawl gear only. For more information on the trap fishery, including commercial, recreational and First Nations fisheries for prawns and shrimp, please refer to the Pacific Region Prawn and Shrimp by Trap IFMP.

The 2021/22 Shrimp Trawl Commercial Harvest Plan is attached as Appendix 1 of this IFMP. Several other appendices provide important information and commercial fish harvesters are advised to review them all.

The species of shrimp targeted by trawl gear are from the family Pandalidae. The most frequent targets are smaller shrimp species such as the Northern or Spiny Pink Shrimp (*Pandalus borealis*) and the Smooth Pink Shrimp (*Pandalus jordani*), collectively called pink shrimp. The next most common species is the Sidestripe Shrimp (*Pandalopsis dispar*). This species grows to a larger size and has a higher market value than pink shrimp. Two other species of Pandalid shrimp, the Coonstripe Shrimp (*Pandalus danae*) and the Humpback Shrimp (*Pandalus hypsinotus*) are also caught in localized areas. These two species may be incidentally retained by shrimp trawl harvesters but seldom make up the majority of their catch. Minor incidental bycatch retention of the Spot Prawn (*Pandalus platyceros*) is permitted.

1.2. History

The first records of trawl gear being used for commercial shrimp fishing date back to 1895. The shrimp trawl fishery did not develop in earnest until the 1960's when a downturn in the salmon and Halibut fisheries occurred. At this time, the British Columbia (B.C.) coast was explored for shrimp grounds and efficient trawl gear was developed. Licences were available for any commercial fishing vessel and most areas were open seasonally with no catch ceilings until stock assessments began in 1973. Shrimp trawl vessels fished the offshore shrimp grounds and landed the majority of the catch in United States of America (USA) ports. Expansion of fishing and processing capacity directed at offshore shrimp stocks, and Canada's declaration of a 200-nautical mile fisheries jurisdiction in 1977, led to licence limitation. Licence eligibility was restricted to vessels that had landed shrimp in 1975 and 1976. The result was that 237 vessels qualified for 'S' licence eligibilities and 71 qualified for Northern area permits. Once licence eligibility was finalized in 1978, a total of 249 'S' licence eligibilities were issued.

In 1995 and 1996, there was a dramatic increase in shrimp effort on the West Coast of Vancouver Island (WCVI) and all shrimp areas of the coast were fished. This increase was caused in part by the changes in groundfish and salmon management strategies, most notably a salmon licence buy-back that resulted in 100 vessels having only an S licence. In addition, shrimp abundance levels were also high in 1995 and 1996, along with a high price being offered for shrimp for those two years. There were catch ceilings in place for the WCVI but the rest of the B.C. coast was open on a seasonal basis (April 1 to October 31) with no catch limits. In response to the increase in effort and landings, significant changes in the management of the shrimp trawl fishery were implemented

in 1997 as Fisheries and Oceans Canada moved to more precautionary management, risk adverse principles, and promoted selective fishing practices. Shrimp Management Areas (SMA) were defined, total allowable catches (TAC) were set to limit exploitation, a seasonal opening for the offshore pink shrimp fishery was implemented, and the development of industry-funded programs to monitor catches and contribute to stock assessment were initiated. The 'shrimp year' was defined for opening/accounting for catch ceilings. In 2003 the official licence year was changed to run from April 1 to March 31 the following year.

1.3. Type of Fishery and Participants

1.3.1. First Nations

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

First Nations fishing effort for shrimp for FSC or domestic purposes is currently not limited by catch quantity. However, few First Nations have access to the commercial trawl gear necessary to target pink and Sidestripe Shrimp. The amount of pink and Sidestripe Shrimp caught by First Nations is not accounted for in the setting of annual catch ceilings.

Five Nuu-chah-nulth First Nations located on the West Coast of Vancouver Island - Ahousaht, Ehattesaht, Hesquiaht, Mowachaht/Muchalaht, and Tla-o-qui-aht (the Five Nations) - have aboriginal rights to fish for any species of fish, with the exception of Geoduck, within their Fishing Territories and to sell that fish. The Department has developed a 2020/21 Five Nations Multi-species Fishery Management Plan (FMP). Feedback provided by the Five Nations during consultations was considered and incorporated into the 2020/21 FMP by DFO where possible. The FMP includes specific details about the fishery, such as allocation/access, licensing and designations, fishing area, harvesting opportunities, and fishery monitoring and catch reporting. For further information see the FMP at: http://waves-vagues.dfo-mpo.gc.ca/Library/40869374.pdf

1.3.2. Recreational

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 Fisheries and Oceans Canada website: https://recfish-pechesportive.dfo-mpo.gc.ca/nrls-sndpp/index-eng.cfm

For recreational licensing information, frequently asked questions, and a list of Independent Access Providers, please visit: http://www.pac.dfo-mpo.gc.ca/fm-gp/rec/licence-permis/index-eng.html.

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

1.3.3. Commercial

Pink and Sidestripe Shrimp are harvested commercially by trawl gear. There are currently 233 licences; 207 'S' licence eligibilities and 26 'FS' licence eligibilities which are allocated to First Nations. Shrimp trawl vessels range in length from 8 to 35 meters (m). Vessel owners who do not intend to fish shrimp by trawl are still required to renew their S licence (fee $100). They are permitted to exercise their Schedule II privileges on their licence once they have satisfied any further conditions specific to each species.

1.4. Location of Fishery

Pink and Sidestripe Shrimp are mostly associated with sand and mud substrates. They move up into the water column during the night to feed on zooplankton and stay close to the bottom during the day. The fishery is conducted in protected inshore waters in the Strait of Georgia, inlets and fjords, offshore regions of the WCVI, and Prince Rupert District (Figure 1).

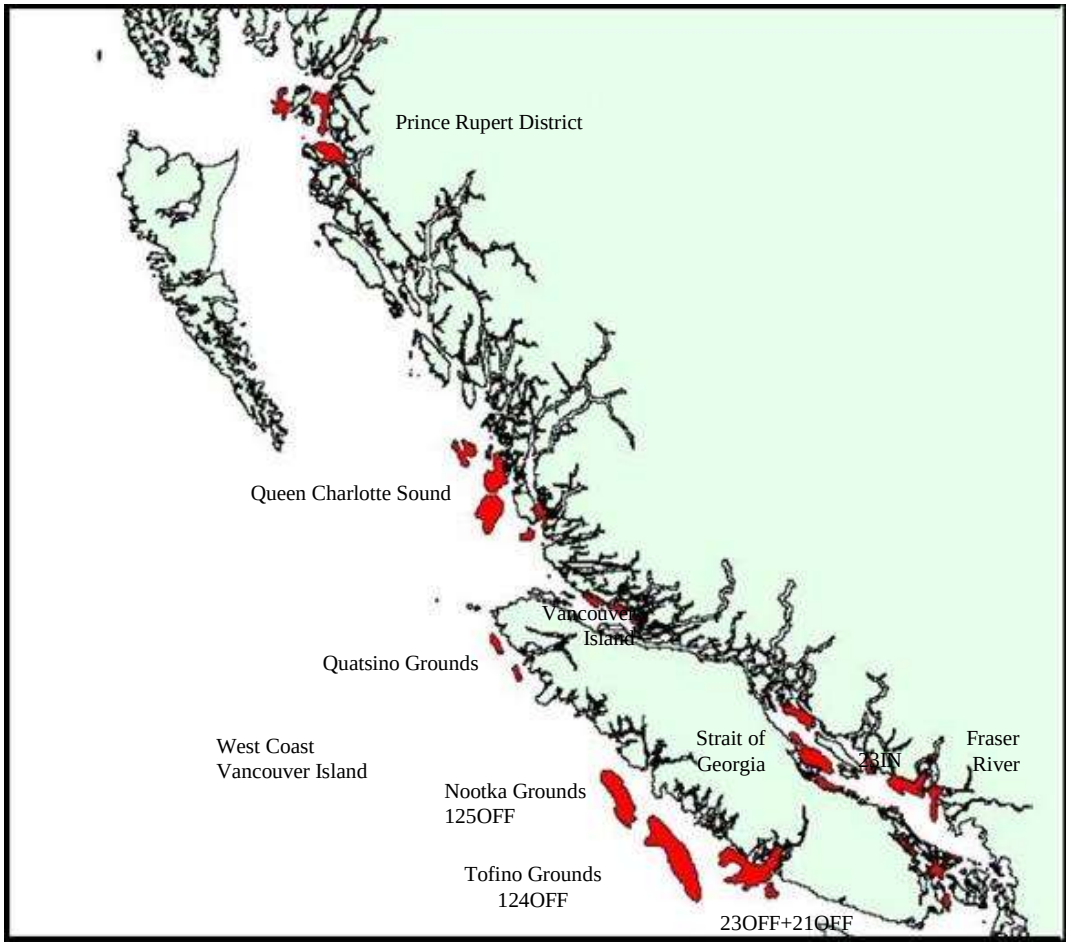

Figure 1. Major shrimp production areas in B.C., Pacific Coast (highlighted areas)

SMAs were developed for the entire B.C. coast in 1997 for the shrimp trawl commercial fishery so that specific catch ceilings could be defined to limit exploitation on discrete stocks of a number of different species. Fishery independent swept-area trawl surveys have been implemented in selected SMAs in order to index shrimp abundance. Descriptions of SMAs and maps can be found in Appendix 9.

1.5. Fishery Characteristics

The commercial shrimp trawl fishery primarily targets pink and Sidestripe Shrimp. Smaller beam trawl vessels (less than 15 m overall length) tend to fish in more sheltered areas and larger otter trawl vessels (15 to 35 m) use larger nets towed at higher speeds and sometimes fish in offshore areas. Of the 237 licences in 2014, participation declined to 36 beam trawl and 8 otter trawl vessels that actively participated in the fishery. In 2016, 33 beam trawl and 24 otter trawl vessels were active (twice the number of otter trawl vessels as the previous few years). Approximately 14 otter trawl vessels that had not been active for 15 years re-entered the fishery on the WCVI in 2015 and 2016, significantly increasing landings of pink shrimp in those areas. The WCVI shrimp biomass declined to average levels in SMA 124OFF and 125OFF and the larger vessels were not active for 2017 and 2018. Declines in shrimp biomass in the Strait of Georgia has limited the opportunities for beam trawl vessels to SMA PRD and a few more northerly areas so participation has declined to 21 beam trawl and 10 otter trawl vessels in 2018. An increase in shrimp biomass in 2019 in SMA 23OFF+21OFF has permitted larger volume landings so a few of the larger vessels were active in this area.

1.6. Governance

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

The shrimp by trawl fisheries are governed by the *Fisheries Act* (R.S., 1985, c. F-14) and regulations made thereunder, including the *Fishery (General) Regulations* (e.g., conditions of licence), the *Pacific Fishery Regulations* (e.g., open times), the *British Columbia Sport Fishing Regulations* (1996), the *Aboriginal Communal Fishing Licences Regulations* and the *Pacific Aquaculture Regulations*. Areas and Subareas are described in the *Pacific Fishery Management Area Regulations*.

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

These documents are available on the internet at: https://www.dfo-mpo.gc.ca/acts-lois/index-eng.htm

Species listed as extirpated, endangered, threatened or special concern are governed by the *Species at Risk Act* (2002, c. 29) (SARA) which has implications for the management of fisheries that

impact SARA-listed species. In addition to existing prohibitions under the *Fisheries Act*, it is illegal under the SARA to kill, harm, harass, capture, take, possess, collect, buy, sell or trade any listed extirpated, endangered or threatened animal or any part or derivative of an individual. More information on the SARA is available at: http://www.sararegistry.gc.ca/

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, Policy for Managing the Impacts of Fishing on Sensitive Benthic Areas, Policy on New Fisheries for Forage Species and Policy on Managing Bycatch. Along with other economic and shared stewardship policies, these will help DFO meet objectives for long-term sustainability, economic prosperity, and improved governance.

More recent information on Canada's Approach to Fisheries Modernization includes: Precautionary Approach Framework Rebuilding Plan Guidelines and the Benthic Ecological Risk Assessment Framework.

Scientific advice for this fishery is peer-reviewed primarily through a regional committee by the Centre for Science Advice Pacific (CSAP), formerly the Pacific Scientific Advice Review Committee (PSARC), conducted in conjunction with the Canadian Science Advisory Secretariat (CSAS).

1.7. Consultation

The Shrimp Trawl Sectoral Committee (STSC) is the primary management advisory process for this fishery. For a full description of the STSC see Appendix 12: Terms of Reference of the STRC.

A multi-sector meeting is held at least once each year. This sectoral meeting provides a forum for the exchange of information and views between the people with interests in the fishery and the Department on issues of importance. It is open to the public and anyone interested in providing advice on the management of the shrimp trawl fishery.

1.8. Approval Process

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

2. STOCK ASSESSMENT, SCIENCE AND TRADITIONAL KNOWLEDGE

2.1. Biological Synopsis

There are over 90 species of shrimp found in waters of B.C. Seven of these species of shrimp, belonging to the family Pandalidae, are harvested by the shrimp trawl fishery off the Pacific coast of Canada. The species are the Northern Pink, (*Pandalus borealis eous*), Smooth Pink Shrimp (*P. jordani*), Flexed Pink Shrimp (*P. goniurus*), Coonstripe Shrimp (*P. danae*), Humpback Shrimp (*P. hypsinotus*), Prawn or Spot Shrimp (P. platyceros), and Sidestripe Shrimp (*Pandalopsis dispar*). The fishery varies in complexity from single species harvest to multi-species harvest, although pink and Sidestripe Shrimp are the main species targeted by the commercial trawl fleet.

Pandalid shrimp have a wide distribution in the northeast Pacific and are found from California to the Bering Sea and occupy a variety of habitats from rocky to mud bottoms. They are found in depths from intertidal to greater than 1,300 meters and inhabit both inshore and offshore areas. Many members of the Pandalidae family, including the species listed above, have a unique life history where each individual begins life as a male and then changes sex into a female. The biological term for this unique sex change is called protandrous hermaphrodism.

Pandalid shrimps start their post-larval life as a male and reach maturity in approximately 18-24 months. They then undergo a transformation phase of approximately 3-5 months where they change sex from male to female. By the third year, most shrimp have completed the sex change and are mature females. Breeding takes place in the fall with females carrying eggs on their abdomens for approximately 4-5 months until they hatch in the late winter. This is followed by a 3 - 4 month pelagic larval stage from March to summer. Larval settlement occurs in the summer (Butler 1980). Shrimp generally have a 4 year life cycle.

2.2. Ecosystem Interactions

Ecosystem interactions for Pandalid shrimp are complex due to the wide range of habitats and niches they occupy. However, Pandalid shrimp likely play an important role as forage fish species because, as larvae, they are a source of food for a number of marine organisms. As adults, shrimp are a food source for a number of pelagic fish species such as Hake, Turbot, Spiny Dogfish, Cod, rockfish, and skates (Butler 1980, and Hannah 1995).

Pandalid shrimp are opportunistic detritus feeders and are known to be predators of polychaete worms, sponges, diatoms, Euphausiids, and other crustaceans (Butler 1980).

2.3. Aboriginal Traditional Knowledge/Traditional Ecological Knowledge

DFO is not aware of Aboriginal Traditional Knowledge of pink and Sidestripe Shrimp, as First Nations participation in this fishery has been very limited.

Traditional Ecological Knowledge in the form of observations and comments collected from commercial fish harvesters over many years contributes to decisions on scientific survey locations and is considered in management decisions. Many of the active fish harvesters have been participants in the fishery for 10 to 40 years.

2.4. Stock Assessment

The shrimp trawl fishery takes place within 34 of the 36 SMAs from large offshore areas to smaller inshore waters. Estimates of biomass are based on fishery independent surveys for pink shrimp, Sidestripe Shrimp and sometimes for Coonstripe and Humpback Shrimp for a select number of SMAs. Area-swept trawl surveys are conducted on a fixed schedule basis to index shrimp biomass and to monitor trends in abundance over time. Survey results and abundance trends are reported in Shrimp Trawl Survey Bulletins in-season and are available upon request (see Appendix 3 for contacts).

The most recent science advisory report on stock trends and stock status advice for inshore shrimp stocks (DFO 2012) can be found at Fisheries and Oceans Canada, CSAS website: http://www.dfo-mpo.gc.ca/csas-sccs/Publications/SAR-AS/2011/2011_085-eng.html

2.5. Precautionary Approach

The Department follows the Sustainable Fisheries Framework (SFF), which is a toolbox of policies for DFO and other interests to sustainably manage Canadian fisheries in order to conserve fish stocks and support prosperous fisheries. The SFF includes a decision-making framework incorporating a precautionary approach to commercial, recreational, and food, social and ceremonial fishing (FSC): http://www.dfo-mpo.gc.ca/reports-rapports/regs/sff-cpd/precaution-eng.htm

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

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

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

The framework requires that a harvest strategy be incorporated into respective fisheries management plans to keep the removal rate moderate when the stock status is healthy, to promote rebuilding when stock status is low, and to ensure a low risk of serious or irreversible harm to the stock. A key component of the Precautionary Approach Framework requires that when a stock has declined to the Critical Zone, a rebuilding plan must be in place with the aim of having a high probability of the stock growing out of the Critical Zone within a reasonable timeframe. http://www.dfo-mpo.gc.ca/reports-rapports/regs/sff-cpd/precautionary-precaution-eng.htm

2.6. Stock Scenarios

Shrimp stock sizes in general tend to show high annual variation. Highly variable stock sizes over the long term should be expected and considered the norm for shrimp populations. This will result in high annual variability in area catch ceilings under the current fixed harvest rate management strategy.

In 2020 most of the regularly scheduled DFO biomass surveys were cancelled due to Covid-19 health risk concerns. One biomass survey in SMA PRD was conducted in the fall of 2020. The 2020 survey in SMA PRD showed healthy stocks of both Pink and Sidestripe Shrimp. The most recently available 2019 biomass survey data for SMAs 14, 16 and FR indicated Pink Shrimp stock biomass continued to be in the Critical Zone. No offshore surveys were conducted in 2020. The 2019 biomass survey results for Pink Shrimp stocks in SMA's 124OFF and 125OFF increased but were still in the Critical Zone so these areas did not open. There was a significant increase in the Pink shrimp biomass in SMA 23OFF&21OFF in 2019. Trends in Pink and Sidestripe Shrimp

abundance for surveyed areas are documented in the Shrimp Trawl Bulletins and available upon Request (see Appendix 3 for contacts).

2.7. Research

Fishery independent surveys are the primary source of stock abundance and research data. From 1996-2011 a number of index sites were surveyed either annually or every second year according to a fixed survey schedule; these were: SMAs 23OFF+21OFF, 124OFF, 125OFF, 23IN, QCSND, 9IN, PRD, 14, and FR. In addition SMA's GSTE, 16, 18, 19, and a portion of 12IN were included when survey time permitted. In 2012 the Department began a two year rotational survey schedule for some of the inshore index survey sites.

Additional scientific information on shrimp stocks and the fishery is available at Fisheries and Oceans Canada, CSAS website: http://www.dfo-mpo.gc.ca/csas-sccs/Publications/SAR-AS/2011/2011_085-eng.html

3. SOCIAL CULTURAL AND ECONOMIC IMPORTANCE

3.1. Socio-Economic Profile

The intent of this section is to provide a socio-economic context for the shrimp trawl fishery in BC. Overviews of Commercial, Processing, Export and Aboriginal sectors of the fishery are included. Recreational fishing for shrimp species is not discussed here because use of trawl gear is prohibited in that fishery. For information on recreational fishing that may pertain to shrimp species, please refer to the Prawn and Shrimp by Trap IFMP.

Recent developments created two banner years (2015 and 2016) in the shrimp trawl fishery, but in 2017 and 2018 the West Coast of Vancouver Island (WCVI) shrimp biomass declined to levels that resulted in no fishing opportunity for the offshore areas. Increases in available biomass and market demand for shrimp resulted in significant growth in the BC fishery in 2015 and 2016, but with no fishing opportunity in the following years, the fishery was not able to maintain these markets. The fishery has shown growth from 2018-2019, with increases in both harvest and landed value. WCVI represented a majority of the trawl fishery in 2019, it is unclear whether this biomass increase will continue.

3.2. Commercial

Shrimp trawling in British Columbia began as early as the 1930s, but developed more quickly since the 1960s. From the 80s to 90s there was a period of increasing participation, until landings peaked in 1996; at that time most of the major shrimp grounds were being fished. From 1997 until 2014 landings have declined due to high costs, lack of market demand, and precautionary management changes, including selective fishing strategies and TACs set to limit exploitation.

From 2007-2019, the BC shrimp fishery has on average 217 expired and valid licences, with one licence per vessel. The number of licensed vessels declined by 37 from 2007-2012 as owners discontinued renewing the licence. Since 2012, the total amount of licences has increased with license numbers peaking in 2015 at 217, the year corresponding with the highest landings since 1996. The annual participation has been 51 vessels on average for the last 10 years. In 2015 and

2016 there was an increase in participation, with 61 and 69 vessels participating in each of those years, respectively. The decline in shrimp biomass and resulting lack of fishing opportunity for 2017 and 2018 resulted in only 39 and 38 active vessels, respectively. Despite the return of a significant WCVI harvest, active vessels did not increase in 2019, remaining at 39. The shrimp fleet is quite diversified, with vessels participating in prawn, groundfish trawl, salmon gillnet, and salmon troll fisheries among other fisheries. Fishing for shrimp requires specialized gear that cannot be used in other fisheries, suggesting the decision to participate requires additional investment.

In 2015 and 2016, the B.C. fishing industry appears to be composed of two groups: smaller vessels with modest volumes and large vessels with high volume. Prior to 2015, the majority of the British Columbia shrimp trawl fleet consisted of small vessels (<12m) that harvested modest volumes of shrimp during short trips; large trawl vessels were generally not active in the fishery. On the East Coast of Canada, Oregon and more recently Washington State in the USA, large trawlers engage in an industrial scale fishery that directly competes with BC's fishery. In 2015 and 2016 several larger trawl vessels (>12m) actively participated in the BC fishery, focusing their effort in the offshore areas of the West Coast of Vancouver Island (WCVI). These larger vessels were much less active in 2017 due to the WCVI SMAs being closed. Some of the smaller beam trawl vessels headed north in 2017, but mostly the fleet in the Southern Gulf of Georgia was not active in 2017, again due to lack of areas to fish (Figure 2 and 3).

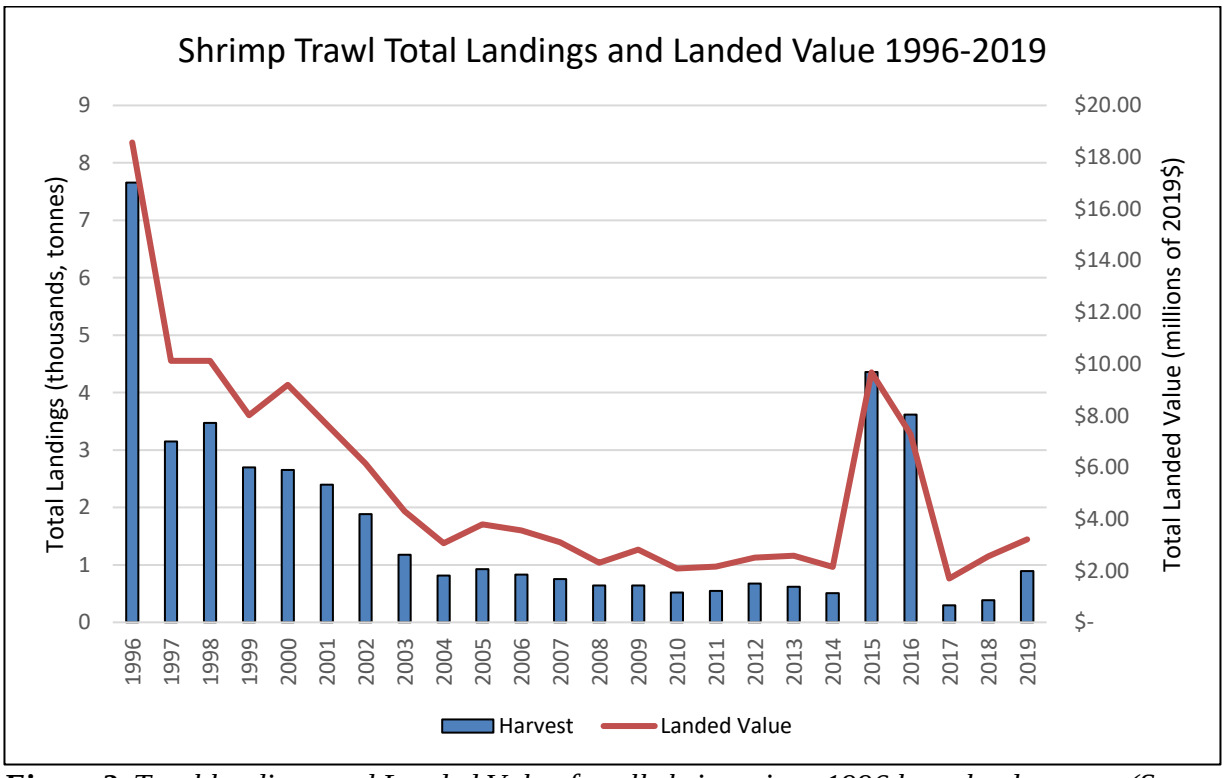

Figure 2. *Total landings and Landed Value for all shrimp since 1996 by calendar year. (Sources: Logbooks with matched Sale Slip data, Economics Unit.)*

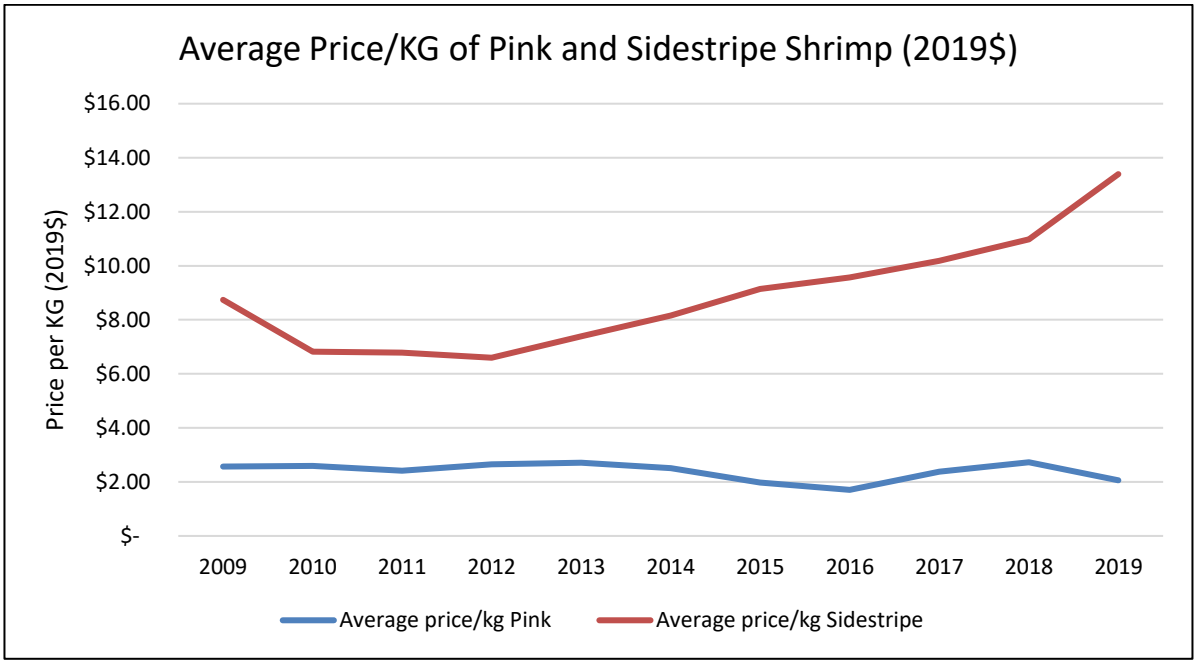

Figure 3*. Average price per kg for pink shrimp (smooth and spiny) and sidestripe shrimp from 2009-2019 (in 2019$) (Sources: Logbooks with matched Sale Slip data, Economics Unit)*

The shrimp trawl fishery opens coast wide on June 1st and fishing opportunities generally continue until the harvest quotas are reached or the closing date is reached (Mar 31 the following year). Initial Catch Ceilings from forecast biomasses are reassessed after stock assessments are completed. The shrimp trawl fishery has not reached the coastal TAC in recent years. The cyclical pink shrimp population increase from 2014 to 2016 was confined to Areas 124 and 125, which was almost exclusively fished by large trawl vessels. In 2016, Shrimp Management Areas 124OFF and 125OFF were closed due to the in-season estimate of eulachon bycatch (Eulachon Action Level or EAL) being reached, and subsequent stock assessment proving that the shrimp biomass had declined dramatically. The decline resulted in no fishing opportunity in 2017 in these areas. Smaller vessels that have historically been active in the fishery typically harvest in areas near population centres, resulting in catch ceilings for these areas being reached. The decline in fishing opportunities in the previous three years resulted in many of these smaller vessels not participating in the fishery. For the smaller vessels, a combination of fuel costs and limited shrimp in some open areas continued to reduce the incentive to fish in areas far from a vessel's home port, resulting in several shrimp trawl areas not being fished in coastal inlets.

Figure 1 shows the low harvest, and as a result the low revenue, experienced in the fishery since the early 2000s. In low harvest years, only the most active vessels had a positive return in the shrimp trawl fishery (Nelson, 2011). In 2014, the top third of the active shrimp fleet reported average gross revenues of over $80,000 (2019$), however, the bottom third of the fleet had gross revenues of about $14,000 (2019$). For the 49 active vessels in 2014, the average landings per vessel were almost 23,000 lbs (10,334 kg) and average gross revenues were $44,000 (2019$). During the time of low landings from 2004-2014, the real price of shrimp averaged $4.02/kg (2019$). The drastic increase in landings in 2015-2016 saw the price drop to $2.12/kg over the two years. However, with landings falling back to pre-2015 levels, the industry saw a huge spike with price levels increasing to $6.68/kg in 2018, before returning to $3.59/kg in 2019. The shrimp industry has explored means of reforming the fishery to improve viability, but has been unable to reach an agreeable alternative.

Shrimp trawl harvest changes with market demand and stock conditions. Starting in the fall of 2014 and continuing into 2016, there was an increase in Pink Shrimp biomass that coincided with a harvest reduction in major competing jurisdictions (northwest USA, eastern Canada), creating more demand for BC shrimp. From 2014 to 2015, landings of shrimp nearly increased by nine-fold. In 2015, average landings per vessel increased substantially to over 157,000 lbs with average revenues of almost $156,000 (2019$) for the 61 active vessels; an increase in total fishery revenue of 351% from 2014. Despite this, most vessels experienced only modest increases, and average revenues for vessels in the bottom third of the fleet dropped from 2014 levels to just above $12,400 (2019$). The majority of the increased harvest was captured by a handful of vessels that had not participated during the low harvest years. In 2015, the 18 vessels that had not participated in 2014 caught 76% of the landed value (2019$). Most of the landed value was from Pink Shrimp harvested off the West Coast of Vancouver Island, which saw nearly a ten-fold increase in value (2019$). Some of the new vessels are quite large compared to the typical vessel in shrimp trawl, allowing them to harvest large quantities further away from their landing port. In 2014, Pink Shrimp accounted for about 70% of the landed quantity, while in 2015 and 2016 the share increased to 97%. The following two years (2017-2018) saw a substantial decrease in both total shrimp landings and the percentage of pink shrimp, which fell to a decade low 59% of landings. Pink Shrimp harvest increased in 2019 accounting for more than 86% of all landings in the fishery, the highest makeup in the last decade apart from the two banner years.

3.3. Processing

There are seven Pandalid shrimp species harvested by trawl in BC and fisheries vary in complexity from single to multi-species fisheries for a variety of markets including hand-peeled, frozen-at-sea, fresh and live shrimp. The majority of landings are a mix of Pink Shrimp and Sidestripe shrimp. Sidestripe shrimp are a higher value shrimp than Pink shrimp due to their larger size. The largest Sidestripe shrimp are finger-packed (heads on) and frozen at sea for the Japanese market or sold fresh directly to the public at local dock sales and farmer's markets. They may also be marketed as a frozen product with the heads removed and the tails packaged and frozen at sea. This produces a higher value product for restaurant and domestic markets, but the market is limited. A large proportion of Sidestripe shrimp, an average of 29% of landings from 2012 to 2016 caught by smaller vessels, are sold dockside by harvesters. It seems that the capital investment in on-board freezing capacity does not warrant updating a shrimp vessel unless the freezer is used for other fisheries such as tuna, salmon by troll or prawn by trap.

The market for Pink Shrimp is limited by the Pink Shrimp's small size compared to other shrimp species. BC Pink Shrimp are marketed mainly as a frozen, peeled cocktail shrimp product and therefore compete directly with a number of other shrimp fisheries worldwide, primarily Eastern Canada, Washington and Oregon.

There are two main methods of preparing cocktail shrimp: hand-peeling and machine-peeling. The hand-peeled market requires the largest shrimp and results in a higher quality (less broken) shrimp product. BC processors continue in the hand-peeled market segment, promoting BC shrimp and supplying this market year-round. Eastern Canada, Washington, and Oregon shrimp fisheries are Marine Stewardship Council certified, machine-peeled and generally supply the demand for cheaper quick frozen processed cocktail shrimp.

The majority of the shrimp harvest is landed on either Vancouver Island (45%) or the Lower Mainland (45%), while the remainder is landed on the North Coast (10%).[1] The majority of the harvest is processed where it is landed. Shrimp processing does not contribute significantly to the processing industry. However, with the drastic increase in landings for 2015 and 2016, shrimp processing provided over 55 000 hours of employment or $1 000 000 (2019$) in wages to British Columbia on average over the two years. The increased harvests of 2015 and 2016 resulted in the processing requirements substantially increasing in one year.[2]

3.4. Export Market

In this section prawn and shrimp exports are reported together, as the harmonized system codes (which record and categorize exports), do not disaggregate exports of prawn and shrimp. The average annual value of prawn and shrimp exports from BC between 2011 and 2019 was at the level of about $50.3 million (2019$). Shrimp is not very well represented in this mixed category due to the much large size of the BC Prawn harvest and resultant exports. All of the prawn and shrimp exported in 2011-2019 were exported either frozen or fresh. Average value per kilogram from prawn and shrimp exports peaked at about $25.7/kg (2019$) in 2019, a slight increase from the previous high of $25.1/kg in 2018. In 2015 there was a major shift in the export profile for the combined product group, which appears to be as a result of changes in the shrimp trawl fishery (Figure 4). Between 2014 and 2016, export volume of shrimp and prawns to the United States of America (USA) increased about 10-fold, while the average export price for the USA declined from about $36/kg to around $6.2/kg. Price decreased drastically due to the large amount of pink shrimp product that the BC domestic market did not have the capacity for. However, since 2016, export volumes to the USA have decreased by nearly 77% to pre-2015 levels, and consequently, average export price has once again risen to $20/kg. This two year increase to the USA is likely in correlation with the drastic increase in shrimp harvest. By contrast, the volume of exports to Japan from 2014-2016 dropped by about 50% while the price increased by 43%. Export volumes remained low in 2017-2018, but saw an increase by 36% in 2019 while prices remained high.

[1] GSGislason & Associates Ltd. (Aug 2017) Linkages Between Seafood Harvesting and Processing (2016 Data)

[2] It is unlikely that the entirety of this processing demand was fulfilled by local processors as BC does not have the processing capacity needed for the large quantities of shrimp harvested in 2015 and 2016, due in part to the specialized equipment and typically low harvest of shrimp. This problem was avoided by shipping the shrimp to Washington and Oregon for cooking and peeling. The increased harvest does not seem to have resulted in investment in additional peeling capacity, although industry participants have made investments in transportation capacity. Source: Interviews with Industry

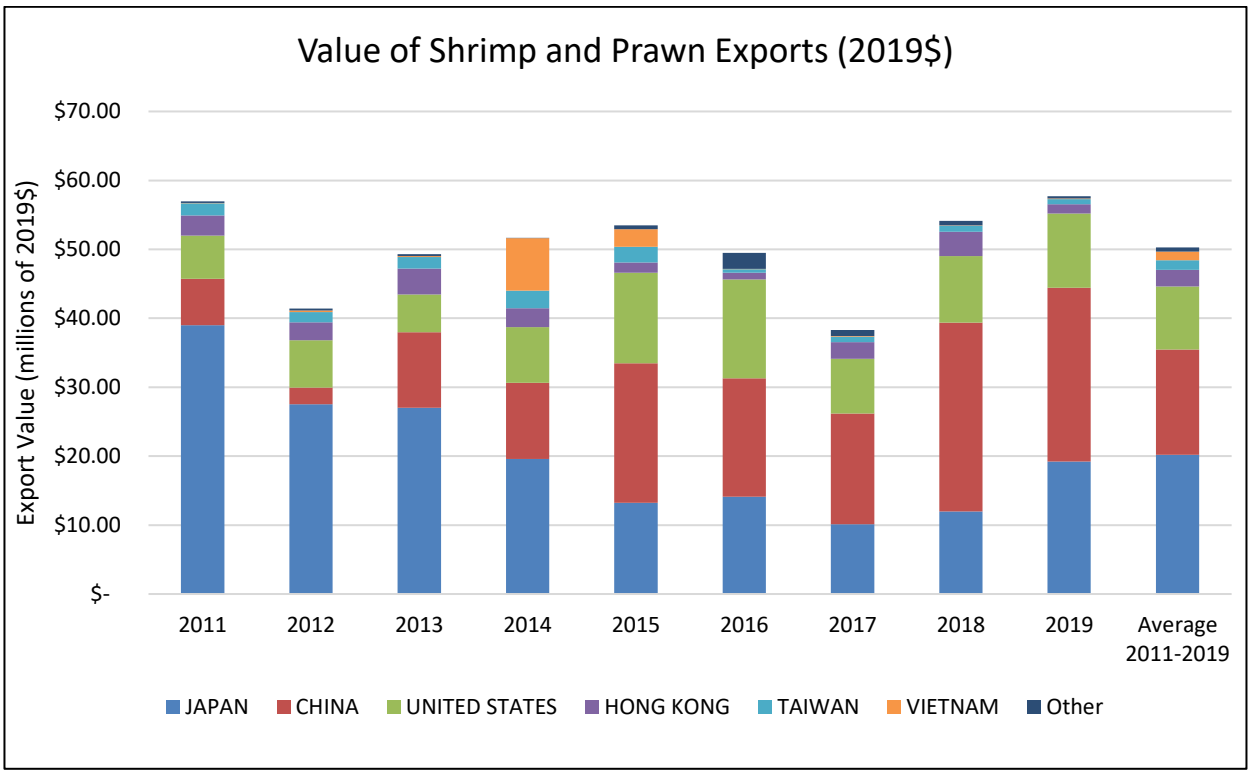

Figure 4. *Total value of shrimp and prawn exports from BC (2019$) 2011-2019 (Source: Statistics Canada (EXIM), Accessed on September 29, 2020).*

Japan is one of the major markets for BC prawn and shrimp, accounting for about 37% of exports from 2011 to 2019, with an average value of about $20.2 million[3]; however, Japan's market share declined from 69% in 2012 to 33% in 2019. In 2015, Japan lost its position as the top market for BC prawn and shrimp, as China assumed the number one spot with exports valued over $20 million. Over the past 5 years, China has been the destination for about 38% of BC's shrimp and prawn export volume, for an average value of $21.20 million per year. Prior to 2013, the USA was generally the second largest market for BC shrimp and prawn. Over the period 2011-2019, the USA accounted for 22% of shrimp and prawn export volume with an average value of $9.2 million per year. In 2016, the value of exports of BC shrimp and prawn to the USA increased by about 10% when compared to 2015. Other significant export markets include Vietnam, Hong Kong and Taiwan. The annual average value of prawn and shrimps imports by Vietnam, Hong Kong and Taiwan (combined) from 2011-2019 was at the level of about $5.0 million (2019$).

From 2016-2017, total export volumes drastically declined by 60% and total exported value also declined by 23%. Exports decreased to all countries, except Hong Kong and Taiwan; export volumes more than doubled to Hong Kong, and increased by 69% to Taiwan. As expected, each country that experienced a loss in import volumes saw shrimp and prawn prices increase. Hong Kong, however, also experienced an increase of 17% in shrimp and prawn price. BC saw a recovery in 2018 as export volumes increased by 36% and export value increased by 41%. Both export volume and value continued to increase the following year, with value received in 2019 being the highest in the past 9 years. China continues to be the largest export market for BC shrimp and prawn, accounting for 38% of total export volume and 44% of total export value in 2019. It is

[3] Average export values are measured in constant 2019 dollars.

clear that maintaining strong international trade ties with China will prove beneficial for the shrimp and prawn export market moving forward.

3.5. Viability and Market Trends

In addition to uncertainty around shrimp biomass in future years, there are developments that may impact harvest, the financial viability, or processing in the shrimp trawl fishery. These events include changes in market standards and international competition, protective measures for shrimp and other species, and the capacity of the fishery.

The Comprehensive Economic Trade Agreement (CETA) with EU aims to reduce barriers for shrimp exports from Canada. This has the potential to increase market demand for BC shrimp in the EU and may increase harvest and exports to the EU in future years.

The move towards eco-labelling has prompted the East Coast of Canada and the Oregon shrimp by trawl fisheries to obtain certification by the Marine Stewardship Council (MSC). This process involves a third party review and requires on-going audits and assessment that is beyond the capacity of the BC shrimp trawl fleet in a low harvest environment. However, the trend of increasing consumer pressure for eco-certification is an issue that the BC fishery will need to address in order to compete with cocktail shrimp from other jurisdictions.

There are other management pressures on the shrimp trawl fishery which continue to impact the fishery. Eulachon was assessed as Endangered by the Committee on the Status of Endangered Wildlife in Canada, and is caught as incidental by-catch in shrimp trawl. To reduce by-catch of eulachon, an Eulachon Action Level (EAL) has been implemented for specific shrimp trawl fishing areas. The estimated catch of eulachon is calculated from observer coverage and when an EAL is met, specific shrimp trawl areas are closed. In 2017, industry agreed to define a mandatory 100% at-sea observer coverage program and dockside validation for all shrimp trawl fishing in PFMAs 124 and 125.

3.6. First Nations

As of 2019, there are 26 First Nations (FS) communal commercial shrimp by trawl licence eligibilities to provide economic opportunity to First Nations through participation in the commercial fishery.[4] These FS licences are made available through DFO's Allocation Transfer Program (ATP) and the Pacific Integrated Commercial Fisheries Initiative (PICFI). Commercial 'S' licences were relinquished from fish harvesters on a voluntary basis and re-issued to eligible First Nation organizations as communal commercial licences. PICFI, announced in 2007, is aimed at achieving environmentally sustainable and economically viable commercial fisheries, where conservation is the first priority and First Nations' aspirations to be more involved are supported. The Government of Canada commits funds on an annual basis to support the PICFI.

Although FS licences are made available to First Nations through PICFI and ATP, use of these licences has been limited. In 2018 one FS licence was active in the fishery; in 2019, two FS licences were active.[5]

[4] DFO License Data
[5] DFO Diversification Table Data

For more information on the Aboriginal Fisheries Strategy (AFS) ATP and PICFI, contact a resource manager listed in Appendix 3: Contacts or see the internet at:
http://www.pac.dfo-mpo.gc.ca/abor-autoc/index-eng.html

4. MANAGEMENT ISSUES

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

4.1. Conservation and Sustainability

4.1.1. Multi-species/Multi-stock Management

The number of shrimp species and stocks involved in the shrimp trawl fishery has resulted in complex management and assessment programs. Surveys of the major shrimp grounds are conducted by the Department's Science Branch and the resulting shrimp biomass estimates are used to define catch ceilings.

4.2. Social, Cultural and Economic

4.2.1. First Nations

The incidental bycatch of an anadromous smelt, Eulachon (*Thaleichthys pacificus)*, is of concern to First Nations since the returns of Eulachon to many of the Central Coast rivers and the Fraser River have declined. Various First Nations organizations in the North Coast, Central Coast, and Fraser River have requested that the shrimp trawl fishery be closed to avoid Eulachon bycatch. The Department is working with the shrimp trawl industry to minimize Eulachon bycatch. Area closures, seasonal closures, and the EAL (see Appendix 1, Section 3.1) with an at-sea observer program were implemented to monitor Eulachon bycatch in WCVI. Bycatch reduction devices (including rigid grates, and footrope lighting devices) are mandatory coast wide.

4.2.2. Recreational

Recreational fish harvesters have brought forward concerns about the bycatch of prawns in the commercial shrimp trawl fishery. When prawn spawner abundance is below the "spawner index" (minimum number of female spawners), areas will close for recreational prawn fishing in winter (see the IFMP for Prawn and Shrimp by Trap for more details). Recreational harvesters have expressed concern that winter shrimp trawling may continue in these areas that have closed to recreational prawn harvesting. Retention of prawns is not permitted in the shrimp trawl fishery except where a small incidental bycatch of prawns is allowed during the commercial prawn by trap fishing season (May-June). When prawn bycatch is suspected to be high in specific areas, at-sea observers may be deployed on commercial fishing trips and a resource manager will make changes to the fishery if necessary.

4.2.3. Commercial

Licence eligibility holders who choose not to fish their shrimp trawl licences during the season are not required to contribute to the in-season program costs for the fishery. The commercial licence holders who are active in the fishery are required to fund the management programs (hails, catch ceiling monitoring, observer coverage, logbook data entry and data reporting). For 2021/22 participation in the opportunity to fish specific areas requires contribution to the management

measures defined for those areas so the costs to individual fish harvesters may vary depending on their areas of interest.

4.3. Compliance

There are no emerging issues for enforcement other than those already highlighted in the Compliance Plan (Section 9). Each licence holder should download and print a copy of this IFMP. Additional attention to Rockfish Conservation Areas (RCA) and the Strait of Georgia and Howe Sound Glass Sponge Reef Conservation Areas is also required as these areas are closed to fishing by trawl nets. For further information on the RCAs and the sponge reefs see the following web sites:
http://www.pac.dfo-mpo.gc.ca/fm-gp/maps-cartes/rca-acs/index-eng.html
http://www.dfo-mpo.gc.ca/oceans/ceccsr-cerceef/closures-fermetures-eng.html

4.4. Ecosystem

The most pressing ecosystem issues concerning the harvest of shrimp and the shrimp trawl fishery are bycatch, benthic impacts, exploitation as a forage fish species, depleted species concerns, and oceans and habitat considerations.

4.4.1. Strategic Framework for Fishery Monitoring and Catch Reporting

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

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

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

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

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

The "Introduction to the Procedural Steps of Implementing the Fishery Monitoring Policy" is available at:
https://www.dfo-mpo.gc.ca/reports-rapports/regs/sff-cpd/fmp-implementation-psp-mise-en-oeuvre-eng.htm

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

Where monitoring options are determined to be feasible, the monitoring and reporting regime will be revised to incorporate these options, providing resource managers with sufficient information to meet Fishery Monitoring Policy objectives. Where monitoring options are not feasible, alternative management approaches are required to reduce the risk posed by the fishery. If there is no gap between the current and target level of monitoring, the management approach will not require any change.

4.4.2. Bycatch

Bycatch has become one of the most significant issues affecting fisheries management both nationally and globally. The bycatch of non-target fish in the shrimp trawl fishery was defined by at-sea observations starting in 1997 and a bycatch monitoring program has been supported by industry contributions since 1999. The Department collects estimates of bycatch, by tow, for trips that are observed. However, observer coverage has been limited in the past which precludes the ability to estimate total annual bycatch by the fishery. The observer program is focused on Eulachon bycatch in WCVI areas to monitor the EAL and to document the use of bycatch reduction gear. The use of bycatch reduction devices (bycatch grates, large mesh panels, etc.) significantly reduces the bycatch of non-target fish (Olsen et al, 2000). Bycatch reduction gear has been mandatory since 2000 (see Appendix 1, Section 2.2 and 7.1 for more detail). Catch composition results of the at-sea observer program for 2002 to 2011 are available in a Data Report (Rutherford et al 2013).

Shrimp trawl gear with bycatch reduction devices avoids larger fish but is not selective for smaller organisms, therefore bycatch of non-target species, particularly Eulachon, is a concern. Eulachon returns to the Fraser River and Central Coast rivers declined in the mid 1990's at the same time that effort and landings increased in the shrimp trawl and groundfish trawl fisheries. It was identified that Eulachon were a significant bycatch in the shrimp trawl fishery in 1997, leading to concern over the potential impact of trawling on Eulachons. When otter trawl effort shifted to Queen Charlotte Sound (SMA QCSND) in 1996, and observations in 1997 and 1998 showed significant Eulachon bycatch, QCSND was closed in 1999 and has remained closed to shrimp trawl.

Managing bycatch and discards has long been part of Canadian fisheries management as it is not always possible to fish for one species without incidentally capturing another species or undesired

individuals of the target species. To ensure long-term productivity, biodiversity and sustainability, Fisheries and Oceans Canada has developed a policy for managing bycatch and discards that builds on the success of existing measures. This policy is a key component of a strengthened SFF and is consistent with the ecosystem approach to fisheries management. This policy can be found at: http://www.dfo-mpo.gc.ca/reports-rapports/regs/policies-politiques-eng.htm

With the increased fishing effort during the 2015/16 season, the Department and licence holders developed a strategy to collect additional at-sea observer data during years of increased effort. The target coverage was increased in 2016/17 and a program of 100% at-sea observer coverage was defined for 2017/18, however, low shrimp biomass resulted in no fishing opportunity in 2017, 2018, or 2019.

In recent years commercial shrimp trawl licence holders approached DFO requesting to be able to use LED lights on their trawl gear. This request was based on studies conducted in the Oregon shrimp trawl fishery which demonstrated significant reduction in bycatch amounts when using these LED lights. Reductions of Eulachon were specifically notable in the study. A new regulation amendment to the Pacific Fisheries Regulation was approved in May 2019 to allow for the use of LED lights in the shrimp trawl fishery. Effective April 1, 2021 LED lights will be required within the fishery by condition of licence.

4.4.3. Gear Impact

Shrimp trawl gear contacts the bottom. The potential impacts of mobile bottom trawl gear on benthic habitat, populations and communities have been well documented (DFO 2006). The shrimp trawl fishery off the coast of British Columbia tends to fish in high energy, soft bottom environments which are more robust to benthic alteration by trawl gear than complex, high structure substrate (Ibid.). A Departmental policy for Managing the Impact of fishing on Sensitive Benthic Areas has been finalized. For more information see the following website: http://www.dfo-mpo.gc.ca/fm-gp/policies-politiques/index-eng.htm

4.4.4. Forage Species

Shrimp are identified as a forage species. Forage species play a special role in aquatic ecosystems by providing a substantial portion of the annual food requirements of many fish, mammals and birds. The ecological relationships between predators and forage species are complex and the actual role of shrimp as forage fish in the ecosystem is not quantified. The Department has a Policy on New Fisheries for Forage Species which is available at: http://www.dfo-mpo.gc.ca/reports-rapports/regs/sff-cpd/forage-eng.htm.

Although there has been no specific evaluation of shrimp as a forage species, the Department uses a precautionary approach to ensure shrimp stocks are conserved.

4.4.5. Depleted Species Concerns

The Committee on the Status of Endangered Wildlife Species in Canada (COSEWIC) was formed in 1977 to provide Canadians with a single, scientifically sound classification of wildlife species at risk of extinction. COSEWIC began its assessments in 1978 and has met each year since then to assess wildlife species.

The *Species at Risk Act* (SARA) came into force in 2003. Within the Act, COSEWIC was established as an independent body of experts responsible for identifying and assessing wildlife

species considered as being at risk. This is the first step towards protecting wildlife species which are potentially at risk. Subsequent steps include COSEWIC reporting its results to the Canadian government and the public, and the Minister of the Environment's official response to the assessment results. Wildlife species that have been designated by COSEWIC may then be listed under Schedule 1 of SARA and receive legal protection and recovery or management plans.

For a full list of species identified and assessed by COSEWIC, please visit: http://cosewic.ca/index.php/en-ca/.

The purposes of SARA are "to prevent wildlife species from being extirpated or becoming extinct, and to provide for the recovery of a wildlife species that are extirpated, endangered or threatened as a result of human activity and to manage species of special concern to prevent them from becoming endangered or threatened." More information on SARA can be found at: https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry/species-list.html

In addition to the existing prohibitions under the *Fisheries Act*, if a species is listed under SARA it is illegal to kill, harm, harass, capture, take, possess, collect, buy, sell or trade any listed extirpated, endangered or threatened animal or any part or derivative of an individual. These prohibitions apply unless a person is authorized, by a permit, licence or other similar document issued in accordance with SARA, to engage in an activity affecting the listed species or the residences of its individuals. These prohibitions do not apply to species listed as special concern.

To view the list of endangered, threatened and special concern species currently listed under Schedule 1 of SARA, please visit: http://dfo-mpo.gc.ca/species-especes/sara-lep/identify-eng.html

In the Pacific Region, the following SARA-listed species may be encountered by shrimp trawl nets:

1.Basking Shark, Pacific population - Endangered

2.Blue Whale, Pacific population – Endangered

3.Bluntnose Sixgill Shark – Special Concern

4.Fin Whale Pacific population Pacific population – Threatened

5.Green Sturgeon – Special Concern

6.Grey Whale, Eastern North Pacific population – Special Concern

7.Harbour Porpoise Pacific Ocean population – Special Concern

8.Humpback Whale – Special Concern

9.Killer Whale Northeast Pacific northern resident population – Threatened

10.Killer Whale, Northeast Pacific offshore population – Threatened

11.Killer Whale, Northeast Pacific southern resident population – Endangered

12.Killer Whale, Northeast Pacific transient population – Threatened

13.Leatherback Sea Turtle – Endangered

14.Longspine Thornyhead – Special Concern

15.North Pacific Right Whale – Endangered

16.Rougheye Rockfish Types I & II – Special Concern

17.Sea Otter – Special Concern

18.Sei Whale, Pacific population – Endangered

19.Steller Sea Lion – Special Concern

20.Tope (Soupfin) Shark – Special Concern

21.Yelloweye Rockfish, Pacific Ocean inside waters and outside waters populations – Special Concern

Additional marine species, including marine or anadromous species of fish, designated by COSEWIC that are currently under consideration for listing under SARA include:

- Bocaccio Rockfish – Endangered
- Darkblotched Rockfish – Special Concern
- Quillback Rockfish – Threatened
- North Pacific Spiny Dogfish – Special Concern
- Eulachon, Fraser River Population – Endangered
- Eulachon, Central Pacific Coast Population – Endangered
- Eulachon, Nass/Skeena Population – Special Concern
- Grey Whale, Pacific Coast Feeding Group population – Endangered
- Grey Whale, Western Pacific population - Endangered
- Northern Fur Seal – Threatened
- Steelhead Trout – Thompson and Chilcotin River DUs - Endangered
- Coho Salmon – Interior Fraser DU - Threatened
- Sockeye Salmon –
  - Sakinaw DU – Endangered
  - Fraser River DUs
- Bowron-ES DU – Endangered
- Cultus-L DU – Endangered
- Francois-Fraser-S DU – Special Concern
- Harrison D/S-L DU – Special Concern
- Harrison U/S-L DU – Endangered
- Kamloops-ES DU – Special Concern
- Lillooet-Harrison-L DU – Special Concern
- Nahatlatch-ES DU – Special Concern
- North Barriere-ES DU – Threatened
- Quesnel-S DU – Endangered
- Seton-L DU – Endangered
- Takla-Trembleur-EStu DU – Endangered
- Takla-Trembleur-Stuart-S DU – Endangered
- Taseko-ES DU – Endangered
- Widgeon River-Type DU – Threatened
- Chinook Salmon
  - Okanagan Chinook DU – Endangered
  - Southern BC Chinook
- East Vancouver Island, Stream, Spring population – Endangered

- Lower Fraser, Ocean, Fall population – Threatened
- Lower Fraser, Stream, Spring population – Special Concern
- Lower Fraser, Stream, Summer (Upper Pitt) population – Endangered
- Lower Fraser, Stream, Summer population – Threatened
- Middle Fraser, Stream, Fall population – Endangered
- Middle Fraser, Stream, Summer population - Threatened
- Middle Fraser, Stream, Spring (MFR+GStr) population – Threatened
- Middle Fraser, Stream, Spring population – Endangered
- North Thompson, Stream, Spring population – Endangered
- North Thompson, Stream, Summer population – Endangered
- South Thompson, Stream, Summer 1.2 population – Endangered
- Upper Fraser, Steam, Spring population – Endangered
- Southern Mainland-Boundary Bay Ocean Fall – Threatened
- Lower Fraser Ocean Summer - Endangered
- South Thompson Stream Summer 1.3 - Endangered
- Lower Thompson Stream Spring - Endangered
- East Vancouver Island Ocean Summer - Endangered
- East Vancouver Island Ocean Fall – Special Concern
- West Vancouver Island Ocean Fall (South) - Threatened
- West Vancouver Island Ocean Fall (Nootka & Kyuquot) - Threatened

Potential listing of Eulachon under SARA:

In 2011, COSEWIC assessed Eulachon within Canada as three designated units (DUs), as follows: the Fraser River DU assessed as Endangered, the Central Pacific Coast DU as Endangered, and the Nass/Skeena Rivers DU assessed as Threatened (and subsequently reassessed as Special Concern in 2013). This assessment triggered the Government of Canada to consider listing these populations under SARA. A process to determine whether or not to list these populations under SARA is underway, a decision has not yet been made.

The regional listing process included the development of science advice, via a Recovery Potential Assessment for Eulachon (Schweigert et al 2012), available at: http://www.dfo-mpo.gc.ca/csas-sccs/Publications/ResDocs-DocRech/2012/2012_098-eng.html; Management Scenarios that outline actions the Department will take in the event of a list or do not list decision, under SARA (completed in 2014); a socio-economic analysis weighing the costs and benefits of each scenario (completed in 2016); as well as consultation to seek input into whether or not to list these populations (completed 2011-2016).. In fall 2020, the Department undertook a “check-in” period to ensure that viewpoints and information shared during 2016 consultations remain accurate and current. The Department will include any new information received during this period in its listing advice.

Eulachon are anadromous and spend most of their life at sea, with the stocks mixing through Canadian Pacific waters. The Fraser River DU Eulachon are known to occur in WCVI, QCSND and PRD SMAs. The Central Pacific Coast DU Eulachon are known to occur primarily in QCSND, PRD and to a lesser degree in WCVI (Beacham et al 2005). The Nass/Skeena Rivers DU occur primarily in PRD.

4.4.5.2 Pacific Coast and Western Pacific Grey Whale

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

The two COSEWIC-assessed Endangered Grey Whale populations are under consideration for SARA listing. In-season changes to manage threats to these populations may be considered as part of the listing process. Consultations on these proposed changes and the potential impacts of SARA listing are anticipated to take place in 2021. . For further information, please contact the SARA Program at SARA.XPAC@dfo-mpo.gc.ca.

4.4.5.3. Whale, Leatherback Sea Turtle and Basking Shark Entanglements and Sightings

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

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

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

MARINE MAMMAL INCIDENT REPORTING HOTLINE AND SIGHTINGS

Marine Mammal Incident Reporting Hotline
https://www.dfo-mpo.gc.ca/species-especes/mammals-mammiferes/report-rapport/page01-eng.html

The Department is responsible for assisting marine mammals and sea turtles in distress. In case of any accidental contact between a vessel or fishing gear and a marine mammal or turtle, or if you observe an entangled, sick, injured, distressed, or dead marine mammal or turtle in B.C. waters,

please contact the Observe, Record, Report line (B.C. Marine Mammal Incident Reporting Hotline) immediately at:

1-800-465-4336 OR VHF CHANNEL 16.

And provide the following:
(a) the date, time and location of the incident;
(b) the species involved in the incident;
(c) the circumstances of the incident;
(d) the size and type of vehicle and, if applicable, the type of fishing gear involved in the incident;
(e) the weather and sea conditions at the time of the incident;
(f) the observed state of the individual after the incident; and
(g) the direction of travel of the individual after the incident, to the extent that it can be determined.
(h) pictures/video taken

4.4.5.4 Shark Codes of Conduct:

Out of the fourteen shark species in Canadian Pacific waters, three species are listed under SARA. The Basking Shark (*Cetorinus maximus*) is listed as Endangered, and the Bluntnose Sixgill Shark (*Hexanchus griseus*) and Tope Shark (*Galeorhinus galeus*) are listed as species of Special Concern. The primary threats to shark species have been identified as by-catch and entanglement. In order to address the conservation concerns with shark species, it is important that measures are taken to reduce the mortality of sharks resulting from these primary threats. As such, commercial fishing licences have been amended to include a Condition of Licence for Basking Sharks that specify mitigation measures in accordance with SARA permit requirements.

Additionally, two 'Code of Conduct for Shark Encounters' documents have been developed to reduce the mortality of Basking Shark, as well as other Canadian Pacific shark species such as Bluntnose Sixgill and Tope Shark resulting from entanglement and by-catch in commercial, aquaculture and recreational fisheries. These guidelines include boat handling procedures during visual encounters with Basking Sharks as well as best practices for handling Canadian Pacific shark species during entanglement encounters. These documents have been posted online and can be found at the following URL links:

Code of conduct for sharks:
https://www.dfo-mpo.gc.ca/species-especes/publications/sharks/coc/coc-sharks/index-eng.html

Code of conduct for Basking Sharks:
https://www.dfo-mpo.gc.ca/species-especes/publications/sharks/coc/coc-basking/index-eng.html

4.4.5.5 Southern Resident Killer Whales

The Government of Canada is taking important steps to protect and recover the Southern Resident Killer Whale population, in keeping with direction provided in *Species at Risk Act* (SARA) recovery documents. In May 2018, the Minister of Fisheries and Oceans and Minister of Environment and Climate Change determined the Southern Resident Killer Whale population faces imminent threats to its survival and recovery. Given the status of the population and ongoing threats to Southern Resident Killer Whale recovery, DFO implemented a number of measures in

2018 and 2019, including measures aimed at increasing prey availability and accessibility for Southern Resident Killer Whales and reducing threats related to physical and acoustic disturbance in key foraging areas.

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

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

- Stop fishing within 1,000 metres of killer whales and let them pass;
- Respect a "Go Slow" zone around whales by reducing speed to less than 7 knots when within 1,000 metres of a marine mammal; and
- Reduce noise by turning echo sounders and fish finders off when not in use, and turning engines to neutral idle when within 400 metres of a killer whale.

For more information on the best ways to help whales while on the water, when on both sides of the border, please visit: bewhalewise.org
Further information regarding the Southern Resident Killer Whale management measures to support recovery, please contact the Marine Mammal Team (DFO.SRKW-ERS.MPO@dfo-mpo.gc.ca) or visit www.pac.dfo-mpo.gc.ca/southern-resident-killer-whale

4.4.5.6 Rockfish Conservation Areas

Between 2003 and 2007, DFO established 164 Rockfish Conservation Areas (RCAs) in the Pacific Region for the long-term protection and conservation of a portion of inshore rockfish populations and their habitat. As of May 1, 2019, South Moresby and Lyell Island RCAs have been superseded and replaced by the strict protection zones of the Gwaii Haanas National Marine Conservation Area Reserve. There are currently 162 RCAs.

DFO is currently undertaking a multi-year review of the conservation effectiveness of RCAs to determine how some RCAs can meet the Other Effective Area Based Conservation Measures criteria. The conservation effectiveness of RCAs might be improved by adjusting boundaries or through relocation, changing management measures, conducting more research, and increasing monitoring and compliance.

RCAs in the Northern Shelf Bioregion have been selected for the first phase of engagement to align with the MPA network planning process in that area. Engagement in other bioregions will occur in subsequent years. Further information on RCAs and the boundary proposals are available online at: http://dfo-mpo.gc.ca/rockfish-conservation or for further information on this, please contact DFO.RCA-ACS.MPO@dfo-mpo.gc.ca.

Fishing shrimp by trawl is not permitted in Rockfish Conservation Areas (RCAs). RCAs are in effect in inside waters as of February 2007. Hook and line fishing for Schedule II species is prohibited in RCAs. Maps and information on RCAs is available at: http://www.pac.dfo-mpo.gc.ca/fm-gp/maps-cartes/rca-acs/index-eng.html

4.4.5.7 Relevant Species at Risk Materials

The following are resources that feature species listed under the Species at Risk Act and are specific to the Pacific Region. These resources cover topics from species identification, regulations, protocols for identifying and reporting incidents with marine mammals, and helping harvesters to properly identify marine species

Marine Mammals

- Whale entanglement brochure (best practices to reduce entanglement and reporting an incident): http://dev-public.rhq.pac.dfo-mpo.gc.ca/whales-baleines/docs/entanglements-empetrements-pub-eng.html
- Approach distances from the amended Marine Mammal Regulations: (https://www.dfo-mpo.gc.ca/about-notre-sujet/publications/infographics-infographies/documents/100-200-400-eng.pdf)

Species identification guides:

- Sharks (https://waves-vagues.dfo-mpo.gc.ca/Library/40757067.pdf)
- Rockfish (https://www.pac.dfo-mpo.gc.ca/fm-gp/commercial/ground-fond/docs/rockfish-sebaste-idguide-eng.pdf)
- Distinguishing between White and Green Sturgeon (http://www.pac.dfo-mpo.gc.ca/fm-gp/rec/docs/sturgeon-l'esturgeon-idguide-eng.pdf)
- Distinguishing between Sea and River Otters (https://wildwhales.org/wp-content/uploads/2020/05/BCCSN_IDGuide_Otters_vertical_4.pdf)
- Distinguishing between pinnipeds, emphasizing differences between Steller and California Sea Lions (https://wildwhales.org/wp-content/uploads/2020/08/BCCSN_IDGuide_Pinniped_email.pdf)

Protecting rockfish (sharing responsibility for sustainable recreational fisheries in the Pacific Region): https://www.pac.dfo-mpo.gc.ca/fm-gp/rec/docs/rockfish-sebaste-dd-eng.html

4.4.6. Oceans and Habitat Considerations

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

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

The *Oceans Act*, the *Canada Wildlife Act*, and the *National Marine Conservation Areas Act* have given rise to several initiatives on the Pacific coast, which are listed below. As goals, objectives, and management plans are finalized for these initiatives, the Department's management of

fisheries will be adapted as appropriate, in consultation with interested parties through Integrated Fisheries Management Plan processes.

Canada's Marine and Coastal Areas Conservation Mandate

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

More information on the background and drivers for Canada's marine conservation targets is available at the following link:
http://www.dfo-mpo.gc.ca/oceans/conservation/index-eng.html.

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

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

Pacific North Coast Integrated Management Area (PNCIMA)

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

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

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

Northern Shelf Bioregion MPA Network

The Province of BC, the Government of Canada and 16 First Nations are working together to develop a Network of marine protected areas for the Northern Shelf Bioregion which extends from the top of Vancouver Island (Quadra Island/Bute Inlet and Brooks Peninsula) and reaches north to the Canada - Alaska border. This bioregion has the same footprint as the Pacific North Coast Integrated Management Area. The planning process is being developed under the policy direction outlined in the National Framework for Canada's Network of MPAs as well as the Canada-British Columbia MPA Network Strategy.

A draft MPA network design, which consists of a map of areas proposed for conservation as well as potential management measures for proposed sites, was shared with First Nations, who are currently not part of the collaborative governance arrangement, and with members of the Network Advisory Committees in February 2019. The various sectors engaged in a review of the draft network design provided substantial input by January 30, 2020. A stakeholder forum was held in February 2020 to present and discuss feedback received. DFO completed its internal review of the draft design scenario and presented the report to the MPA Technical Team in March 2020. Governance partners are considering all input received to date and will be reporting out to stakeholders in late fall 2020. Revising the draft scenario will occur during the winter 2021 after which there will be further consultations, including public engagement in coastal communities, on scenario #2 and the accompanying socio-economic analysis.

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

Marine Spatial Planning South Coast

As part of a national marine spatial planning (MSP) initiative, DFO in collaboration with the Province of BC, federal departments (Transport Canada, Natural Resources Canada, Environment and Climate Change Canada, Parks Canada) and Indigenous groups, have begun marine spatial planning efforts on the South Coast, including the Strait of Georgia and Southern Shelf bioregions. The intent of MSP is to improve coordination across jurisdictions and activities in the marine space, and work is underway to define scope and objectives of the project. In the early phases, engagement on governance is taking place internally with GC partners, and externally with the Province of BC and local First Nations (beginning with representative organisations like First Nations Fisheries Council). National MSP deliverables include: governance, a bioregional atlas, and a marine spatial plan. Harvesters can expect updates on this process via Advisory Boards in the future.

Marine Protected Areas (MPAs)

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

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

Endeavour Hydrothermal Vents (EHV) MPA

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

SGaan Kinghlas-Bowie Seamount (SK-B) MPA

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

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

The Hecate Strait and Queen Charlotte Sound Glass Sponge Reefs Marine Protected Area (Hecate MPA) was designated under the *Oceans Act* in February 2017 to conserve the biological diversity, structural habitat and ecosystem function of the glass sponge reefs. The Hecate MPA Regulations are available online at: http://www.dfo-mpo.gc.ca/oceans/mpa-zpm/hecate-charlotte/index-eng.html. The Hecate MPA is located in the Northern Shelf Bioregion of the Pacific Region southeast of Haida Gwaii, North and South of the entrance to the Douglas Channel, covering an area of approximately 2,410 square kilometres. The Hecate MPA zoning approach involves different management measures within each zone. Under the Hecate MPA Regulations, each glass sponge reefs' Core Protection Zone (CPZ) is closed to all commercial, recreational, and Aboriginal fishing. Anchoring, cable installation, maintenance and repair are also prohibited in the CPZ. The Vertical Adaptive Management Zone (VAMZ) and Adaptive Management Zone (AMZ) is currently closed to all commercial bottom contact fishing activities for prawn, shrimp, crab and groundfish (including halibut), as well as for midwater trawl for hake. For more detail on the fishery closure within the Hecate MPA, review Fishery Notice FN0198 found here: https://notices.dfo-mpo.gc.ca/fns-sap/index-eng.cfm?DOC_ID=194216&ID=all&pg=view_notice. Scientific research, monitoring, and educational activities are allowed in the Hecate MPA if a proponent submits an activity plan to DFO and it receives Ministerial approval. Additional maps and shape files of the Hecate MPA are available at: https://open.canada.ca/data/en/dataset/a1e18963-25dd-4219-a33f-1a38c4971250.

Offshore Pacific Area of Interest

In May 2017, DFO announced a new Area of Interest (AOI) with the intention of making it one of Canada's largest Marine Protected Areas by 2020. The proposed MPA extends from the toe of the continental slope to the westward boundary of Canada's Exclusive Economic Zone (EEZ) in the southern portion of the Offshore Pacific Bioregion. On average, the proposed MPA would be approximately 150 km away from the west coast of Vancouver Island, and would have an approximate area of133,019 km^2. The conservation objective for the proposed MPA is to conserve, protect and enhance understanding of unique seafloor features including seamounts and hydrothermal vents and the marine ecosystems they support. More information on the Offshore Pacific AOI can be found on the internet here: http://www.dfo-mpo.gc.ca/oceans/aoi-si/offshore-hauturiere-eng.html

Offshore Pacific Seamounts and Vents Closure

Fishery closures to restrict commercial and recreational bottom-contact fishing activities within the Offshore Pacific AOI were announced in October 2017. At approximately 83,000 km^2 in size, the closure protects and conserves unique seafloor features including seamounts and hydrothermal vents identified through a Canadian Science Advisory Secretariat process, as well as a number of species of regional importance including corals, sponges and other endemic or rare species. The closure boundary was informed by available science and input received during consultations with First Nations, federal and provincial government agencies, industry and conservation organizations. Specific details of the closure can be found in the Fishery Notice.

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

Race Rocks Area of Interest

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

National Marine Conservation Area Reserves (NMCARs)

Gwaii Haanas

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

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

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

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

The final zoning plan includes several areas of strict protection, where commercial and recreational fishing are prohibited.

The zoning plan can be found at:
https://www.pc.gc.ca/en/pn-np/bc/gwaiihaanas/%20info/%20consultations/gestion-management-2018.

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

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

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

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

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

necessary. Please contact the Gwaii Haanas administration office at 1-877-559-8818 for further information.

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

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

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

Scott Islands Marine National Wildlife Area

The Scott Islands Marine National Wildlife Area (mNWA) is the first protected marine area established by Environment and Climate Change Canada (ECCC) under the Canada Wildlife Act. In support of the conservation objectives of the Scott Islands mNWA, DFO is consulting on new regulations under the Fisheries Act to restrict certain fisheries that pose a risk to seabirds. A Notice of Intent was published in Canada Gazette Part 1 in June 2018 indicating the proposed regulations would prohibit fishing for three key forage fish species that serve as a key food source for seabirds (Pacific sand lance, Pacific saury, and North Pacific krill) as well as groundfish bottom trawling (in portions of the mNWA consistent with existing commercial closures) and salmon gill net and seine for commercial, recreational, and Indigenous fishing for food, social and ceremonial purposes. The anticipated pre-publishing of the regulations in Canada Gazette 1 is expected to occur in early 2021.

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

More information on the Scott Islands marine NWA can be found at:
https://www.canada.ca/en/environment-climate-change/services/national-wildlife-areas/locations/scott-islands-marine.html

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

Strait of Georgia and Howe Sound Glass Sponge Reef Marine Refuges

Effective April 1st, 2019 all commercial, recreational and Aboriginal Food, Social and Ceremonial (FSC) bottom-contact fishing activities for prawn, shrimp, crab and groundfish, as well as the use of downrigger gear for recreational salmon trolling (restricted via Condition of Licence) are prohibited within portions of Subareas 28-2 and 28-4 to protect nine Howe Sound glass sponge reefs, as marine refuges. This includes prohibition of the following fishing activities:

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

These eight closures are in addition to the nine areas closed to all commercial, recreational and Aboriginal FSC bottom-contact fishing activities in the Strait of Georgia and Howe Sound in 2015. Nine remaining areas in Howe Sound have been
ground-truthed to assess their ecological significance and management measures are currently being considered.

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

Current closure locations and more information are available at: https://www.dfo-mpo.gc.ca/oceans/ceccsr-cerceef/closures-fermetures-eng.html

Ghost Gear Initiative

One of the biggest threats to oceans internationally is marine litter, and in particular, ghost fishing gear. Ghost gear refers to any fishing equipment or fishing-related litter that has been abandoned, lost or otherwise discarded and is some of the most harmful and deadly debris found in oceans.

In support of international efforts to reduce marine litter, in 2018, Canada signed the G7 Charlevoix Blueprint for Healthy Oceans, Seas and Resilient Coastal Communities. In doing so:
Canada committed to accelerating the implementation of the 2015 Oceans Plastics Charter; and,
Strengthened our domestic and international commitment to addressing marine litter by signing onto the Global Ghost Gear Initiative.

These commitments were further strengthened in DFO's 2019 Minister's Mandate Letter, emphasizing the importance of this work to Canadians.

Conditions of License to Report Lost and Retrieved Gear

In the spring of 2020 it became a condition of license for commercial harvesters to report lost and retrieved fishing gear. Not reporting lost and or retrieved gear is now a chargeable offence that can have international trade implications.
Lost gear reporting forms can be found at: https://www.dfo-mpo.gc.ca/fisheries-peches/commercial-commerciale/reporting-declaration-eng.html

Sustainable Fisheries Solutions and Retrieval Support Contributions Program (A.K.A. The Ghost Gear Fund)

In the summer of 2020, DFO funded seven organizations in Pacific Region to work on the retrieval, collection and responsible disposal of lost or otherwise discarded fishing gear. To learn more about the DFO Ghost Gear Fund, go to: https://www.dfo-mpo.gc.ca/fisheries-peches/management-gestion/ghostgear-equipementfantome/program-programme/projects-projets-eng.html

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.

Habitat and Coral Protection Measures in the Groundfish Trawl Fishery

In 2012, the Canadian Groundfish Research and Conservation Society (on behalf of the British Columbia commercial groundfish trawl industry) and the Pacific Marine Conservation Caucus agreed to innovative management measures that restricted trawl fishing to provide protection of coral and sponge habitat off the west coast of Canada.

The objectives were:

- To reduce and manage the catch of corals and sponges by the British Columbia groundfish bottom trawl fishery;
- To reduce the impact of the British Columbia groundfish bottom trawl fishery on low energy and low productivity environments in deep waters off of the west coast of British Columbia;
- To ensure that the British Columbia groundfish bottom trawl fishery does not disproportionately affect any one particular benthic habitat type;
- To ensure that the British Columbia groundfish bottom trawl fishery is restricted to areas previously trawled between 1996-2011; and
- To improve the performance of the British Columbia groundfish bottom trawl fishery against habitat criteria used to evaluate the sustainability of fisheries.

Specific management measures adopted include:

- Freezing the footprint of groundfish bottom trawl activities;
- Establishing a combined habitat by-catch conservation limit (HBCL) for coral and sponges;
- Allocating the HBCL among groundfish trawl licence holders and allow for transferability within specified vessel caps with the groundfish trawl fleet; and
- The establishment of an encounter protocol for trawl tows where combined coral and sponge catch exceeds 20 kg in a single tow.

The Department accepted these management measures and implemented them on April 2, 2012 for the groundfish bottom trawl fishery. Areas open and closed to the trawl fleet as a result of these measures are outlined in Appendix 8 to this IFMP.

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

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

5. OBJECTIVES

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 PSARC identified three biological objectives for management of Pacific Region fish and invertebrate stocks (Rice et al, 1995). The objectives remain relevant today, particularly in light of development of the national objectives around sustainable fisheries:

- Ensure that subpopulations over as broad a geographical and ecological range as possible do not become biologically threatened (COSEWIC sense of “threatened”);
- Operationally, the above objective requires at least that management allow enough spawners to survive, after accounting for all sources of mortality (including all fisheries and natural mortality), to ensure production of enough progeny that they will, themselves, be able to replace themselves when mature;

- Fisheries may have collateral effects on other species, mediated by the ecological relationships of the target species. Fisheries should be managed in ways that do not violate the above objectives for ecologically related species, as well as target species.

5.3. Invertebrate Resource Management

Management goals and objectives have been defined for invertebrate fisheries in an annual management plan produced by the Department since 1990. The management goals and objectives, as written by 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 FSC 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. Objectives for Pink and Sidestripe Shrimp Trawl

5.4.1. Conservation and Sustainability

DFO's species specific objectives for the conservation and sustainability of pink and Sidestripe Shrimp stocks fished by trawl are:

- To maintain shrimp biomass in the Healthy and Cautious zones;
- To set catch ceilings by each SMA based on the best stock assessment information available. Catch ceilings will be defined following the PA. Fishery independent biomass surveys will be conducted in-season and harvest rates set based on stock biomass;
- To monitor the ratio of Eulachon to shrimp in WCVI SMAs and to adjust fishing practices when estimated Eulachon bycatch reaches action levels.

5.4.2. Social, Cultural and Economic

DFO's objective is to work collaboratively with the STSC to ensure sustainable fisheries and to collect input from all fishing sectors in the annual development of the IFMP. Specific objectives for the pink and Sidestripe Shrimp by trawl fishery are:

- To promote a best practices approach that meets the Department's objectives for sustainable, selective and risk averse harvest strategies by encouraging participation by

commercial licence holders and processors in IFMP development and by having licence holder and processor representation on the STSC;

- To promote an understanding of the shrimp trawl management strategies by encouraging participation by First Nations in the STSC;
- To consider experimental fishing proposals and the development of selective fishing techniques and standards in consultation with the STSC;
- To provide opportunities for shrimp harvests that maximize the potential economic return to shrimp trawl fish harvesters, while meeting the Departments goals for a PA to shrimp harvesting, and ecosystem, bycatch, species at risk, sensitive benthic areas and forage species policies.

5.4.3. Compliance

DFO's objective is to pursue opportunities to monitor and enforce the shrimp trawl fishery in conjunction with the monitoring and enforcement priorities in the Pacific Region.

5.4.4. Ecosystem

DFO's objective is to use the Ecological Risk Assessment Framework drafted under the national Policy for Managing the Impacts of Fishing on Sensitive Benthic Areas to determine the level of risk in these fisheries and whether mitigation measures are required in any areas. Ecosystem objectives may also arise with initiatives under the *Oceans Act*. It is a shared objective with the commercial fishery to avoid sponge reefs and cloud sponges in areas identified in the Commercial Harvest Plan (Appendix 1), including the Hecate Strait / Queen Charlotte Sound Glass Sponge Reefs.

Specific ecosystem objectives for the pink and Sidestripe Shrimp by trawl fishery are:

- To define selective and responsible fishing practices for the shrimp trawl fishery;
- To minimize Eulachon bycatch to stay below the EAL;
- To avoid bycatch and close areas when deemed necessary.

6. ACCESS AND ALLOCATION

The exploitation of pink and Sidestripe Shrimp is primarily conducted under commercial licence and as such there are no sharing or allocation arrangements in place for the fishery. Harvest opportunity is determined under the stock assessment and management framework as defined under the Commercial Harvest Plan (Appendix 1). Harvest of pink and Sidestripe Shrimp by First Nations for FSC or domestic harvest; recreational harvest; and by other gear types in the commercial fishery is considered small and is not taken into consideration in setting annual catch ceilings.

Nisga'a Domestic Fishing:

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

Tsawwassen Domestic Fishing:

The Tsawwassen fishery for domestic (FSC) purposes under the Tsawwassen Final Agreement (Treaty) came into effect on April 3, 2009. The Tsawwassen First Nation is located in the lower mainland near the city of Vancouver, and their territory spans portions the Strait of Georgia near the mouth of the Fraser River as well as portions of the lower Fraser River and Boundary Bay. More information on the Treaty can be found at: https://www.aadnc-aandc.gc.ca/eng/1100100022706/1100100022717

Maa-nulth Domestic Fishing:

The Maa-nulth First Nations fishery for domestic (FSC) purposes under the Maa-nulth First Nations Final Agreement (Treaty) came into effect on April 1, 2011. The Maa-nulth First Nations comprise five individual First Nations; Huu-ay-aht First Nations, Ka:'yu:'k't'h'/Che:k'tles7et'h' First Nations, Toquaht Nation, Uchucklesaht Tribe and the Yuułuʔiłʔatḥ First Nation on the WCVI. More information on the Treaty can be found at: https://www.aadnc-aandc.gc.ca/eng/1100100022663/1100100022665

Tla'amin Domestic Fishing:

The Tla'amin fishery for domestic (FSC) purposes under the Tla'amin Final Agreement (Treaty) came into effect on April 5, 2016. The Tla'amin Nation is located near the City of Powell River, 130 km northwest of Vancouver. More information on the Treaty can be found at: https://www.rcaanc-cirnac.gc.ca/eng/1397152724601/1542999321074

While these four treaties do provide for shellfish harvest, no specific allocations for shrimp by trawl are provided in them.

Five Nations/T'aaq-wiihak Fishing:

Five Nuu-chah-nulth First Nations located on the West Coast of Vancouver Island - Ahousaht, Ehattesaht, Hesquiaht, Mowachaht/Muchalaht, and Tla-o-qui-aht (the Five Nations) - have aboriginal rights to fish for any species of fish, with the exception of Geoduck, within their Fishing Territories and to sell that fish. The Department has developed a 2020/21 Five Nations Multi-species Fishery Management Plan (FMP). Feedback provided by the Five Nations during consultations was considered and incorporated into the 2020/21 FMP by DFO where possible. The FMP includes specific details about the fishery, such as allocation/access, licensing and designations, fishing area, harvesting opportunities, and fishery monitoring and catch reporting. For further information see the FMP at: http://waves-vagues.dfo-mpo.gc.ca/Library/40869374.pdf

7. MANAGEMENT MEASURES FOR THE DURATION OF THE PLAN

See Appendix 1 for detail on the following management measures:

- Fishing seasons and areas;
- Total allowable catch ceilings and decision rules by species and Shrimp Management Area;
- Licensing requirements;

- Licenced species;
- Mandatory bycatch reduction devices;
- At-sea observer coverage requirements;
- EALs (bycatch action levels);
- Closures for RCAs, specific sponge reefs, conservation areas, seasonal areas, navigational areas and ecological reserves;
- Notification and reporting measures (hails when fishing, hails of catch, logbooks, electronic data reporting).

Specific changes to the Commercial Harvest Plan such as fishing gear, bycatch limits, and closures based on conservation as a result of new initiatives, that may require on-grounds audits or enforcement, will be communicated to licence holders during the Sectoral meeting, at time of licence issuance, or by Fishery Notice if required to be implemented in-season.

8. SHARED STEWARDSHIP ARRANGEMENTS

8.1. Commercial

The Pacific Shrimp Harvesters Association (PSHA), the B.C. Shrimper Trawler's Association (BCSTA), and DFO have defined the annual data standards and reporting requirements to support of the commercial fishery for the start of this season.

Shrimp trawl harvesters are required by Conditions of Licence to make arrangements with an approved service provider for the delivery of in-season vessel fishing location and landing hail reports. A catch monitoring program, including at-sea bycatch and dockside sampling of shrimp, are also all requirements under the current fishery. The approved industry service provider for this season is Archipelago Marine Research Ltd.

8.2. Fisheries and Oceans Canada

Fisheries and Oceans Canada provides fishery management, enforcement, licensing and administration, and partial stock assessment for the shrimp trawl fishery. Personnel are generally multi-tasked and, as a consequence, costs incurred by the Department to manage this fishery are difficult to assess. Contributions to the IFMP are provided by the Fisheries Management Directorate, the Science Branch, the Shellfish Data Unit, the Conservation and Protection (C&P) Directorate, the Pacific Fisheries Licence Unit, the Recreational Fisheries Division, the Oceans Directorate and numerous administrative personnel.

9. COMPLIANCE PLAN

General information about the C&P program is available at: http://www.dfo-mpo.gc.ca/fm-gp/enf-loi/index-eng.htm

At-sea observers will continue to provide an "observe, record and report" capability.
OBSERVE, RECORD, AND REPORT hotline: 1-800-465-4DFO (4336).

9.1. Priorities for 2021/22

C&P staff will pursue opportunities to monitor the issues and problems associated with this fishery, patrol of closed areas/times and enforce retention rules and gear configurations in conjunction with other regional priorities. Inspections will focus on fishing vessels at-sea and at landing ports to inspect catch on board, bycatch gear in nets, hails, landing records and harvest logs. Closed time and area patrols may be conducted by Canadian Coast Guard (CCG) patrol vessels, program vessels, or by air, in conjunction with other patrols.

9.2. Enforcement Issues and Strategies

Issue	Section	Strategy
Licensing Verification Vessel licensed. No Fisher's Registration Card (FRC). Fail to produce FRC.	Pacific Fisheries Regulations (PFR) Section (S) 22 PFR S 25 Fisheries General Regulations F(G)R S 11	At-sea and dockside inspections will occur during regular patrols. These inspections may include checks of all licensing documents on board the vessel to ensure compliance with regulations.
Fishing during closed time/area.	PFR S 63	Patrols utilizing patrol vessels will be pursued. Possibilities exist to use the regional air surveillance plane in co-ordination with patrols scheduled for priority fisheries.
Fail to provide proper landing and hail information, lack of notification for change of area, cancellation of trip, or incorrect reporting of area fished.	F(G)R S 22(7)	At-sea and dockside inspections will occur during regular patrols. Investigations will occur on an opportunistic basis, after C&P has been notified by Fisheries Management that a violation has occurred.
Fail to maintain Harvest Log Book.	F(G)R S 22(7)	At-sea and dockside inspections will occur during regular patrols. Investigations may also occur on an opportunistic basis, after C&P has been notified by Fisheries Management that a violation has occurred.
Bycatch monitoring. Retain prawns during closed time for prawn. Exceed prawn bycatch limit (100). Retain prawns < 33 mm. Retain prawns with eggs. Fail to keep prawns separate from shrimp catch. Fish without a selectivity device in place.	F(G)R S 22(7)	At-sea and dockside monitoring may include inspections for bycatch limits as noted to ensure compliance with the regulatory requirement. Inspections may occur in conjunction with enforcement activities in other fisheries, particularly where non-compliance in this fishery may impact conservation or control in other fisheries.

Issue	Section	Strategy
Use of mechanical device for the purposes of automatically separating bycatch from shrimp. More squid than 2% of total shrimp onboard. Retention of non-retention species. Failure to record retained squid or octopus on Shrimp Harvest Log.		
Fail to off-load "shrimp by trap" prior to fishing shrimp by trawl net.	F(G)R S 22(7)	At-sea and dockside inspections will occur during regular patrols.
Fish with gear other than trawl net.	F(G)R S 22(7)	At-sea and dockside inspections will occur during regular patrols.
Fish with gear that does not contain an escape hole, or exceeds maximum spacing on rigid grate.	F(G)R S 22(7)	At-sea and dockside inspections will occur during regular patrols.
Dockside sales without Fish Vending Licence.	B.C. Fish Act S 13(4)	Dockside inspections and monitoring will be pursued during regular patrols.

10. 2021/22 PERFORMANCE REVIEW

10.1. Conservation and Sustainability

- The landings and effort will be limited to the catch ceilings for each SMA. Opportunities for managing and accounting for multiple shrimp species in the catch will be reported.
- Fishery landings will be monitored through the catch monitoring program and harvest logs. Misreporting or under-reporting of catch will be documented. Problems with the catch monitoring program will be documented as identified by industry members, the Department, and/or the service provider.
- In-season stock assessment information will be incorporated into the in-season management of the fishery.
- Results of the catch sampling program will be compiled and areas for improvement to selective fishing practices will be identified.

10.2. Social, Cultural and Economic

- The management approach will be maintained for the 2021/22 fishery and any results of co-management programs will be documented.
- Any progress with regard to the improved economics of the fishery, enhancing fishery values, or alternative management strategies will be documented.

- Issues brought forward by First Nations will be identified and addressed.
- Issues of safety in the operation and management of the fishery will be identified and addressed.

10.3. Compliance Plan Evaluation Criteria

- Hours spent on enforcement of this fishery will be tracked, along with the number of charges, warnings, seizures, and suspected violations or convictions will be defined. Changes from previous years will be identified.
- The number of occurrence reports identified by the service provider and the nature of these occurrences and possible alternative management actions identified.
- Other in-season enforcement issues will be identified and any unresolved issues brought forward.

10.4. Ecosystem

The estimated Eulachon bycatch for WCVI SMAs will be monitored through observer coverage and fishing effort and will be assessed against Eulachon Action Level thresholds. The development of selective gear to reduce bycatch will be encouraged by the issuance of experimental licences and the results collected and documented.

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12. GLOSSARY

Acronyms	BRD Bycatch Reduction Device CSAP Centre for Scientific Advice – Pacific (formerly PSARC) DFO Department of Fisheries and Oceans EAL Eulachon Action Level EEZ Exclusive Economic Zone FSC Food, Social and Ceremonial IFMP Integrated Fishery Management Plan JPA Joint Project Agreement LRP Limit Reference Point (40% of ln(avg)biomass) MSC Marine Stewardship Council PICFI Pacific Integrated Commercial Fisheries Initiative PSARC Pacific Scientific Advise Review Committee SMA Shrimp Management Area STSC Shrimp Trawl Sectoral Committee TAC Total Allowable Catch USR Upper Stock Reference (80% of ln(avg)biomass) WCVI West Coast Vancouver Island
Aquaculture	The process of spawning animals and rearing the progeny to marketable size, usually involving some level of intervention (e.g. feeding, predator protection) by the aquaculturist.
Area	A division of Canadian fisheries waters as described in Schedule II of the *Pacific Management Area Regulations*, maps are available on the Pacific Region internet at: http://www.pac.dfo-mpo.gc.ca/fm-gp/maps-cartes/areas-secteurs/index-eng.htm
beam trawl	A type of trawl net in which the mouth of the net is held open by a "beam" or "pole." The beam is held horizontal across the mouth of the net while under tow.
BRD	Bycatch reduction device (rigid grate, fish eye, fish excluder, escape holes, or other device in a trawl net to permit non-target, incidental or unintentional catch to escape the net and not be brought on board the vessel.
Bycatch	Incidental or unintentional catch of non-target stocks or species.
catch ceiling	A total allowable catch defined from a pre-season biomass forecast, or survey biomass index and harvest rate of 0 percent to 35 percent, or defined by an arbitrary precautionary quota set as a 10th or 25th percentile of landings history (up to 1997).

communal licence	Issued to First Nations organizations pursuant to the *Aboriginal Communal Fishing Licences Regulations* to carry on fishing and related activities.
Communal Commercial Licence	Issued to First Nations organizations pursuant to the *Aboriginal Communal Fishing Licences Regulations* for participation in the general commercial fishery. Licences issued are equivalent to the capacity of licences that have been retired under the Aboriginal Fisheries Strategy (AFS) Allocation Transfer Program (ATP).
CSAS - CSAP	Canadian Science Advisory Secretariat (formerly called the Pacific Scientific Advice Review Committee (PSARC); the authority for the regional Centre for Science Advice Pacific (CSAP).
exclusion grate or excluder	A grate that when inserted properly into a trawl net reduces the amount of non-target species in the catch (one form of BRD).
excluder net	A second trawl net that when attached properly inside a trawl net reduces the amount of non-target species in the catch. No longer allowed as the only bycatch reduction device.
fishing hail	Notification prior to commencement of fishing.
fishing trip	That period when the vessel departs from a dock to engage in fishing until fishing ceases and shrimp are offloaded.
fixed exploitation rate	The exploitation rate is the proportion of the fishable population that is taken as catch. With a fixed rate, the harvestable quota varies with the population size.
harvested	Referring to fish, including shrimp, caught by any means.
invertebrate	An animal without a backbone.
landed or landing	The transfer of catch from a licensed vessel to land (including docks and wharves).
landing hail	Notification prior to landing or offloading catch at the end of a fishing trip.
offloaded	The landing or removal of catch from the licensed vessel.
observer	An individual who has been designated as an observer by the Regional Director General for Pacific Region pursuant to Section 39 of the *Fishery (General) Regulations*.

otter trawl	A type of trawl net in which the mouth of the net is held open and towed by means of boards of wood and/or metal ("otter" boards or "doors").
PICFI	Pacific Integrated Commercial Fisheries Initiative - DFO's PICFI is an initiative aimed at achieving environmentally sustainable and economically viable commercial fisheries, where conservation is the first priority and First Nations' aspirations to be more involved are supported.
PSARC	Pacific Scientific Advice Review Committee (now CSAP)
Quota	For the purposes of the Shrimp Trawl fishery, an annual quota refers to the total allowable catch determined from a biomass survey or other stock assessment information, and harvest rates of zero percent to 35 percent of the survey biomass.
selective fishing	The ability to avoid known, non-target species and stocks or, if encountered, to release them alive and unharmed.
selectivity device	A general term that refers to a device that when added to a trawl net will reduce the amount of non-target species in the catch. Also called BRD.
Shrimp Management Area (SMA)	The area of a management unit in the Shrimp Trawl fishery, based on location of fishing grounds and shrimp stocks. Maps of SMAs are in Appendix 9.
Shrimp Trawl Fishing Log (logbook)	A record of fishing activity, catch, effort, and gear.
Southern Inside Waters	Shrimp Management Areas 12IN, 14, 16, 17, 18, 19, GSTE, FR, and 23IN, differentiated from other areas to allow a split in the quota for two openings, ensuring some fishing opportunity in November.
stock assessment	Analyses of fisheries and research data used to estimate stock abundance and health or evaluate the effects of fishing on a stock or population and predict the reactions of populations to alternative management choices.
Stock	A biologically discrete population.
Subarea	A division of Canadian fisheries waters as described in Schedule II of the *Pacific Management Area Regulations*, maps are available on the Pacific Region internet at: http://www.pac.dfo-mpo.gc.ca/fm-gp/maps-cartes/areas-secteurs/index-eng.html
tonne (t)	Metric tonne, which is 1,000 kg or 2,204.6 lbs.
trawl net	Any bag-type net that is dragged in the water by a vessel for the purpose of catching fish, (under the *Fisheries Act* and *Regulations*, "fish" includes shellfish).

verification	Verification of any or all of the following activities: estimating, weighing, sampling all species, inspection of fishing records, and/or interviewing the vessel master.
WCVI	West Coast of Vancouver Island (generally includes Areas 21, 121, 123 to 127 and Subareas 23-7 to 23-11, but may be less depending on the area surveyed and used to estimate biomass).

13. INTERNET SITES

Pacific Region Shrimp web page (and links to Shrimp Trawl fishing information):
http://www.pac.dfo-mpo.gc.ca/fm-gp/commercial/shellfish-mollusques/shrimp-pcrevette/index-eng.html
Acts, Regulations, and Pacific Fishery Management Area Definitions:
https://www.dfo-mpo.gc.ca/acts-lois/index-eng.htm
Infectious Diseases of Shrimp:
http://www.dfo-mpo.gc.ca/science/aah-saa/diseases-maladies/index-eng.html
CSAP (e.g., shrimp stock status reports):
http://www.isdm-gdsi.gc.ca/csas-sccs/applications/Publications/index-eng.asp
Openings and Closures (from Commercial Fisheries Notices):
https://www-ops2.pac.dfo-mpo.gc.ca/fns-sap/index-eng.cfm?pg=fishery_search&ID=all

APPENDIX 1: 2021/22 SHRIMP TRAWL COMMERCIAL HARVEST PLAN

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1. MANAGEMENT CHANGES AND HIGHLIGHTS FOR 2021/2022

1.1. Mandatory Use of LED Lights

Vessels fishing for shrimp by trawl must use footrope lighting devices (LEDs) on their trawl nets in all shrimp trawl management areas of the coast. See Section 2.2.

1.2. Amendment to Special Management Area 9IN

Vessels choosing to hail to fish within Pacific Fisheries Management Subareas 9-1 or 9-12 during the period of January to March will no longer be required to pre-arrange at-sea observer coverage for the first fishing trip. Vessels hailing to PFMA 9-2 to 9-11 will still be required to arrange for at-sea observer coverage during this period.

1.3. Elimination of 27IN as a Special Management Area

SMA 27IN no longer a special management area.

1.4. SMAs Requiring New Biomass Survey Prior to Openings

The most recent biomass survey data available for several SMAs indicated stocks with at least one shrimp species below the limit reference point for several SMAs. New survey biomass surveys will be required within SMAs 14, Fraser River, GSTE, 16, 18, 19, 124OFF, and 125OFF indicating that a commercial quota can be supported prior to the Department opening these SMAs.

1.5. Eulachon Action Level for West Coast Vancouver Island (WCVI)

The Eulachon Action Level (EAL) for the WCVI remains set at 4 tonnes (t). The WCVI EAL is further divided into two (2) portions, with an EAL of 2 t set for SMAs 124OFF and 125OFF combined, and 2 t set for SMAs 23OFF&21OFF and 23IN combined. See Section 3.1.

1.6. Individual Vessel Eulachon Bycatch Limit

An individual vessel Eulachon bycatch limit pilot program for SMAs 124OFF and 125OFF will be in place for the 2021/22 season. A maximum of 250 lb. of Eulachon bycatch will be authorized under this pilot for each ‘S’ and ‘FS’ vessel fishing within SMAs 124OFF and 125OFF during the licence year. Each vessel’s eulachon bycatch will be monitored by an independent at-sea observer for 100% of fishing effort.

1.7. Individual Vessel Eulachon Bycatch Limit Overage Adjustment

An individual vessel Eulachon bycatch overage adjustment provision for SMAs 124OFF and 125OFF will be in place for the 2021/22 licence year. Individual vessels fishing within SMAs 124OFF and 125OFF that exceed their individual vessel Eulachon bycatch limit for the 2021/22 season will have the overage amount deducted from their 2022/23 individual vessel bycatch limit. SMAs 124OFF and 125OFF will close effective 23:59 hours on February 28, 2022 even if these SMAs have remaining shrimp quota available. This closure is to allow the Department time prior to licence renewal to calculate any individual vessel Eulachon overages, and prepare unique individual vessel licence conditions for the following season.

1.8. At-Sea Observer Coverage

At-Sea Observer coverage will be required on all fishing trips for SMA 124OFF and 125OFF during the 2021/22 season (100% observer coverage). Within SMAs 23OFF&21OFF and 23IN coverage will be required at a rate of 25% of each vessels fishing days in these areas during the season.

An additional 20 at-sea observer days will be required to be funded and arranged by licence holders for deployment of observers in other SMAs on the coast during the fishing year.

Data bycatch summaries and trip reports from all observations made by the at-sea observers on each fishing trip must be delivered to the Department within five (5) days following the completion of the fishing trip for the vessel.

1.9. Pre-notification Period Prior to Openings for SMA 23IN and 23OFF&21OFF

In order to allow time for the Service Provider to better organize and facilitate arrangements for At-Sea Observers within SMAs 23IN and 23OFF&21OFF a pre-notification period prior to these SMAs openings may be implemented once DFO decides whether harvest opportunities will be available, and a quota is set. DFO may announce a potential opening date with a couple weeks advance notice in order to help ensure At-Sea Observers will be available for the opening. See Section 3.6.

1.10. Limiting Fishing Hails for SMA 23IN and 23OFF&21OFF if Observer Coverage Not Achieved

In the event that the at-sea observer coverage rate objective is not being achieved within SMA 23IN and 23OFF&21OFF and sufficient observers are not available for the fishery, the Department may instruct the Service Provider to withhold all new hails to the fishery in order to ensure that observer coverage rates can be achieved. In the event that observers cannot be provided within the foreseeable future, DFO may implement an in-season closure for SMA 23IN and 23OFF&21OFF until such time as observers become available to the fishery. See Section 3.7.

1.11. Skeena River Estuary Area Seasonal Closure

A new seasonal closure in Pacific Fisheries Management Area 4-12 and 4-15. Those waters that include Area 4-15 and that portion of Area 4-12 in that lies south of a boundary formed by two submarine cables that cross Inverness Passage about 0.8 miles South East of Hicks Point, and then beginning 2 miles north of Hazel Point on Smith island and following the line of the two submarine cables that cross Marcus Passage and Malacca Passage, to the North end of Lawyer Island and the Ashore to Porcher Island one mile south of Hunter Point, will be closed February 15th, 2022 to March 31st, 2022 to help avoid the risk of interactions with Eulachon returning to spawn.

1.12. Dockside Validation Program for SMA 124OFF and 125OFF

A mandatory Dockside Validation Monitoring pilot program for all shrimp harvested within SMAs 124OFF and 125OFF will be in effect for the 2021/22 season.

1.13. Marine Mammal Reporting Continues

Reporting of all interactions with marine mammals, including collision and entanglement with fishing gear, is mandatory during all commercial fishing trips Marine Mammal Incident Reporting

Hotline at 1-800-465-4336 or VHF Channel 16. For more information, please visit: https://www.dfo-mpo.gc.ca/species-especes/mammals-mammiferes/report-rapport/page01-eng.html.

1.14. Industry Funded Biomass Surveys

The Department is interested in continuing collaborative opportunities with the industry associations to conduct industry funded biomass surveys in an effort to expand fishing opportunities for the fleet. Future planning for this work is expected to continue through the survey subcommittee, and DFO would encourage licence holders to engage with their sectoral committee representative to provide advice and recommendations on this issue.

1.15. Processing Requirements Prior to Export – Reminder to Vessel Masters

As of January 15, 2019 the Safe Food for Canadians Act and Safe Food for Canadians Regulations (SFCR) will be in effect. The SFCR replaces the 14 sets of regulations currently enforced by the CFIA, including the Fish Inspection Act and Regulations, and the Consumer Packaging and Labelling Regulations. A Safe Food for Canadians licence issued by the Canadian Food Inspection Agency may be required for activities conducted by fishers for export or interprovincial trade. A licence is not required for freezing whole shrimp on a vessel, holding fish in containers, icing whole shrimp, refrigerating or rinsing whole shrimp. See Section 6.10.

1.16. Reporting of Lost Gear

New licence conditions first introduced in 2020 for mandatory reporting of lost and retrieved gear will continue for the 2021/22 season. See Section 6.1.7.

2. MANAGEMENT MEASURES

2.1. Species

The following shrimp species may be retained:

a.) Northern (spiny) Pink Shrimp (*Pandalus borealis*)
b.) Pink (smooth or ocean) Shrimp (*Pandalus jordani*)
c.) Flexed Shrimp (*Pandalus goniurus*)
d.) Sidestripe Shrimp (*Pandalopsis dispar*)
e.) Coonstripe (dock) Shrimp (*Pandalus danae*)
f.) Humpback Shrimp (*Pandalus hypsinotus*)

Prawn (*Pandalus platyceros*), squid, and octopus caught incidentally while fishing for the above species may be retained subject to the quantity and other restrictions as defined in conditions of licence.

For proper identification and reporting of catch by species, illustrations of the common commercial shrimp species are attached to this plan (see Appendix 5: Identification of Commercial Shrimp Species) and included as a colour plate in the Shrimp Trawl Harvest Logbook.

Unless the retention of an incidental catch is expressly authorized by the licence, under Section 33 of the *Fishery (General) Regulations*, every person who catches a fish incidentally (including shellfish) shall forthwith return it to the place from which it was taken; and in a manner that causes it the least harm.

The non-retention of any incidentally caught finfish when shrimp trawling includes Schedule II species (those species listed in Part 2 of the shrimp trawl licence and in Schedule II - Part II of the *Pacific Fishery Regulations*) as trawl gear is not permissible for the harvest of these species.

Fish harvesters are reminded that where a vessel holds a shrimp trawl licence eligibility and a Prawn and shrimp by trap licence eligibility, all shrimp including Prawns caught under the authority of the Prawn and shrimp by trap licence must be offloaded prior to the vessel fishing under the authority of the shrimp trawl licence.

2.2. Gear

2.2.1. Net Requirements:

Trawl nets for fishing shrimp are either beam trawls (net held open by a neutrally buoyant beam) or otter trawl (net held open with doors). The trawl net must be modified to reduce bycatch of species other than shrimp with the insertion of a rigid grid or grate along with an escape hole. The bycatch reduction grid (e.g. aluminium, PVC) must be inserted into the forward end of the cod end of the trawl net at an angle so that it entirely blocks access to the cod end, except for the spaces between the bars. For 2021/22 the spacing between the bars of the grate must be no greater than 19 mm when fishing within SMAs 23OFF&21OFF, 124OFF, 125OFF, and 27OFF. Within all other SMAs the bars of the grate must be no greater than 31.75 mm apart. The netting directly above the grid must have an opening (escape hole) and the sides of the opening must be reinforced so that the opening remains unobstructed and maintains its shape while the net is being towed through the water.

In addition to the gear modification described above, the top (hood or upper belly) of an otter trawl net shall be comprised of a minimum 4.4 square metre (48 square foot) panel of plastic lattice with minimum 4 cm square openings, such as is found in snow-fencing (note that the STSC recommends that more than 48 square feet be installed).

2.2.2. Mandatory Use of LED Lights:

The vessel master shall ensure that vessels fishing for shrimp by trawl use footrope lighting devices (LEDs) on their trawl nets in all shrimp trawl management areas of the coast. At all times when the trawl net is in the water;

(a) the lighting devices must be operational;

(b) lighting devices are emitting a green colour;

(c) lighting devices are securely attached within 6 inches (15.24cm) of the forward leading edge of the bottom panel of trawl netting; and

(d) each trawl net has a minimum of five (5) lighting devices spaced 4 feet (1.22 m) apart in the central 16 feet (4.88 m) of each net.

2.3. Fishing Season

This section identifies the general rules for determining the fishing season in any given year. Table 2 identifies the status of each SMA for the 2021/22 season.

2.3.1. Regular Fishing Season Coastwide

The shrimp by trawl commercial fishery is scheduled to open in some SMAs at 00:01 hours, June 1, with the exceptions noted in Section 2.3.2. or SMAs without quotas assigned in Table 2. Seasonal and permanent closures are in effect; see Section 4.3. SMAs will generally remain open until March 31, but may close earlier if the catch ceiling for a given species in an SMA is reached. SMAs 124OFF and 125OFF will close 23:59 hours on February 28, 2022 regardless of remaining shrimp quota available. This early closure in SMA 124OFF and 125OFF is required to allow for the administration of the new individual vessel Eulachon bycatch overage provisions.

All openings referred to in this plan are tentative until confirmed by issuance of a Variation Order accompanied by a Fishery Notice. When an area is open, any vessel with a valid S or FS licence and conditions to fish shrimp is allowed to fish the area provided they are adhering to all licence conditions and reporting requirements.

Other portions of the coast may be opened in-season following industry funded biomass surveys following the required DFO science survey protocol during the 2021/22 season, with new harvest areas opening in-season, or quota adjustments to existing SMAs resulting from these surveys.

2.3.2. Early Openings

Early openings in select areas have been permitted when shrimp biomass in the previous year was large, when 30% of the catch ceiling remained on March 15, and when there was a minimum of 3,000 lb of quota. Fish harvesters are requested to submit logbook information earlier than is outlined in the conditions of the shrimp trawl licence to assist in the evaluation of fishing opportunities.

For the 2021/22 fishing season no early openings are currently expected.

2.3.3. Southern Inside Waters - Two Openings

The most frequently fished areas in the south coast often have sufficient effort to reach the annual catch ceilings. Shrimp harvesters have asked for two openings so that some of the annual catch ceiling is reserved for the period starting November 15th when market demand is peaking and the highest value is obtained at dockside sales. Based on the recommendation from the STSC, the Southern Inside Waters (12IN, GSTE, 14, 16, 17, 18, 19, FR, and 23IN) generally will have two openings:

1. June 1 for 75% of the initial catch ceiling.
2. November 15 for the remainder of the annual quota.

The initial annual catch ceilings for these areas are provided in Table 2. An SMA will close upon attaining 75% of the annual catch ceiling for any one species. Landings from the first opening that exceed, or are short of, the early catch ceiling will be applied to the final opening.

In-season adjustments to catch ceilings may result from in-season biomass estimates and will be applied at the time the biomass estimates become available.

2.3.4. Special Management Areas

There are areas that are not regularly open to fishing shrimp by trawl as a result of management considerations (bycatch levels have been high in the past or observer coverage is required). These areas may be open to specific vessels by variation order or amended conditions of licence once all aspects of fishing activity and required management measures are satisfied.

2.3.4.1. Shrimp Management Area QCSND (Queen Charlotte Sound)

SMA QCSND is currently closed and includes Pacific Fisheries Management Areas 107, 108, 109, 110, 111, 130, and Subareas 7-1, 7-25, 7-26, 7-31, 8-1, 10-1, 10-2, 11-1 and 11-2. SMA QCSND was designated a special management area in 2000 because of concerns for Eulachon stocks in central coast rivers. The Department is currently reviewing Eulachon for consideration of listing under the *Species at Risk Act*. Given the current SARA process and consultations the Department will not be considering any commercial harvest opportunities in QCSND during the 2021/22 season. For further information, contact the North Coast Fisheries Manager (see Appendix 3: Departmental and Industry Contacts).

2.3.4.2. Shrimp Management Area 2IN

For SMA 2IN, vessel operators wishing to fish in this area are required to obtain amended Conditions of Licence prior to commencement of fishing. Sampling coverage in this remote area has been proven to be cost prohibitive to the catch sampling program. Commencing in 2001, and continuing for the current season, costs for observer coverage in this area will be the responsibility of the individual vessel master. Amended Conditions of Licence are issued subject to fulfilling application requirements, including the vessel master securing arrangements for certified shrimp fishery observer coverage and having up-to-date and complete Shrimp Trawl Harvest Logbooks. Proposals will be considered from groups of fish harvesters that arrange collectively for adequate observer coverage. Arrangements for amended Conditions of Licence can be made with the North Coast Fisheries Manager.

2.3.4.3. Skeena River Area – PFMA 4-12 and 4-15

Skeena River Estuary Area Seasonal Closure (Seasonal Closure) This new seasonal closure is implemented in Pacific Fisheries Management Area 4-12 and 4-15. Those waters that include Area 4-15 and that portion of Area 4-12 in that lies south of a boundary formed by two submarine cables that cross Inverness Passage about 0.8 miles South East of Hicks Point, and then beginning 2 miles north of Hazel Point on Smith island and following the line of the two submarine cables that cross Marcus Passage and Malacca Passage, to the North end of Lawyer Island and the Ashore to Porcher Island one mile south of Hunter Point, will be closed February 15th to March 31st to help avoid the risk of interactions with Eulachon returning to spawn. This measure will be reviewed following the 2021/22 season.

2.3.4.4. Shrimp Management Area 27OFF

SMA 27OFF may open upon request from a vessel master subject to the vessel master securing arrangements for a certified shrimp fishery observer for the first fishing trip to these areas. Contact the South Coast Fisheries Manager to request an opening. Previously this as also required for SMA 27IN, however this is not required for 2021/2022.

2.3.4.5. Shrimp Management Area 9IN

SMA 9IN (Pacific Fishery Management Areas 9-1 to 9-12), will open with the coast-wide opening for shrimp trawl, and will remain open until December 31 or until the annual catch ceiling is attained. If annual catch ceiling remains available after January 1 in the new year then subareas 9-1 and 9-12 will remain open. Pacific Fishery Management Subareas 9-2 to 9-11 may reopen during the period of January to March upon request subject to the vessel master securing arrangements for a certified shrimp fishery at-observer for the first fishing trip to this area. A limited number of observer days will be available from the industry-funded catch monitoring program. It will be the responsibility of the vessel master to secure arrangements for observer coverage before the area is opened. PFMA 9-1 and 9-12 will not automatically require at-sea observer coverage on the first trip. Contact the North Coast Fisheries Manager to request an opening.

2.4. Setting Catch Ceilings

In keeping with Fisheries and Oceans Canada mandate on conservation and risk-averse management, catch ceilings have been implemented for SMAs (see Appendix 9: Maps of Shrimp Management Areas). Catch ceilings are in effect for the period April 1, 2021 to March 31, 2022, with areas closing on achieving the catch ceiling for any species.

Catch ceilings are defined for most of B.C.'s main shrimp stocks using provisional reference points linked to indices of stock biomass estimated from fishery independent area-swept trawl surveys. Catch ceilings are defined using harvest rates following the Provisional Harvest Control Rules (HCR) compliant with the Precautionary Approach. The HCR adjust the harvest rate to a proportion of the biomass depending on the stock status (Healthy, Cautious or Critical Zone) for each major target species.

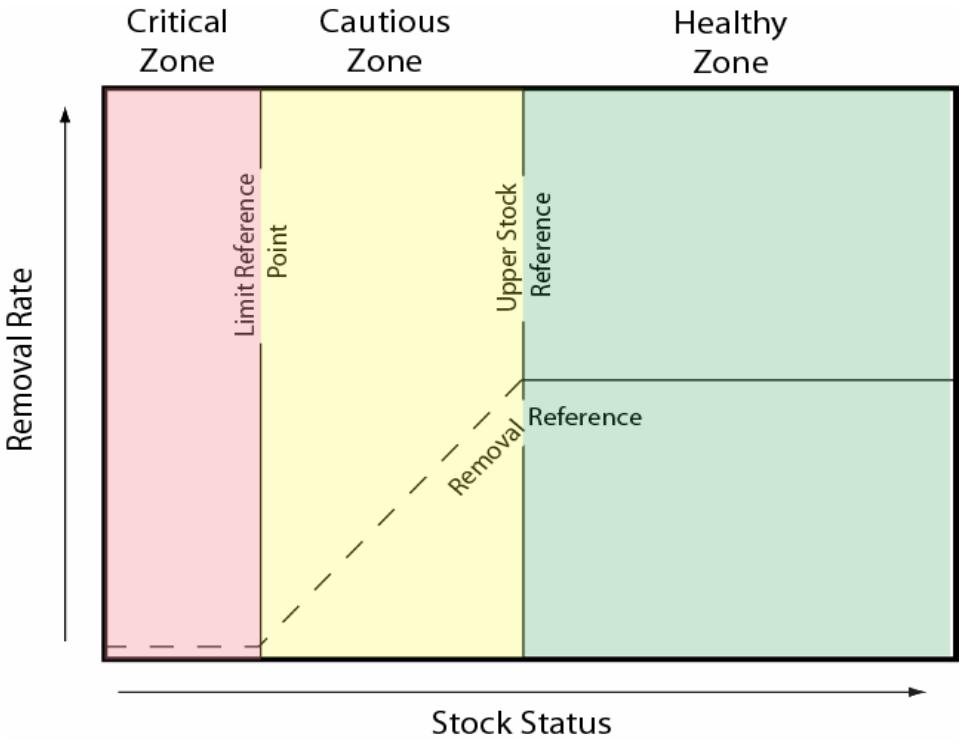


Figure 1: *Adjustments to Removal Rate (harvest rate) when Stock Status is in Critical Zone (zero), Cautious Zone (0 to 35%) or Healthy Zone (35%). Healthy and Cautious Zone is delineated by Upper stock reference point. Cautious and Critical Zone delineated by Limit Reference Point.*

2.4.1. Provisional Reference Points

Provisional Precautionary Approach reference points have been established for many west coast shrimp stocks (Table 1, DFO 2009) in relation to the biomass of maximum sustainable yield (Bmsy). For west coast shrimp stocks strong stock recruit relationships are not evident; therefore, a proxy for Bmsy, the natural log of the average biomass is used (Bprox).

The default formulas used for the limit reference point (LRP) and upper stock reference (USR) are:

Proxy for the Biomass of maximum sustainable yield (B_{prox}) = ln (average Biomass)
LRP = 40% B_{prox}
USR = 80% B_{prox}

Table 1: *Summary of B_{prox} (tonnes), limit reference point (LRP) and upper stock reference (USR) points for Sidestripe Shrimp (Pandalopsis dispar), Spiny Pink Shrimp (Pandalus borealis) and Smooth Pink Shrimp (P. jordani) by SMA.*

SMA	Species	B_{prox} (tonnes)	LRP (40%)	USR (80%)
PRD	Sidestripe	587.4	235.0	469.9
	Pinks[1]	977.6	391.0	782.1
9IN	Sidestripe	66.5	26.6	53.2
	Smooth pink	115.0	46.0	92.0
QCSND	Sidestripe	191.5	76.6	153.2
	Smooth pink	3006.7	1202.7	2405.4
12IN	Sidestripe	68.9	27.6	55.1
	Spiny pink	191.4	76.6	153.1
14	Sidestripe	69.8	27.9	55.9
	Smooth pink	313.3	125.3	250.6
GSTE	Sidestripe	78.6	31.4	62.9
	Smooth pink	367.9	147.2	294.3
16	Sidestripe	27.3	10.9	21.8
	Pinks[1]	114.8	45.9	91.9
FR	Sidestripe	171.0	68.4	136.8
	Pinks[1]	222.6	89.0	178.1
18	Sidestripe	23.7	9.5	19.0
	Spiny pink	94.7	37.9	75.7
19	Sidestripe	10.5	4.2	8.4
	Spiny pink	75.6	30.2	60.5
23IN	Sidestripe	35.1	14.0	28.1
	Smooth pink	330.2	132.1	264.1
121OFF+123OFF	Smooth pink	1796.8	718.7	1437.4
124OFF+125OFF	Smooth pink	2928.7	1171.5	2342.9

[1] Mixed pink shrimp species (*P. borealis* + *P. jordani*)

SMAs 23IN and 23OFF&21OFF are no longer surveyed separately and a combined biomass is defined following the survey. Reference points have not been defined for the combined area. The combined biomass is divided in proportion to the previously defined Bprox estimates, and used to define the biomass for setting catch ceilings for SMAs 23IN and 23OFF&21OFF.

2.4.2. Harvest Control Rules

For SMAs with annual surveys the harvest rates are determined from survey biomass estimates using the following decision rules, compliant with the Precautionary Approach:

- If estimated shrimp biomass (either forecasts or derived from survey information) are in the Critical Zone (i.e., below the LRP), the harvest rate is zero (i.e., the SMA will not open for fishing, or it will close for the remainder of the season). The area will not re-open until a stock assessment is completed.

- If estimated shrimp biomass is in the Cautious Zone (i.e., above the LRP but below the USR), harvest rate (HR) will vary between 0% and 35% based on the formula:

$$HR=35\%*((Biomass-40\%B_{msy})/(80\%B_{msy}-40\%B_{msy}))$$

- If estimated shrimp biomass is in the Healthy Zone (i.e., above the USR), the harvest rate is 35%.

- When an area is surveyed and sufficient information is obtained to estimate a biomass for a species, but there is not sufficient history to define LRP or USR, a catch ceiling is defined from the survey biomass and a harvest rate of 33%. This harvest rate is derived from a Gulland model at a level of 0.3M.

2.4.3. Initial Catch Ceilings

Using the HCRs identified in section 2.4.2, at the beginning of the season a catch ceiling is allocated for each SMA on the coast. These Initial Catch Ceilings are identified in Table 2.

For the management areas with continued surveys a five year running average (5YRA) model is used to forecast biomass by species and SMA. Harvest rates are set according to the Precautionary Approach and an initial catch ceiling is defined. This initial catch ceiling is adjusted when shrimp biomass estimates are available following the shrimp surveys in-season. SMAs with no survey history have arbitrary catch ceilings defined from 10th or 25th percentile of the pre-1997 catch history – generally 10 t (22,050 lb) and offshore areas 25 t (55,120 lb). These areas accounted for approximately 25% of the 2018 coast-wide TAC. Forecast biomass estimates cannot be calculated using the five year running model for SMAs with some survey history but were not surveyed in the previous year. These SMAs may have initial quotas set using the lowest biomass estimated as a result of surveys in the last five years, but will be recalculated in-season if a new biomass survey is conducted during the year.

Initial catch ceilings in 2021/22 may be adjusted in-season based on any new survey data and stock assessment information collected during the season. Surveys may include either DFO conducted assessments, or industry funded biomass survey assessments following the established DFO survey protocol. New harvest areas or portions of the coast may be opened for commercial harvest in-season following industry funded biomass surveys.

Table 2: *Initial Catch Ceilings for 2021/2022. All species combined unless noted.*

SMA	Areas and Subareas	Initial Catch Ceiling		Notes
		(lb)	(t)	
23OFF&21OFF	21, 121, 123, 23-7 to 23-11	161,156 Pink 3,748 Sidestripes	73.1 Pink 1.7 Sidestripes	DFO will consult with industry representatives to seek recommendations on opening details. 25% observer requirements
124OFF	124	Closed	Closed	Opening dependent upon in-season survey results. 100% Observer.
125OFF	125	Closed	Closed	Opening dependent upon in-season survey results. 100% Observer.
PRD	3-1 to 3-4, 103, 4-1 to 4-15, 104, 5-1, 5-2 and 5-23	196,871 pink 245,152 sidestripe	89.3 pink 111.2 sidestripes	
DXE	1 and 101	22,050	10	
QCI	102 and 142	55,120	25	

SMA	Areas and Subareas	Initial Catch Ceiling		Notes
		(lb)	(t)	
2IN	2	22,050	10	Amended Conditions of Licence and observer required.
3IN	3-5 to 3-18	28,660 pink 31,526 sidestripe	13 pink 14 sidestripe	
5IN	5-3 to 5-10, 5-12 to 5-19, 5-21 and 5-24	22,050	10	
5OFF	5-11, 5-20, 5-22, 105	22,050	10	
6IN	6-1 to 6-8, 6-10 to 6-12, 6-14 to 6-16, 6-18 to 6-28	22,050	10	
6OFF	6-9, 6-13, 6-17 and 106	55,120	25	
7IN	7-2 to 7-24, 7-27 to 7-30 and 7-32	22,050	10	
8IN	8-2 to 8-16	22,050	10	
9IN	9-1 to 9-12	56,879 pink 36,376 sidestripe	25.8 pink 16.5 sidestripe	In-season survey may adjust catch ceiling, Contact the North Coast Fisheries Manager to request an opening. of 9-2 to 9-11 after December 31st.
10IN	10-3 to 10-12	22,050	10	
11IN	11-3 to 11-10	22,050	10	
12OUT	12-1 to 12-21, 12-24, and 12-25	8,818 pink 17,637 sidestripe	4 pink 8 sidestripe	
12IN	12-22, 12-23, 12-26 to 12-48	27,558 humpback 488,098 pink 45,856 sidestripe	12.5 humpback 221.4 pink 20.8 sidestripe	
GSTE	13 and 15	Closed	Closed	Opening dependent upon in-season survey results.
14	14	Closed	Closed	Opening dependent upon in-season survey results
16	16	Closed	Closed	Opening dependent upon in-season survey results.
17	17	17,637	8	
18+19	18 and 19	Closed	Closed	Opening dependent upon in-season survey results.
20	20	22,050	10	
23IN	23-1 to 23-6	22,157 Pink 1,984 Sidestripes	10.1 Pink 0.9 Sidestripes	DFO will consult with industry representatives to seek recommendations on opening details. 25% observer requirements
24IN	24	22,050	10	
25IN	25	22,050	10	
26IN	26	22,050	10	
27IN	27-3, 27-7 to 27-11	22,050	10	

SMA	Areas and Subareas	Initial Catch Ceiling		Notes
		(lb)	(t)	
27OFF	127, 27-1, 27-2, 27-4 to 27-6	55,115	25	Observer Requirements
FR	28 and 29	Closed	Closed	Opening dependent upon in-season survey results.

New harvest areas not listed above may be considered for commercial openings in-season during the 2021/22 fishery based on new biomass survey assessment data or information.

2.4.4. Adjustment of Catch Ceilings after Survey

The catch ceilings for the shrimp management areas with continued surveys are based on estimates of shrimp biomass resulting from fishery independent trawl surveys conducted in May through September, and are defined following the Provisional HCRs, depending on the state of the stock (Healthy, Cautious or Critical Zone). After the survey, a bulletin is produced and the results of the survey will be announced by Fishery Notice.

2.4.4.1. In-Season Changes to Catch Ceilings for Southern Inside Waters

The catch ceilings for some inside waters have been allocated based on forecast biomass estimates from the previous year's surveys. For index areas with no survey in the previous year an initial quota is authorized to allow harvesting prior to the biomass survey being completed later in the year. In-season changes to catch ceilings for Southern Inside waters will be determined if new survey results become available, and will be re-proportioned to the two harvest periods at that time. If survey results indicate additional quota and become available while an area is open and actively being fished, the quota will be re-proportioned at that time and the fishery will continue. If survey results indicate sufficient additional quota to manage a re-opening and become available while the area is closed, effort will be made to provide 48 hours advance notice prior to re-opening.

2.4.5. Catch Ceiling Reached

Catch estimates by each fish harvester are obtained at the end of each trip, prior to landing and selling the catch. A landing hail number is required and is entered in fishing logbooks and must be recorded prior to landing and selling the catch. The service provider maintains a cumulative catch from all fish harvesters and provides a Landing Quota Status (LQS) report to the industry and the Department once a week. The LQS report includes the catch ceiling, total landed, pounds remaining, percent remaining, area status and number of active vessels hailed to fish in each SMA for each species catch ceiling. Weekly Shrimp Trawl LQS Reports can be obtained by email or by fax from the service provider, Archipelago Marine Research Ltd, (250) 383-4535.

When the weekly LQS report shows that a catch ceiling for one species is close to being reached the area will be closed, using the following criteria, with the objective of not exceeding the catch ceiling.

Closure decisions will be based on:

- Quota remaining in the area
- The number and gear type of boats fishing in the area
- Outstanding catch reporting
- Landings in previous weeks

This may result in some amount of quota remaining in the area when it is closed.

3. BYCATCH AND DISCARDS

Shrimp and incidental Prawns, squid, and octopus are permitted to be caught and retained (with seasons, catch limits, and area closures). All other bycatch must be discarded as soon as feasible in the best condition as possible. Specific management measures have been defined for some species. Management measures to minimize capture of fish that will reduce mortality of discards, improve reporting and accounting of the entire catch, including bycatch and discards will be developed following implementation of the Policy Framework on Managing Bycatch and Discards. Specific management measures for Eulachon bycatch have been developed for WCVI SMAs. An at-sea observer program is funded by active industry vessel owners. The primary goal of the observer program is to monitor Eulachon bycatch in WCVI SMAs. Observers are deployed by the service provider when the vessel master obtains a hail number to go fishing. The observer travels with the vessel when fishing and records information on all species in the catch, the configuration of the gear and specific tow location and duration. This information is used to monitor the Eulachon-to-shrimp ratio and the Eulachon catch rates. Current bycatch and discard measures are defined in the following sections.

Licence holders are responsible for arranging at-sea observer coverage through the Service Provider defined for the fishery. SMAs 124OFF and 125OFF will require 100% at-sea observer coverage on-board the vessel to monitor all fishing activity. Within SMA 23OFF&21OFF and 23IN licence holders must arrange for at-sea observer coverage on 25% of all fishing days during the season.

In addition, licence holders shall arrange for an additional 20 days of at-sea observer coverage to be available for deployment in other SMAs along the coast. Deployment of observers will be based on Departmental priorities such as shrimp species identification, catch distribution or bycatch issues.

Data bycatch summaries and trip reports from all at-sea observer trips must be provided to DFO within five (5) days following the completion of the fishing trip. The Department may implement in-season closures to the fishery if data delivery timelines are not met by the licence holders or the service provider.

3.1. Eulachon Bycatch Action Levels

The Department is working with the shrimp trawl industry to minimize Eulachon bycatch. An EAL is set annually for WCVI (Table 3) to encourage active shrimp trawl harvesters to adjust their gear to minimize Eulachon bycatch. The 2021/22 EAL for the WCVI will be 4 t. There will be no in-season adjustment to the EAL based on the WCVI surveys as in previous years. Eulachon bycatch cannot be retained. If no commercial fishing opportunities exist within one of these SMA groupings in a given year, then the EAL assigned to that grouping may be re-allocated to the other SMA grouping.

Table 3: *Eulachon Action Levels for WCVI*

SMA Group	2021/22 Eulachon Action Level (t)
124OFF and 125OFF	2.0
23OFF&21OFF and 23IN	2.0

In season Eulachon bycatch estimates for SMA 124OFF and 125OFF, combined, will be determined from 100% at-sea observer estimates on a vessel trip basis, summarized weekly.

In season Eulachon bycatch estimates for 23OFF&21OFF and 23IN combined areas are based on data collected by at-sea observers following the Pooled In-season (PI) method defined by Hay et al.(1999)[1]. No confidence intervals are calculated. The Eulachon to shrimp ratio from at-sea observations is applied to total estimated shrimp catch (hails) to generate an estimate of in-season Eulachon bycatch when the catch is summarized each week.

Eulachon catch is estimated using $Ec = (\sum Eo)/(\sum So) * (Sc)$

Where
- Ec = eulachon catch estimate
- Eo = Eulachon observed
- So = Shrimp observed
- Sc = Shrimp catch estimate from fish harvester hails (weekly Landings Quota Status Report)

If at-sea observations are not available, previously observed eulachon to shrimp ratios (by beam or otter trawl) are used to impute Eulachon bycatch.

3.1.1. Eulachon Action Levels Reached

In the event the estimate of Eulachon bycatch in a given WCVI area reaches the EAL the commercial fishery will close in that area.

3.2. Prawn

Vessels operating under the authority of a shrimp trawl licence are restricted to an incidental, legal size, possession limit of 100 individual Prawn (*Pandalus platyceros*) whole, in the shell, provided that the area is open for fishing for Prawn by means of trawl gear. This generally occurs in areas and at times when the Prawn and shrimp by trap fishery is open. It is the vessel master's responsibility to ensure an area is open to Prawn retention by shrimp trawl gear. Vessel masters are advised to regularly contact a local Fisheries and Oceans Canada office for advice on prawn closures in their area. The quantity of catch is recorded and reported as weight in pounds in the logbook.

The minimum legal size limit for prawns is 33 mm carapace length (measured from the posterior most part of the eye orbit to the posterior mid-dorsal margin of the carapace). See Appendix 7 Prawn Minimum Size for instructions on measurement.

[1] Hay, D.E, R. Harbo, J. Boutillier, E. Wylie, L. Convey, and P.B. McCarter. 1999. Assessment of bycatch in the 1997 and 1998 shrimp trawl fisheries in British Columbia, with emphasis on eulachons. Canadian Stock Assessment Secretariat Research Document - 1999/179.

Concern has been expressed regarding the incidental catch of undersize Prawns. Fish harvesters are asked to avoid areas where there is a high incidence of undersize Prawn. If this is a persistent problem, shrimp trawl closures may be implemented.

South Coast Area 17 and Subarea 29-5 and North Coast Subareas 4-10 and 4-11 in PRD are closed year round to the retention of Prawn by shrimp trawl gear.

All Prawns must be sorted out of the catch immediately upon being brought on deck. Undersize Prawns, berried Prawns and Prawns in excess of the incidental catch allowance must be returned immediately to the water in a manner that best affords their survival. Predation of released prawns by sea birds has been identified as a concern. Fish harvesters should consider methods that get the prawns below the surface as quickly as possible. Concerns have been raised regarding the incidental catch mortality of trawl-caught prawn during conservation closures for prawn. If this is a persistent problem, shrimp trawl closures may be implemented.

All retained Prawns must be kept segregated from all other catch.

Any Prawns with an egg mass (berried females) shall be released immediately and unharmed to the waters from which they are caught.

No Prawns or shrimp that are not permitted to be retained under the authority of the commercial licence shall be on board the licensed vessel.

3.3. Squid

Vessels operating under the authority of an ‘S’ or ‘FS’ licence are restricted in the retention of incidentally caught Opal Squid (*Loligo opalescens*) to an amount that does not exceed two percent of the total weight of shrimp on board. This catch weight (in lb or kg) must be recorded on the Shrimp Trawl Harvest Logbook in the Remarks section.

3.4. Octopus

Vessels operating under the authority of an S licence are allowed to retain all incidentally caught Octopus (*Enteroctopus dofleini*). This catch weight (in lb or kg) must be recorded on the Shrimp Trawl Harvest Logbook in the Remarks section.

3.5. Marine Mammal Interactions Reporting Requirements

New U.S. *Marine Mammal Protection Act* (MMPA) requirements states that fisheries exporting into the U.S. market need to meet U.S. standards for levels of bycatch and impacts on marine mammals. If the fishery operations are comparable with U.S. levels then Canadian fisheries can continue to export their product to the U.S.

DFO has implemented new reporting requirements for shrimp trawl vessels. Vessel masters shall provide information regarding all interactions with marine mammals during fishing trips. For the purpose of reporting, interactions refer to cases of incidental mortality and serious injury to marine mammals. This includes accidental drowning, bycatch, entanglements, collisions, and fatalities. The vessel master shall complete the DFO reporting form “MARINE MAMMAL INTERACTION FORM”, which shall be submitted as per the instructions provided on the form.

Note: The Marine Mammal Interaction Form is available at:

https://dfo-mpo.gc.ca/species-especes/mammals-mammiferes/report-rapport/page01-eng.html

Vessel Masters shall also report interaction via the 1-800-465-4336 ORR line.

3.6. Pre-Notification Period Prior to Openings for SMA 23IN and 23OFF&21OFF

In order to allow time for the Service Provider to better organize and facilitate arrangements for At-Sea Observers within SMAs 23IN and 23OFF&21OFF a pre-notification period prior to these SMAs openings may be implemented once DFO makes decides whether harvest opportunities will be available, and a quota is set. DFO may announce a potential opening date with a couple weeks advance notice in order to help ensure At-Sea Observers will be available for the opening.

3.7. Limiting Fishing Hails for 23IN and 23OFF&21OFF if Observer Coverage Not Achieved

In the event that the at-sea observer coverage rate objective is not being achieved within SMA 23IN and 23OFF&21OFF and sufficient observers are not available for the fishery, the Department may instruct the Service Provider to withhold all new hails to the SMA in order to ensure that observer coverage rates can be achieved. In the event that observers cannot be provided within the foreseeable future, DFO may implement an in-season closure for SMA 23IN and 23OFF&21OFF until such time as observers become available to the fishery.

3.8. Humpback and Coonstripe Shrimp

As set forth by the Minister of Fisheries and Oceans Canada in a letter to the Shrimp Trawl Sectoral Committee (STSC) (January 31, 1997), "any directed fishery for Humpback Shrimp in non-traditional areas or with new or modified trawl or trap gear, will be subject to the Pacific Region Guidelines on New and Developing Invertebrate Fisheries" (New Emerging Fisheries Policy).

In general, the harvest of Humpback and Coonstripe Shrimp is restricted to an incidental harvest. Closures to all shrimp fishing may be implemented in non-traditional Areas or Subareas where directed fishing for Humpback or Coonstripe Shrimp occurs. Under the New Emerging Fisheries Policy it has been recommended that directed Coonstripe fisheries should be based on species-specific catch ceilings developed through fishery independent surveys (Dunham and Boutillier, 2001). A bycatch monitoring program and catch validation/monitoring for both the trap and trawl fisheries would be used to quantify the discard mortality of small sorted shrimp and define the most selective fishing method or gear to be used.

4. CLOSURES

4.1. Shrimp Management Area Closure Status

It is the fish harvester's responsibility to ensure that an area is open prior to setting gear. SMAs will close in-season as required on the basis of any one or more of the following:

- Catch ceilings or annual quotas for any species of shrimp have been reached. (See section 2.4.5.)
- For the areas included as Southern Inside Waters, the proportion of the catch ceiling allocated to that time period has been reached.

- If the Department is of the opinion that the fishery may be characterized as unmanageable; indications of misreporting of harvest on hails or harvest logs; at-sea observer coverage goals are not being met; Eulachon or other bycatch levels, including that of Prawns, are deemed by the Department as too high (if shrimp trawl fishing occurs in areas identified as having low Prawn spawner index and are closed to recreational Prawn by trap fishing, the Department may close areas to trawl fishing to avoid handling mortality of egg bearing females and the overall prawn population).
- SMAs 124OFF and 125OFF will close effective 23:59 hours on February 28, 2022 to allow year-end calculation of individual vessel Eulachon bycatch amounts and administer any necessary overage adjustments in the follow year's licence conditions for those individual vessels.
- Access to shrimp by First Nations for FSC purposes is jeopardized.
- For other reasons of conservation or for any other valid legislative reason.

4.1.1. Shrimp Information Line

Vessel masters are advised to call the Shrimp Information Line 1-888-978-7888 for information on area closures, the results of surveys, adjustments to catch ceilings and other in-season fishery information. Information will be available 24 hours a day by recording at this toll free number.

Fish harvesters are advised that the service provider is not responsible for notifying fish harvesters of existing or pending closures.

4.1.2. Fishery Notices

Information on area openings, through Fishery Notices for shrimp trawl, can be obtained by contacting local Fisheries Offices, the Fishery Managers listed in Appendix 3, or click on the Commercial Fishery Notices link from the Pacific Region Internet site at:

http://www-ops2.pac.dfo-mpo.gc.ca/fns-sap/index-eng.cfm?CFID=5970768&CFTOKEN=60169251

4.1.3. Canadian Coast Guard Announcements

Once a week the Canadian Coast Guard (CCG) may announce shellfish openings and closures. These announcements will be made, time permitting, following regular scheduled WX broadcasts and may be interrupted or delayed for Search and Rescue (SAR) priorities. Broadcast times are as follows:

Prince Rupert MCTS	WCVI	Tuesdays	12:15 DST	1915 UTC
Prince Rupert MCTS	North Coast	Tuesdays	12:15 DST	1915 UTC
Victoria MCTS	S Coast Nanaimo to Juan de Fuca	Tuesdays	07:10 DST	1510 UTC
Victoria MCTS	S Coast North of Nanaimo	Tuesdays	12:15 DST	1915 UTC

4.2. Rockfish Conservation Areas and Strait of Georgia Glass Sponge Reefs

Fishing shrimp by trawl is not permitted in Rockfish Conservation Areas (RCAs). RCAs are in effect in inside waters as of February 2007. Hook and line fishing for Schedule II species is prohibited in RCAs. Maps and information on RCAs is available at: http://www.pac.dfo-mpo.gc.ca/fm-gp/maps-cartes/rca-acs/index-eng.html

Fishing shrimp by trawl is not permitted in 17 glass sponge reef areas in the Strait of Georgia. Formal closures of bottom contact fishing activities in these areas were put in place in recent years. In accordance with the Sensitive Benthic Areas Policy and its Ecological Risk Assessment Framework (ERAF) for Cold-water Corals and Sponge Dominated Communities, DFO has conducted a risk assessment regarding the potential impacts of bottom-contact fisheries on these glass sponge reef areas. The Department consulted with First Nations, commercial and recreational fishers and other interested groups on proposed protection measures for the reefs. Coordinates and a figure describing the glass sponge reef closure areas can be found below, in Appendix 15, and on the following web site: http://dfo-mpo.gc.ca/oceans/ceccsr-cerceef/closures-fermetures-eng.html

4.3. Closures by Pacific Fisheries Management Area/Subarea

4.3.1. Area 1

4.3.1.1. Dixon Entrance/Hecate Strait Closure - Areas 1, 2, 101, 102, 104, 105, 106, 130 and 142. Those waters of Areas 1, 2, 101 to 106, 130 and 142 will be closed 00:01 hours March 1, 2022 to 08:00 hours August 1, 2022. (Crab Softshell Closure, Seasonal closure). If a soft-shell monitoring program is in place, the area, or portions of the area, could close earlier or later than March 1 and open earlier or later than August 1 if sampling indicates a change to the opening date is appropriate. Contact the North Coast Fisheries Manager.

4.3.1.2. McIntyre Bay: Subarea 1-5 closed to conserve halibut. (Conservation Halibut)

4.3.2. Areas 101 and 142

4.3.2.1. Bowie Seamount Marine Protected Area (MPA): 180 km west of the Queen Charlotte Islands Areas. For a schedule of boundaries and a map see the internet website at: https://laws-lois.justice.gc.ca/eng/regulations/SOR-2008-124/index.html (Marine Protected Area)

4.3.3. Areas 105 to 107, 110

4.3.3.1. Hecate Strait and Queen Charlotte Sound Glass Sponge Reefs MPA in portions of Areas 105, 106, 107, and 110. Three closures have been established surrounding glass sponge reefs in the North and Central Coast areas. Area closure boundaries for each reef are shown in Appendix 8 Locations of Glass Sponge Reefs in Hecate Strait and Queen Charlotte Sound. The Core Protection Zone is closed to all fishing activity. The Vertical Adaptive Management Zone and the Adaptive Management Zone are closed to all commercial bottom contact fishing activities, as well as for midwater trawl for hake. For more detail on the fishery closure within Hecate Strait and Queen Charlotte Sound Glass Sponge Reef MPA please review the Fishery Notice FN0198. (Sponge Reef)

4.3.4. Area 2

See 4.3.1.1 Dixon Entrance/Hecate Strait Closure.

4.3.4.1. SMA 2IN: Opens under request with confirmation of observer coverage at fish harvester's expense. Amended Conditions of Licence required. (See Section 2.3.4.2.) (Seasonal Observer)

4.3.4.2. Cumshewa Inlet: Subareas 2-3 and 2-4. (New Emerging Fisheries Policy)

4.3.4.3. Burnaby Narrows: Those waters of Subareas 2-13 and 2-16 inside a line commencing at 52º23.071’ N and 131º20.427’ W, east to a point at 52º23.079’ N and 131º22.790’ W, then following the southern shoreline of Kat Island east to a point at 52º23.104’ N and 131º22.193’ W, then east to a point at 52º23.303’ N and 131º22.277’ W, then following the western shoreline of Burnaby Island south to a point at 52º20.982’ N and 131º20.427’ W, then west to a point at 52º20.733’ N and 131º21.063’ W, then north following the eastern shoreline of Moresby Island back to the point of commencement. (National Marine Conservation Area)

4.3.4.4. Louscoone Estuary: Those waters of Subareas 2-33 and 2-34 north of a line drawn from 52º11.828’ N and 131º15.662’ W east to 52º12.269’ N and 131º14.579’ W. (National Marine Conservation Area)

4.3.4.5. Flamingo Estuary: Those waters of Subarea 2-37 north of a line drawn from 52º14.523’ N and 131º22.24’ W southeast to 52º14.245’ N and 131º21.481’ W. (National Marine Conservation Area)

4.3.4.6. Gowgaia Estuary: Those waters of Subarea 2-41 east of a line drawn from 52º24.947’ N and 131º32.13’ W southeast to 52º24.233’ N and 131º32.021’ W. (National Marine Conservation Area)

4.3.4.7. Cape Saint James: Those waters of Subareas 2-19, 102-3, 130-3 and 142-1 inside a line commencing at 51º56.509 minutes N and 131º01.547 minutes W, southwest to 51º55.499 minutes N and 131º02.468 minutes W, then southeast to 51º52.493 minutes N and 130º57.907 minutes W, then south to 51º51.655 minutes N and 130º57.780 minutes W, the southeast to 51º50.395 minutes N and 130º56.561 minutes W, then northeast to 51º51.054 minutes N and 130º54.702 minutes W, then north to 51º53.826 minutes N and 130º55.640 minutes W, then northwest to 51º58.517 minutes N and 130º59.468 minutes W, and then west to 51º58.727 minutes N and 131º00.620 minutes W, and then following the southern shore of Kungit Island to the point of commencement. (National Marine Conservation Area)

4.3.4.8. 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 52º05.655’ N and 131º13.178’ W. (National Marine Conservation Area).

4.3.4.9. SGaan Kinglas: Bowie Seamount Protected Area – those waters of Areas 101 and 142 - has been established to conserve and protect the unique biodiversity and biological productivity of the area’s marine ecosystem. The MPA Regulations establish the outer boundary of the MPA as the area of the Pacific Ocean, which includes the Bowie, Hodgkins and Davidson Seamounts — consisting of the seabed, the subsoil and the water column above the seabed — that is bounded by a series of rhumb lines drawn from a point 53°03′07.6″ N, 135°50′25.9″ W, to a point 53°16′20.9″ N, 134°59′55.4″ W, then to a point 53°39′49.2″ N, 135°17′04.9″ W, then to a point 53°39′18.0″ N, 135°53′46.5″ W, then to a point 53°52′16.7″ N, 136°30′23.1″ W, then to a point 53°49′19.6″ N, 136°47′33.1″ W, then to a point 53°40′02.5″ N, 136°57′03.5″ W, then to a point 53°13′59.2″ N, 136°10′00.0″ W, then back to the point of commencement (National Marine Conservation Area).

4.3.5. Area 3

4.3.5.1. Nass River: Those waters of Subareas 3-12 and 3-18 will be closed February 1 to March 31 to avoid interaction with schooling adult Eulachon returning to spawn. This closure will be reviewed annually with industry and First Nations.. (Seasonal Eulachon)

4.3.6. Area 4

4.3.6.1. Prince Rupert Harbour: Subareas 4-10 and 4-11. Closed to the retention of Prawns at all times. (Conservation Prawns)

4.3.6.2. Those waters that include Subareas 4-15 and that portion of Subarea 4-12 in that lies south of a boundary formed by two submarine cables that cross Inverness Passage about 0.8 miles South East of Hicks Point, and then beginning 2 miles north of Hazel Point on Smith island and following the line of the two submarine cables that cross Marcus Passage and Malacca Passage, to the North end of Lawyer Island and the Ashore to Porcher Island one mile south of Hunter Point, will be closed February 15th to March 31st to help avoid the risk of interactions with Eulachon returning to spawn. (Seasonal Closure)

4.3.7. Area 9

4.3.7.1. SMA 9IN: Opens June 1 and remains open until December 31, or until the annual catch ceiling is attained. After January 1, if sufficient catch ceiling remains, Subareas 9-1 and 9-12 will remain open. Subareas 9-2 to 9-11will open under request with confirmation of observer coverage. (Seasonal Observer, see Section 2.3.4.4.)

4.3.8. Area 13

4.3.8.1. Discovery Passage: Subareas 13-3, 13-4, 13-5 and a portion of 13-6. Those waters of Discovery Passage bounded on the north by a straight line drawn true west from North Bluff on Quadra Island, across Seymour Narrows to a fishing boundary sign on Vancouver Island, and on the south by a line from the Cape Mudge light true west to Vancouver Island. (Marine Reserve)

4.3.8.2. Deepwater Bay: A portion of Subarea 13-7 inside a line from a fishing boundary sign at Separation Head to a fishing boundary sign at the north-westerly entrance to Deepwater Bay, salmon holding area. (Marine Reserve)

4.3.8.3. Kelsey Bay: Subarea 13-34. (Navigation)

4.3.9. Area 14

4.3.9.1. East of Hornby Islands: That portion of Subarea 14-6 that lies inside a boundary beginning at 49º 33.490’ N and 124º 29.230’ W, then southerly to 49º 32.701’ N and 124º 28.760’ W, then to 49º 31.657’ N and 124º 29.434’ W, then to 49º 31.663’ N and 124º 29.896’ W, then to 49º 32.651’ N and 124º 29.752’ W, then to 49º 33.340’ N and 124º 29.935’ W, then to 49º 33.498’ N and 124º 29.773’ W, then to the beginning point. [East of Hornby Islands] (Sponge Reef)

4.3.9.1. Parksville: Those portions of Subareas 14-2 and 14-3 that lie inside a boundary beginning at 49º 21.680’ N and 124º 19.762W, then southeasterly to 49º 21.514’ N and 124º 18.893’ W, then to 49º 21.191’ N and 124º 17.723’ W, then to 49º 21.064’ N and 124º 17.724’ W, then to 49º 20.725’ N and 124º 18.380’ W, then to 49º 21.432’ N and 124º 19.811’ W, then to the beginning point. [Parksville] (Sponge Reef)

4.3.9.2. Baynes Sound Closure: Those waters of Subareas 14-8 and 14-15 will be closed due to bycatch issues in this area. (Conservation Bycatch)

4.3.9.3. Upper Baynes Sound (Subarea 14-11) and Comox Harbour (Subarea 14-14). (Navigation)

4.3.10. Area 16

4.3.10.1. Bargain Bay (Subarea 16-3), Pender Harbour (Subarea 16-4) and Head of Sechelt Inlet (Subarea 16-5). (Navigation)

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

4.3.11. Area 17

4.3.11.1. Area 17 is closed year round to the retention of Prawn by shrimp trawl gear. (Conservation Prawns)

4.3.11.2. Ladysmith Harbour (Subarea 17-7) and Nanaimo Harbour (Subarea 17-14). (Navigation)

4.3.11.1. Gabriola Island: That portion of Subarea 17-11 that lies inside a boundary beginning at 49º 13.672’ N and 123º 47.577’ W, then southerly to 49º 13.235’ N and 123º 47.429’ W, then to 49º 13.185’ N and 123º 47.882’ W, then to 49º 13.391’ N and 123º 48.119’ W, then to 49º 13.623’ N and 123º 48.166’ W, then to the beginning point. (Sponge Reef)

4.3.11.2. Subarea 17-17 Pylades Channel. This Subarea is mainly a Humpback Shrimp area with very few pink shrimp or Sidestripe Shrimp and the populations have not been assessed. (New Emerging Fisheries Policy)

4.3.12. Area 18

4.3.12.1. Outer Gulf Islands 1: Those portions of Subareas 18-1 and 29-4 that lie inside a boundary beginning at the point begins at 48º 54.936’ N and 123º 19.589’ W, then southerly to 48º 54.283’ N and 123º 18.529’ W, then to 48º 54.114’ N and 123º 18.619’ W, then to 48º 54.065’ N and 123º 18.771’ W, then to 48º 54.787’ N and 123º 19.929’ W, then to 48º 54.902’ N and 123º 19.793’ W, then to the beginning point. (Sponge Reef)

4.3.12.2. Outer Gulf Islands 2: Those portions of Subareas 18-1 and 29-4 that lies inside a boundary beginning at the point 48° 52.588’N and 123° 15.261’ W, then easterly to 48° 52.520’ N and 123° 14.537’ W, then to 48° 51.971’ N and 123° 13.768’ W, then to 48° 51.795’ N and 123° 13.947’ W, then to 48° 52.150’ N and 123° 14.444’ W, then to 48° 52.038’ N and 123° 14.678’ W, then to 48° 52.479’ N and 123° 15.521’ W, then to the beginning point. (Sponge Reef)

4.3.12.3. Outer Gulf Islands 3: Those portions of Subareas 18-1 and 29-4 that lies inside a boundary beginning at the point 48° 51.602’ N and 123° 13.233’ W, then southerly to 48° 51.309’ N and 123° 12.751’ W, then to 48° 50.913’ N and 123° 12.938’ W, then to 48°

50.844’ N and 123° 13.059’ W, then to 48° 51.163’ N and 123° 13.662’ W, then to 48° 51.579’ N and 123° 13.378’ W, then to the beginning point. (Sponge Reef)

4.3.12.4. Outer Gulf Islands 4: Those portions of Subareas 18-1 and 29-4 that lies inside a boundary beginning at the point 48° 50.999’ N and 123° 12.391’ W, then southerly to 48° 50.608’ N and 123° 11.603’ W, then to 48° 50.097’ N and 123° 10.956’ W, then to 48° 49.959’ N and 123° 11.182’ W, then to 48° 50.857’ N and 123° 12.654’ W, then to 48° 50.959’ N and 123° 12.566’ W, then to the beginning point. (Sponge Reef)

4.3.12.5. Sansum Narrows, Burgoyne Bay and Maple Bay (Subarea 18-7), Cowichan Bay (Subarea 18-8) and Fulford Harbour (Subarea 18-10). (Navigation)

4.3.12.6. Satellite Channel: that portion of Subarea 18-6 found inside a line starting at 48°41.46'N latitude 123°29.48'W longitude, thence one nautical mile 60° true to 48°41.96'N latitude 123°28.178'W longitude, thence one nautical mile 330° true to 48°42.82'N latitude 123°28.92'W longitude, thence one nautical mile 240° true to 48°42.32'N latitude 123°30.23'W longitude, thence one nautical mile 150° true to the point of origin. (Ecological Reserve)

4.3.12.7. Saturna Island: Those portions of Subareas 18-5 and 18-11 off Saturna Island inside a line commencing on the shoreline of Saturna Island at 48°47.033'N and 123°03.550'W [North Boundary of East Point(shoreline)] northeasterly to a point in water at48°47.300'N and 123°03.000'W [Tumbo Channel], thence northeasterly to a point in water at 48°47.666'N and 123°02.416'W [Northwest Corner(Boiling Reef)],thence southeasterly to a point in water at 48°47.550'N and 123°02.000'W [Northeast Corner (Boiling Reef)], thence southwesterly to a point in water at48°46.933'N and 123°02.666'W [Boundary Pass], thence southwesterly to a point in water at 48°46.600'N and 123°03.166'W [Narvaez Bay Boundary Following the Traffic Separation Scheme(TSS)], thence southwesterly to a point in water at 48°46.450'N and 123°03.650'W [Narvaez Bay Boundary Following the TSS], thence southwesterly to a point in water at 48°46.300'N and 123°04.200'W [Southeast Corner (Narvaez Bay)], thence northwesterly to a point in water at 48°46.416'Nand 123°04.533'W [Southwest Corner (Narvaez Bay)], thence northeasterly to apoint along the shoreline of Saturna Island at 48°46.766'N and 123°03.916'W [South Boundary of East Point (shoreline)], and thence following the eastern shoreline back to the point of commencement. [Saturna Island Interim Sanctuary Zone]

4.3.12.8. Pender Island: That portion of Subarea 18-4 west of Pender Island inside a line commencing at a point in water at 48°44.166'N and 123°13.900'W [Southeast Boundary (Wallace Point)] due east to a point in water located at 48°44.166'N and 123°15.550'W [Southwest Boundary (Swanson Channel)], thence northwesterly to a point in water at 48°46.050'N and 123°19.516'W [Northwest Boundary (Swanson Channel)],thence due east to point in water at 48°46.050'N 123°18.383'W [Northeast Boundary (South of Thieves) Interim Sanctuary Zone]

4.3.13. Area 19

4.3.13.1. Victoria Harbour (Subarea 19-1) and Esquimalt Harbour (Subarea 19-2). (Navigation)

4.3.13.2. Sidney Spit Marine Park: Subarea 19-6. (Park)

4.3.13.3. Saanich Inlet: Subareas 19-7 to 19-12. (Conservation)

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

4.3.13.5. 10 Mile Point: Subareas 19-4 and 19-5. Those waters of within 0.4 nautical miles of Cadboro Pt. navigation light. (Marine Reserve)

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

4.3.14. Area 20 & 121

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

4.3.14.2. Port San Juan: Subareas 20-2) and Sooke Harbour and Basin (Subareas 20-6 and 20-7). (Navigation)

4.3.14.3. Swiftsure: Those portions of Subareas 121-1 and 121-2 inside a line commencing at a point in water located at 48°34.000'N and 125°06.000'W [Northwest Boundary] due east to a point in water located at 48°34.000'N and 124°54.200'W [Northeast Boundary], thence southeasterly to a point in water at 48°32.100'N and 124°49.518'W [Southeast Boundary], thence due west to point in water located at 48°32.100'N and 125°01.843'W [Southwest Boundary], and thence northwesterly back to the point of commencement. [Swifture Bank Interim Sanctuary Zone]

4.3.15. Area 23

4.3.15.1. Pacific Rim National Park, Broken Group Islands: Those waters of the Broken Group Islands in Barkley Sound within park boundaries as shown, since 1989, on Canadian Hydrographic Service Chart 3671. (Park)

4.3.15.2. Fishing Hazard Advisory – Areas 23 and 123. The NEPTUNE Canada Ocean Observatory is a scientific cabled ocean observatory that is installed on the seafloor off the West Coast of Vancouver Island by Oceans Network Canada. The Observatory consists of a ring of powered telecommunications cable laid on the seafloor down the centre of Alberni Inlet and Trevor Channel across the continental shelf and out to approximately 160 nautical miles offshore (2,500 meters water depth). For further information, see Appendix 11 Fishing Hazard Advisory – NEPTUNE Node, West Coast Vancouver Island or check the Neptune Internet site: www.neptunecanada.ca. (ONC Infrastructure 2017)

4.3.16. Area 24

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

4.3.17. Area 25

4.3.17.1. Subarea 25-16. (Navigation)

4.3.18. Areas 27 and 127

4.3.18.1. 27OFF: Open under request with confirmation of observer coverage. The intent is to document species composition of bycatch. (Seasonal Observer)

4.3.19. Area 28

4.3.19.1. Howe Sound - Defence Islands: That portion of Subarea 28-4 that lies inside a line beginning at 49° 34.102’ N and 123° 17.070’ W, then southerly to 49° 33.730N and 123° 16.562’ W, then to 49° 33.553’ N and 123° 16.462’ W, then to 49° 33.438’ N and 123° 16.750’ W, then to 49° 33.707’ N and 123° 17.201’ W, then to 49° 33.993’ N and 123° 17.391’ W, then to the beginning point. (Sponge Reef)

4.3.19.2. Howe Sound – Queen Charlotte Channel 1: Those portions of Subareas 28-2 and 29-3 that lie inside the boundaries of a point starting at 49° 21.486’ N and 123° 17.254’ W, then southerly to 49° 20.528’ N and 123° 17.690’ W, then to 49° 20.401’ N and 123° 17.956’ W, then to 49° 20.765’ N and 123° 18.794’ W, then to 49° 20.982’ N 123° 18.584’ W, then to 49° 21.098’ N and 123° 18.037’ W, then to 49° 21.501’ N and 123° 17.737’ W, then to the beginning point. (Sponge Reef)

4.3.19.3. Howe Sound - Queen Charlotte Channel 2: Those portions of Subareas 28-2 and 29-3 that lie inside the boundaries from a point beginning at 49°20.288’ N and 123°17.693’ W, then southeasterly to 49°20.225’ N and 123°17.501’ W, then to 49°19.993’ N and 123°17.377’ W, then to 49°19.802’ N and 123°17.444’ W, then to 49°19.720’ N and 123°17.840’ W, then to 49°19.937’ N and 123°18.107’ W, then to the beginning point. (Sponge Reef)

4.3.19.4. Howe Sound - Queen Charlotte Channel 3: Those portions of Subareas 28-2 and 29-3 that lie inside the boundary of a point beginning at 49°19.296’ N and 123°19.905’ W, then southerly to 49°19.918’ N and 123°19.847’ W, then to 49°19.307’ N and 123° 20.344’ W, then to 49°19.643’ N and 123°20.421’ W, then to 49°19.819’ N and 123°20.361’ W, then to 49°19.947’ N and 123°20.097’ W, then to the beginning point. (Sponge Reef)

4.3.19.5. Howe Sound - Queen Charlotte Channel 4: Those portions of Subarea 28-2 and 29-3 that lie within the boundary beginning at the point 49° 20.637’ N and 123° 19.162’ W, then easterly to 49° 20.577’ N and 123° 18.720’ W, then to 49° 20.441’N and 123° 18.637’ W, when to 49° 20.068’ N and 123° 18.818’ W, then to 49° 20.076’ N and 123° 19.135’ W, then to 49° 19.718’ N and 123° 19.188’ W, then to 49° 19.726’ N and 123° 19.514’ W, then to 49° 20.259’ N and 123° 19.828’ W, then to the beginning point. (Sponge Reef)

4.3.19.6. East Defence Islands That portion of Subarea 28-4 that lies inside a line that begins at 49° 34.731’ N, 123° 16.555’ W then northeast to 49° 34.848’ N, 123° 16.357’ W then northeast to 49° 34.854’ N, 123° 16.120’ W then southeast to 49° 34.580’ N, 123° 16.084’ W then southwest to 49° 34.535’ N, 123° 16.539’ W then to the beginning point. (Sponge Reef)

4.3.19.7. Anvil Island: That portion of Subarea 28-4 that lies inside a line that begins at 49° 32.874’ N, 123° 17.425’W then southeast to 49° 32.865’ N, 123° 16.815’ W then southwest to 49° 32.533’ N, 123° 16.869’ W then southwest to 49° 32.482’, 123° 17.118’ W then northwest to 49° 32.574’ N, 123° 17.483’ W then to the beginning point. (Sponge reef)

4.3.19.8. Lost Reef: That portion of Subarea 28-2 that lies inside a line that begins at 49° 29.799’ N, 123° 18.203’ W then northeast to 49° 29.935’ N, 123° 18.007’ W then southeast to 49° 29.882’ N, 123° 17.832’ W then southeast to 49°29.591’ N, 123° 17.519’ W then southwest to 49° 29.547’ N, 123° 17.941’ W then to the beginning point. (Sponge Reef)

4.3.19.9. Brunswick Point: That portion of Subarea 28-2 that lies inside a line that begins at 49° 28.577’ N, 123° 14.965’ W then southeast to 49° 28.434’ N, 123° 14.732’ W then southwest to 49° 28.177’ N, 123° 15.031’ W then northwest to 49° 28.397’ N, 123° 15.377’ W then to the beginning point. (Sponge Reef)

4.3.19.10. Lions Bay and Kelvin Grove: That portion of Subarea 28-2 that lies inside a line that begins at 49° 27.629’ N, 123° 15.761’ W then southeast to 49° 27.315’ N, 123° 14.516’ W then southwest to 49° 26.950’ N, 123° 14.595’ W then northwest to 49° 26.952’ N, 123° 15.046’ W then northwest to 49° 27.195’ N, 123° 15.655’ W then to the beginning point. (Sponge Reef)

4.3.19.11. Halkett Point: That portion of Subarea 28-2 that lies inside a line that begins at 49° 27.036‘ N, 123° 18.686‘ W then southeast to 49° 26.897’ N, 123° 18.444’ W then southwest to 49° 26.696’ N, 123° 18.578’ W then southwest to 49° 26.657’ N, 123° 18.776’ W then northwest to 49° 26.742’ N, 123° 18.984’ W then to the beginning point. (Sponge Reef)

4.3.19.12. Bowyer Island: That portion of Subarea 28-2 that lies inside a line that begins at 49° 24.774’ N, 123° 16.219’ W then northeast to 49° 24.820’ N, 123° 15.763’ W then southwest to 49° 24.096’ N, 123° 16.043’ W then northwest to 49° 24.389’ N, 123° 16.408’ W then to the beginning point. (Sponge Reef)

4.3.19.13. Dorman Point: That portion of Subarea 28-2 that lies inside a line that begins at 49° 22.577N, 123° 19.379’ W then southeast to 49° 22.543’ N, 123° 19.051’ W then southwest to 49° 22.287’ N, 123° 19.152’ W then northwest to 49° 22.351’ N, 123° 19.454’ W then to the beginning point. (Sponge Reef)

4.3.19.14. Horseshoe Bay: Subarea 28-2. Those waters bounded by a line commencing from Whytecliff Point, thence in a straight line to the most southerly point of Bowyer Island, thence in a straight line 120 true to the mainland. (Navigation)

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

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

4.3.19.17. Point Atkinson Reef: Subarea 28-6. Those waters bounded by a line commencing at the southwest entrance to Starboat Cove thence seaward in a southwest direction for 85 meters, thence westerly following the shoreline for 100 meters, thence in a northeast direction to a point on land. (Conservation)

4.3.19.18. Subareas 28-8 and 28-10. (Navigation)

4.3.19.19. Subareas 28-11 to 28-14. (Conservation)

4.3.20. Area 29

4.3.20.1. Halibut Bank: That portion of Subarea 29-2 that lies inside a boundary beginning at 49º 21.768' N and 123º 41.501' W, then southerly to 49º 21.174' N and 123º 40.045' W, then to 49º 20.961' N and 123º 40.139' W, then to 49º 20.803' N and 123º 39.860' W, then to 49º 20.565' N and 123º 40.182' W, then to 49º 21.610' N and 123º 41.843' W, then to 49º 21.673' N and 123º 42.643' W, then to 49º 21.895' N and 123º 43.908' W, then to 49º 22.174' N and 123º 44.748' W, then to 49º 22.555' N and 123º 44.456' W, then to 49º 22.188' N and 123º 42.167' W, then to the beginning point. (Sponge Reef)

4.3.20.2. Sechelt: That portion of Subarea 29-2 that lies inside a boundary beginning at 49º 25.948' N and 123º 48.889' W, then easterly to 49º 25.899' N and 123º 47.266' W, then to 49º 25.373' N and 123º 46.494' W, then to 49º 24.734' N and 123º 47.083' W, then to 49º 24.910' N and 123º 47.951' W, then to 49º 24.253' N and 123º 48.283' W, then to 49º 24.845' N and 123º 49.914' W, then to the beginning point. (Sponge Reef)

4.3.20.3. Foreslope Hills: That portion of Subarea 29-3 that lies inside a boundary beginning at a point at 49º 09.634' N and 123º 23.048'W, then southeasterly to 49º 09.389' N and 123º 22.622' W, then to 49º 09.187' N and 123º 22.587' W, then to 49º 09.211' N and 123º 23.567' W, then to 49º 09.646' N and 123º 23.543' W, then to the beginning point. (Sponge Reef)

4.3.20.4. Outer Gulf Islands 1: Those portions of Subarea 29-4 that lie inside a boundary beginning at the point begins at 48° 54.936' N and 123° 19.589' W, then southerly to 48° 54.283' N and 123° 18.529' W, then to 48° 54.114' N and 123° 18.619' W, then to 48° 54.065' N and 123° 18.771' W, then to 48° 54.787' N and 123° 19.929' W, then to 48° 54.902' N and 123° 19.793' W, then to the beginning point. (Sponge Reef)

4.3.20.5. Outer Gulf Islands 2: Those portions of Subarea 18-1 that lie inside a boundary beginning at the point 48° 52.588'N and 123° 15.261' W, then easterly to 48° 52.520' N and 123° 14.537' W, then to 48° 51.971' N and 123° 13.768' W, then to 48° 51.795' N and 123° 13.947' W, then to 48° 52.150' N and 123° 14.444' W, then to 48° 52.038' N and 123° 14.678' W, then to 48° 52.479' N and 123° 15.521' W, then to the beginning point. (Sponge Reef)

4.3.20.6. Outer Gulf Islands 3: Those portions of Subarea 18-1 that lie inside a boundary beginning at the point 48° 51.602' N and 123° 13.233' W, then southerly to 48° 51.309' N and 123° 12.751' W, then to 48° 50.913' N and 123° 12.938' W, then to 48° 50.844' N and 123° 13.059' W, then to 48° 51.163' N and 123° 13.662' W, then to 48° 51.579' N and 123° 13.378' W, then to the beginning point. (Sponge Reef)

4.3.20.7. Outer Gulf Islands 4: Those portions of Subarea 18-1 that lie inside a boundary beginning at the point 48° 50.999' N and 123° 12.391' W, then southerly to 48° 50.608' N

and 123° 11.603’ W, then to 48° 50.097’ N and 123° 10.956’ W, then to 48° 49.959’ N and 123° 11.182’ W, then to 48° 50.857’ N and 123° 12.654’ W, then to 48° 50.959’ N and 123° 12.566’ W, then to the beginning point. (Sponge Reef)

4.3.20.8. Subarea 29-5 is closed year round to the retention of prawn by shrimp trawl gear. (Conservation Prawns)

4.3.20.9. Subareas 29-7 to 29-10, 29-12 and those portions of Subareas 29-3, 29-4, and 29-6, shoreward of the 100 metre contour line as shown on charts 3463 and 3512, as published by the Canadian Hydrographic Service of Fisheries and Oceans Canada. (Conservation Crab)

4.3.20.10. Fishing Hazard Advisory - Subareas 29-6, 29-7. The Victoria Experimental Network under the Sea (VENUS) project includes a shallow water installation that may pose a hazard to trawl fishing (see Appendix 10 Fishing Hazard Advisory – VENUS Georgia Strait Node, Area 29). For further information, check the VENUS Internet site: www.venus.uvic.ca (ONC Infrastructure 2017)

5. LICENSING

National On-line Licensing System (NOLS) Client Support – Licensing Services

All fish harvesters/licence holders/vessel owners are now required to use the National Online Licensing System (NOLS) to view, pay for and print their commercial fishing licences, licence conditions and/or receipts.

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. DFO also provides client support and assistance on how to use the system via e-mail at fishing-peche@dfo-mpo.gc.ca or by calling toll-free at 1-877-535-7307. Telephone support is available Monday to Friday (excluding holidays) from 07:00 to 19:00 Eastern.

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

5.1. Licence Category

A shrimp trawl (category S) or communal commercial (category FS) licence is required to commercially harvest shrimp with trawl gear.

Category S licence eligibilities are limited entry and vessel based.

Category FS eligibilities are limited entry and party-based. A First Nation group is the licence eligibility holder, and the licence must be designated to a commercially registered fishing vessel that meets established length restrictions.

5.2. Licence Renewal Fees

In accordance with the Service Fees Act, annual licence renewal fees will be adjusted by the annual rate of inflation determined by the Consumer Price Index (CPI) published by Statistics Canada. The commercial Shrimp by Trawl (Category S) licence renewal fee may be found on the following

link: http://www.pac.dfo-mpo.gc.ca/fm-gp/licence-permis/renewalfees-fraisrenouvellement-eng.html

There is no annual licence renewal fee for communal commercial category FS licences.

5.3. Licence Issuance

Renewal of a category S licence and payment of the fee must be done on an annual basis to retain the privilege to be issued the licence in the future, regardless of whether or not fishing is carried out. Those category S licences not renewed by March 31, 2022 will cease and licence issuance requests will be unable to be considered in future. Prior to annual licence issuance of a communal commercial (FS) licence, licence eligibility holders are required to annually designate the fishing vessel to hold the licence. This must be done by navigating to the 'Submit a Request' menu selection within the National Online Licensing System (NOLS). Full instructions are available at: https://fishing-peche.dfo-mpo.gc.ca/.

Prior to annual licence issuance, vessel owners/licence eligibility holders are required to:

a) Meet any Ministerial conditions placed on the licence eligibility.

b) Ensure any conditions of the previous year's licence, such as submission and approval of logbooks have been met.

c) the designated vessel's overall length does not exceed the maximum vessel length of the category FS licence eligibility.

To avoid delays, please ensure the payment and vessel designation information is submitted all at the same time through the Pay Fees and Submit a Request menu selection within the NOLS, when renewing a communal commercial licence.

Licence Documents

Shrimp by trawl licence documents are valid from the date of issue until March 31, 2022.

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

Designation of Harvesters to Fish a Communal Commercial Licence

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

First Nations licence holders interested in obtaining an example template to use to designate their fish harvesters may contact a DFO Resource Manager (see Contacts in Appendix 3 of the Integrated Fisheries Management Plan for Shrimp by Trawl).

5.4. Fishery Monitoring Services to Fish Shrimp

Prior to fishing for shrimp by trawl, vessel masters must arrange for hail services and at-sea observer coverage to meet the notifications, catch verification, and catch sampling requirements outlined in the licence conditions for this fishery.

5.5. Vessel Replacement

The owner(s) of a category S licensed Shrimp by Trawl vessel may make an application to replace the commercial fishing vessel. Both the replacement vessel and the vessel being replaced must have a survey on file with the Pacific Fishery Licence Unit (PFLU) or submitted with the vessel replacement application. Vessel must be surveyed according to the Department guidelines.

Only one Shrimp by Trawl licence is allowed on a vessel at a time.

The replacement vessels may not exceed the overall length of the vessel being replaced.

Shrimp by Trawl licence eligibilities become permanently married to other vessel based licence eligibilities when combined on a vessel and may not be separated from those married licence eligibilities upon further vessel replacement requests.

Communal commercial licences are not eligible for vessel replacement as the licence eligibility is party based.

Temporary vessel replacements are allowed if the vessel has been declared a loss or the vessel is out of service due to an accident or unforeseen damage. Vessels that are in disrepair at the time of purchase, have engine problems, or have encountered delays in annual maintenance or rebuilding do not qualify for a temporary replacement.

Written confirmation from an insurance company, shipyard, or marine engineer explaining why the vessel is inoperative must be submitted to a Pacific Fishery Licence Unit when declaring the vessel a total loss.

Temporary replacement vessel may not exceed the overall vessel length plus 10 per cent of the Shrimp by Trawl trap vessel.

Should the Shrimp by Trawl licence eligibility be temporarily split from other licence eligibilities, the remaining eligibilities may not be placed on a third vessel.

For further information on vessel replacement policies, please contact the Department by telephone at 1-877-535-7307 or email at fishing-peche@dfo-mpo.gc.ca.

5.6. Schedule II Species

The commercial S licence includes harvest opportunities under specific gear requirements for the species listed in Schedule II - Part II of the *Pacific Fishery Regulations*. Refer to Part 2 of the conditions of shrimp trawl licence and the Pacific Region Integrated Fisheries Management Plans for Lingcod, Dogfish, Tuna, Skate, Sole, Flounder and Pacific Cod by Hook and Line (available from Pacific Fishery Licensing Units), for the conditions and guidelines for harvest of these species.

5.7. Conditions of Licence to Transport Fish

If catch is transferred from a licensed vessel to another vessel, the receiving vessel must have a commercial fishing licence or a transporting, category “D”, licence according to *Pacific Fishery Regulations,* Part II, Section 24. Part 3 of the shrimp trawl licence authorizes the vessel to transport fish other than fish caught by the licensed vessel. When product is transferred from one vessel to another vessel or a vehicle, that vessel or vehicle requires a provincial fish receiver licence. This licence is required for all types of vessels and vehicles, including aircraft. The licence may also be required for personal vehicles in some instances, when a vehicle is carrying the catch from more

than one vessel, even if the licence holder owns both vessels. Fish harvesters should contact AgriServiceBC at 1-888-221-7141. For more information see the website: http://www2.gov.bc.ca/gov/content/industry/agriculture-seafood/fisheries-and-aquaculture/seafood-industry-licensing

5.8. Fisher Identification Number (FIN)

Under the *Pacific Fishery Regulations*, any person over the age of sixteen engaged in commercial fishing, or on board a vessel being used in commercial fishing, must possess a Fisher's Registration Card (available from Pacific Fishery Licensing Units). DFO has introduced unique Fisher Identification Numbers (FIN) that will be assigned to all Pacific commercial fish harvesters. A FIN will be automatically generated for fisher harvesters when their new year's FRC licence is issued. Once a FIN has been assigned to a fisher, that individual will reference the FIN when identifying him or herself in subsequent business dealings with both the department and service contractors, completing the FIN field on logbooks, noting the FIN when hailing and landing catch, etc.

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

For further information, please contact a PFLU or a resource manager (see Appendix 3).

6. CONTROL AND MONITORING OF COMMERCIAL FISHING ACTIVITIES

To meet the conservation and sustainable fishing objectives in this fishery, a Shrimp Trawl Catch Monitoring Program has been developed to track commercial fishery landings and to monitor the status of SMA catch ceilings. The program has two main components: a "hailing" requirement including notification prior to fishing and prior to offloading, and a catch reporting requirement through harvest logbooks and fish slips with verification in the form of random dockside validation by a Department certified observer.

6.1. Notification Procedures

6.1.1. Notification Prior to Commencement of a Fishing Trip

The vessel master shall obtain a Fishing Hail Number 24 hours prior to leaving port and prior to commencing fishing by contacting 1-866-377-1400 between the hours of 08:30 to 16:30 h Monday to Friday only, and provide the following information (hereinafter referred to as a "Fishing Hail"):

a.) Vessel name and Vessel Registration Number (VRN #)
b.) Vessel master's name (first and last) and contact phone number
c.) Vessel's cellular or satellite phone number
d.) Gear type (beam or otter trawl)
e.) SMA or Subarea to be fished (note - one area only)
f.) Anticipated date and time that fishing will begin
g.) Anticipated number of fishing days for the trip
h.) Target shrimp species
i.) Product type (fresh, live, frozen at sea, etc.)
j.) Anticipated offload location and date

Alternatively, a Shrimp Fisher ID number may be issued in-season by the service provider to replace items (a) through (d) providing there is no change to the contact information provided at the start of the season. If there is a change in vessel masters, this information must be updated.

Upon completion of the notification, the vessel master (skipper) will receive a unique Fishing Hail Number.

Vessel masters must have available for inspection by Fisheries and Oceans Canada officers or fishery guardians their current Fishing Hail Number at all times during fishing or while shrimp are on board their vessel.

In all instances, it is the vessel master's responsibility to obtain a Fishing Hail Number prior to leaving the dock to go fishing. A Fishing Hail Number may be refused if the hail location is vague or misleading.

It is a Condition of Licence that vessels arrange for 100 percent at-sea observer coverage. This requirement may be waived at the time of Fishing Hail if the Department does not require an observer on board the vessel for that particular fishing trip. Deployments will follow DFO schedule.

The service provider is not responsible for notifying fish harvesters of existing or impending closures (See Section 4.1).

Vessel masters who are having difficulty dialling the toll free number using marine radio telephones in remote locations are advised to dial the operator and ask for assistance.

6.1.2. Notification of a Change in Fishing Area

If the SMA or target species to be fished is different from the original Fishing Hail, the vessel master shall contact (866) 377-1400 (08:30 to 16:30 hours, Monday to Friday only) to update the fishing hail record prior to fishing in the new SMA. This shall be done by quoting the original Fishing Hail Number for that trip and advising of the new SMA to be fished and the weight of each species of shrimp on board from each SMA fished prior to changing locations.

Changes to the anticipated number of fishing days (trip length), product type (fresh, live, frozen at sea, etc.) and/or landing port do not need to be re-hailed unless the SMA to be fished changes.

6.1.3. For Fishing Trips Longer Than Seven Days

If the fishing trip is longer than seven days (i.e. the landing date is more than seven days after the Fishing Hail), the vessel master shall contact (866) 377-1400 (08:30 to 16:30 hours, Monday to Friday only) and provide the following information every seven days:

a.) Fishing hail number which applies to the current fishing trip.
b.) SMA or Subarea in which fishing occurred.
c.) Total weight of each species of shrimp, on board the vessel from each SMA fished.

For example, if the fishing hail report is made on Monday, then an update of catch information is required every Monday for the duration of the fishing trip.

6.1.4. Notification Prior to Landing Catch

Prior to landing any catch at the end of a fishing trip, the vessel master shall obtain a Landing Hail Number by calling (866) 377-1200 (24 hours per day, seven days a week) or (866) 377-1400 (08:30

to 16:30 h, Monday to Friday only) and provide the following information (hereinafter referred to as a "Landing Hail"):

a.) Fishing hail number which applies to the current fishing trip.
b.) Vessel name and VRN #
c.) Vessel master's name
d.) Date fishing began
e.) Date and time of offloading
f.) Port and location of offloading
g.) Buyer
h.) SMA(s) or Subarea(s) in which fishing occurred
i.) Weight of each species* of shrimp on board from each SMA fished
j.) Total hours towed for each SMA fished

*Northern Pink Shrimp (*Pandalus borealis*) and Smooth Pink Shrimp (*Pandalus jordani*) may be reported as "pink shrimp."

Upon completion of the Landing Hail, the vessel master (skipper) will receive a unique Landing Hail Number.

The Landing Hail and Shrimp Trawl Harvest Logbook must be completed and account for all shrimp and incidental catch retained prior to any shrimp or incidental catch being offloaded from the vessel.

6.1.5. Cancellation of a Fishing Hail Number

Where a fishing hail number has been issued and no fishing occurs, the vessel master shall notify (866) 377-1200 (24 hours per day, seven days a week) or (866) 377-1400 (08:30 to 16:30 h, Monday to Friday only) to cancel the hail, i.e. specify that no fishing took place. No follow-up paperwork will be required by the vessel master.

Active hails that have not been cancelled are deemed to be late, and thereby not in compliance of the Conditions of Licence.

6.1.6. Marine Mammal Reporting

If a marine mammal becomes entangled in fishing gear, immediately log your coordinates and contact the Marine Mammal Incident Hotline 1-800-465-4336 of VHF channel 16 providing as much information as possible regarding species and gear type and a DFO representative will contact you. If a whale is entangled in fishing gear you may be asked to track the animal to aid in relocating the animal as an attempt may be made to rescue both the animal and fishing gear.

Reporting of all interactions with marine mammals, including collision and entanglement with fishing gear, to the Marine Mammal Incident Hotline 1-800-465-4336 is mandatory during all commercial fishing trips. In addition, the vessel master shall provide information regarding all interactions with marine mammals during fishing trips to an internet reporting site, by completing the DFO reporting form "MARINE MAMMAL INTERACTION FORM." The Marine Mammal Interaction Form shall be submitted as per the instructions provided on the form.

Note: The Marine Mammal Interaction Form is available from: https://dfo-mpo.gc.ca/species-especes/mammals-mammiferes/report-rapport/page01-eng.html

When reporting, provide the following information:

(a) the date, time and location of the incident;
(b) the species involved in the incident;
(c) the circumstances of the incident;
(d) the size and type of vehicle and, if applicable, the type of fishing gear involved in the incident;
(e) the weather and sea conditions at the time of the incident;
(f) the observed state of the individual after the incident; and
(g) the direction of travel of the individual after the incident, to the extent that it can be determined.
(h) pictures/video taken

6.1.7. New Licence Condition for Reporting Lost Fishing Gear

The licence holder shall report any lost fishing gear to Fisheries and Oceans Canada within 24 hours of landing by completing and submitting the Lost Fishing Gear form available online at http://www.dfo-mpo.gc.ca/fisheries-peches/reports-rapports/mobile-pac/index-eng.html

The licence holder/vessel master shall report the retrieval of any of their own previously reported lost gear to Fisheries and Oceans Canada within 24 hours of landing by completing and submitting the Retrieval of Previously Reported Fishing Gear form available online at http://www.dfo-mpo.gc.ca/fisheries-peches/reports-rapports/retrieval-pac-recuperation/index-eng.html

6.2. Dockside Validation for All Shrimp Harvested in SMAs 124OFF and 125OFF

A mandatory Dockside Validation Monitoring pilot program for all shrimp harvested within SMAs 124OFF and 125OFF will be in place for the 2021/22 season. At the time of completing the landing hail, vessels must arrange for mandatory dockside validation and monitoring of offloading by the DFO approved service provider for the fishery.

Under Section 47 of the *Fishery General Regulations*, the vessel master of the licensed vessel shall:

a.) Permit the observer to go on-board the vessel to perform the designated duties. This would include providing access to the vessel's fish holds, freezers, and other fish storage areas at any time during the landing.

b.) Allow the observer to inspect a hard copy of the Shrimp Trawl Harvest Logbook upon completion of each verification.

c.) Provide the observer with such assistance as is reasonably necessary to enable the observer to perform those duties.

Harvesters fishing within SMAs 124OFF and 125OFF must land their catches at one of the following approved designated landing ports; Ucluelet, Tofino, Zeballos, Gold River, Winter Harbour, or Coal Harbour.

Detailed data and reporting standards for the dockside validation program are outlined in Appendix 14: 2021/22 Shrimp Trawl Data and Reporting Standards.

6.3. Dockside Observations for Catch Verification

The service provider will conduct dockside observations for catch validation during 2021/22 to verify shrimp landing weights, species composition, and quality against hailed or otherwise

reported figures. Biological samples may also be requested for use in the stock assessment program. The program includes 20 random days defined as opportunities present themselves.

Under Section 47 of the *Fishery General Regulations*, the vessel master of the licensed vessel shall:

a.) Permit the observer to go on-board the vessel to perform the designated duties. This would include providing access to the vessel's fish holds, freezers, and other fish storage areas at any time during the landing.
b.) Allow the observer to inspect a hard copy of the Shrimp Trawl Harvest Logbook upon completion of each verification.
c.) Provide the observer with such assistance as is reasonably necessary to enable the observer to perform those duties.

6.4. Assistance to Observers

Under Section 46 of the *Fishery (General) Regulations*, the vessel owner or master of a fishing vessel shall, at the request of the Regional Director General, permit an observer to go on-board that vessel to perform the designated duties for the period of time specified and arrange for the embarkation or disembarkation of the observer, at such time and place as is specified. The vessel master shall provide all reasonable assistance to the observer, including:

a.) Providing a suitable work area, including a table and adequate lighting;
b.) Providing, at the request of the observer, information relating to any matter mentioned in subsection 61(2) of the *Fisheries Act*;
c.) Providing, at the request of the observer, the position of the vessel in latitude and longitude;
d.) Facilitating the sending and receiving of messages by means of the communications equipment on board the vessel;
e.) Giving access to all areas of the vessel involved in fishing, processing and storage operations;
f.) Permitting the taking of samples free of charge;
g.) Providing suitable storage facilities for samples;
h.) Assisting, at the request of the observer, in the examination and measurement of fishing gear on board the vessel;
i.) Permitting the taking of photographs of the fisheries operations, including fishing gear and equipment;
j.) Permitting the removal from the vessel of samples, records, photographs or film taken or made on board the vessel; and
k.) Where the observer is on board for more than four consecutive hours, providing food and accommodation equivalent to that provided to officers of the vessel.

Fishery closures will be implemented if the level of sampling and observer coverage required for the proper management and control of the fishery has not been achieved. Vessel owners or vessel masters that fail to comply with the request to take on board an observer are subject to prosecution under the *Fisheries Act*.

6.5. Catch Sampling Program

A Catch Sampling Program will be undertaken by dockside and at-sea observers or catch monitors to collect biological samples of shrimp for size and age analysis, and to assess the composition of the catch for both shrimp and non-target species. This information is necessary for the proper management of the fishery, and for the stock assessment program. Fishing closures will be implemented if the level of catch sampling coverage required by the Department has not been achieved.

Licence holders are responsible for arranging at-sea observer coverage. Within SMA 124OFF and 125OFF 100% at-sea observer coverage will be required to monitor all fishing activity. Within SMAs 23IN and 23OFF&21OFF licence holders must arrange for at-sea observer coverage on 25% of all fishing days. In addition, licence holders shall arrange for an additional 20 days of at-sea observer coverage to be available for deployment in other SMAs along the coast.

During the fishing season, vessel owners will be responsible for arranging at-sea observer coverage with a Fisheries and Oceans Canada certified observer. Observers will be distributed coast-wide to monitor catch onboard vessels and in some instances to collect biological information or samples.

Data bycatch summaries and trip reports from all at-sea observer trips must be provided to DFO within five (5) days following the completion of the fishing trip. The Department may implement in-season closures to the fishery if data delivery timelines are not met by the licence holders or service provider.

6.5.1. Selection of Vessels for Catch Sampling Program

During the course of the season, certified shrimp fishery observer coverage is required as part of the catch sampling program. Vessels will be selected for catch sampling depending on sampling requirements by area and time period. In SMA 124OFF and 125OFF 100% at-sea observer coverage is required. In SMAs 23IN and 23OFF&21OFF a minimum of 25% of all fishing days shall be monitored by at-sea observers. Twenty (20) additional days of observer coverage will be required in other areas of the coast. The actual days targeted for coverage will be determined in-season according to area fished, gear, fishing effort, month, and the need for biological samples.

It is a Condition of Licence that vessel masters arrange for observer coverage prior to leaving the dock to start fishing activities for every day of fishing activity. For vessels that are not deemed to require an observer on that particular trip, the service provider will issue an exemption at the time of hail-in. The shrimp information line will provide updates on the outstanding requirements for observer coverage in priority areas. Fishery closures will be implemented if the level of observer coverage required for the proper management of the fishery has not been achieved.

6.5.2. Shrimp Samples for Biological Sampling

Observers, catch monitors, or patrol vessels from Fisheries and Oceans Canada may also approach vessels, while at a dock or at-sea while fishing, to request samples of shrimp or to collect other catch information. Detailed information may be requested concerning the location, depth and area of catch, gear type, bycatch reduction devices, preferred cod end mesh size, bycatch species and marketing of the shrimp sampled. Fisheries and Oceans Canada, industry associations and the STSC ask for the co-operation of fish harvesters and processors in providing biological samples and other catch information. These samples will provide the information such as shrimp species in

the catch, strength of age classes, location of shrimp stocks, number of egg-bearing female shrimp, and preferred mesh size or gear.

6.6. Individual Vessel Eulachon Bycatch Limit

An individual vessel Eulachon bycatch limit pilot program for SMAs 124OFF and 125OFF will be implemented for the 2021/22 season. A maximum of 250 lb per year of Eulachon bycatch would be authorized under this pilot for each 'S' and 'FS' vessel fishing within SMAs 124OFF and 125OFF. Each vessel will have an individual vessel Eulachon bycatch limit listed on their licence conditions. Eulachon may not be retained. All eulachon bycatch must be discarded.

Vessels fishing within SMAs 124OFF and 125OFF will also require 100% at-sea observers on-board during all fishing operations. At-sea Observers will record and track total Eulachon catch for the vessel. Once a vessel reaches their individual vessel's limit, that vessel may no longer fish within SMAs 124OFF and 125OFF for the remainder of the licence year.

6.7. Shrimp Trawl Harvest Logbook Data

An important component of the stock assessment program is the information collected from the vessel master in the form of a Shrimp Trawl Harvest Logbook. In-season adjustments to catch ceilings rely on information collected from these logbooks. Vessel masters and processors are encouraged to submit logbook information early (e.g. following each trip), to ensure more timely analyses and assessments that may result in further fishing opportunities. Timely submission of logbooks is particularly important for assessing WCVI fishing opportunities.

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

To fulfil stock assessment objectives it is imperative that a very fine resolution of fishing location be reported in this fishery. The vessel master/licence holder is responsible for reporting latitude/longitude position on harvest logs in the "location" field for each "tow" undertaken.

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

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

Fisheries and Oceans Canada
Shellfish Data Unit
Pacific Biological Station
3190 Hammond Bay Road
Nanaimo, BC V9T 6N7

Tel: (250) 756-7022 or (250) 756-7306

As an alternative to logbook provision through a service provider, the vessel master/licence holder may provide a hard copy logbook in the same form and providing the same particulars as shown

in the logbook sample attached as Appendix 6: Example of Shrimp Trawl Log (Harvest Logbook) Record. The vessel master/licence holder must also provide an electronic copy of the harvest data, which is required to be a true and accurate transcription of the hard copy data, delivered to the Shellfish Data Unit on Shellfish Data Unit approved media. Submissions will remain the property of Fisheries and Oceans Canada. The electronic copy must be a database table of specific design created by Microsoft Access 2010 (or earlier version).

Contact the Shellfish Data Unit at the above address to obtain the requirements and acceptable data formats for supplying logbook and electronic data in a format that meets the Conditions of Licence. The paper copy of the logbook and the electronic data must be forwarded within 28 days following the end of each month in which fishing occurred. This information must be sent to the above address.

Catch information must be recorded in the Shrimp Trawl Harvest Logbook by midnight of the day of fishing. The logbook must be kept aboard the licensed vessel. Logbooks must be produced for examination on demand of a fishery officer, guardian, or a fishery observer designated under the *Fisheries Act*.

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

6.7.1. Gear Questionnaire

Gear information is collected on the harvest logbook sheets. A gear questionnaire may be filled out by an observer during catch verification or sampling. A gear questionnaire should be filled out and submitted for any significant change to the gear being used. A gear questionnaire may be included in the Shrimp Trawl Harvest Logbook or can be obtained from the Shellfish Data Unit by calling (250) 756-7306 or (250) 756-7022.

6.7.2. Submission and Release of Logbook Data

The vessel owner/licence holder of record reported with 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 logbook data to the reported vessel owner/licence holder and only upon written request.

6.7.3. Nil Report for Logbook - Licence Issued but not Fished

In the event that a licence is issued but not fished, the vessel owner/licence holder is responsible for submitting a Nil Report for the season. The Nil Report must be submitted prior to the issue of approval for licence renewal. One page from the logbook identifying the vessel, licence tab number, and the year with "Nil" entered in the body of the logbook and signed by the vessel owner/licence holder constitutes a Nil Report. The exception to the Nil Report requirement is when the licence issued is 'Option N – Schedule II fishing only'. A Nil Report for the 'Option N' licence is not required.

6.7.4. Confidentiality of Data

Harvest data, including fishing location data supplied through latitude/longitude coordinates, collected under the harvest logbooks for shellfish fisheries programs, are used by the Department in the proper assessment, management, and control of the fisheries. Upon receipt by the

Department of harvest data and/or fishing location information, supplied by the fish harvester in accordance with Conditions of Licence, Section 20(1)(b) of the *Access to Information Act* prevents the Department from disclosing to a third party, records containing financial, commercial, scientific or technical information that is confidential information. Further, Section 20(1)(c) of the *Act* prevents the Department from giving out information, the disclosure of which could reasonably be expected to prejudice the competitive position of the licence holder.

6.8. Fish Slips

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

Fisheries and Oceans Canada
Regional Data Unit
200 - 401 Burrard St.
Vancouver, BC V6C 3S4

Fish slip books may be purchased at the above address, or at most Fisheries and Oceans Canada offices. Phone (604) 666-2716.

6.9. Customs Requirements When Fishing Offshore

Fisheries and Oceans Canada cooperates with the Canadian Border Services Agency (CBSA) in the administration of programs under the *Coastal Fisheries Protection Act.* The Regulations covering the authority are under the *Oceans Act* and a result of Canada's being signatory to the 1982 UN Convention on the Law of the Sea.

Shrimp trawl vessels fishing more than 12 nm offshore should refer the specific memorandum outlining the requirements under D3-5-1 ISSN 2369-2391 August 4, 2015. Details and contact information for CBSA can be found at the website: http://www.cbsa-asfc.gc.ca/publications/dm-md/d3/d3-5-1-eng.pdf

6.10. Processing Requirements Prior to Export

A Safe Food for Canadians licence issued by the Canadian Food Inspection Agency may be required for activities conducted by fishers for export or interprovincial trade. As explained in Section 5.11 of "Food business activities that require a licence under the Safe Food for Canadians Regulations", a licence is required by fishers if you:

- Manufacture, process, treat, preserve or grade fish, and/or if you;
- Package and label fish (unless it is not consumer pre-packaged, and will be subsequently manufactured, processed, treated, preserved, graded, packaged or labelled by a licence holder in another province).

See CFIA web pages:
https://inspection.gc.ca/food/requirements-and-guidance/food-licences/food-business-activities/eng/1524074697160/1524074697425#a511

Glossary items: manufacture, process, treat, preserve or grade fish, package and label.

A licence is not required to conduct activities that are necessary to protect the fish you catch or harvest from contamination, damage and spoilage. These are handling practices associated with catching, harvesting, unloading, holding and moving fish. With respect to shrimp, this includes:

- freezing whole shrimp on a vessel
- holding fish in containers
- icing whole shrimp
- refrigerating
- rinsing whole shrimp

Information on the requirements for licensing under the Safe Food for Canadians Act and Regulations can be found at: https://inspection.gc.ca/eng/1297964599443/1297965645317

Information on exporting food from Canada can be found at:
https://inspection.gc.ca/food/exporting-food/eng/1323723342834/1323723662195

If you require a Safe Foods for Canadians Licence, please contact the CFIA. More information on the *Safe Food for Canadians Regulations* and licensing can be found on the CFIA website:
https://inspection.gc.ca/food/requirements-and-guidance/eng/1512149634601/1512149659119

To apply for a licence, please go to:
https://inspection.gc.ca/food/requirements-and-guidance/food-licences/eng/1523876882572/1523876882884

CFIA – Burnaby	CFIA – Victoria	CFIA - Parksville
150-3001 Wayburne Dr.	103 – 4475 Viewmont Ave.	457 E. Stanford Ave.
Burnaby, B.C.	Victoria, B.C	Parksville, B.C.
V5G 4W3	V8Z 6L8	V6P 1V7
(604) 666 9904	(250) 363 3618	(250) 248-4772

7. SELECTIVE FISHING PRACTICES

7.1. LED Lights

The vessel master shall ensure that vessels fishing for shrimp by trawl use footrope lighting devices (LEDs) on their trawl nets in all shrimp trawl management areas of the coast. At all times when the trawl net is in the water;

(a) the lighting devices must be operational;

(b) lighting devices are emitting a green colour;

(c) lighting devices are securely attached within 6 inches (15.24cm) of the forward leading edge of the bottom panel of trawl netting; and

(d) each trawl net has a minimum of five (5) lighting devices spaced 4 feet (1.22 m) apart in the central 16 feet (4.88 m) of each net.

7.2. Selectivity Devices

The shrimp trawl industry, through the STSC and with the support of industry associations and the Department, recommended that selectivity devices (also known as exclusion grates, excluders, soft mesh excluders or Bycatch Reduction Devices) be mandatory as a Condition of Licence. Fisheries and Oceans Canada commends the shrimp trawl industry's initiative in fishing selectively and taking active measures to reduce bycatch. Each trawl net used shall have an exclusion grate (or Nordmore grate) inserted into the forward end of the cod end of the trawl net at an angle so that it entirely blocks access to the cod end, except for the spaces between the bars. A maximum spacing of 31.75 mm (1.25 inches) on the rigid grate has been implemented as a Condition of Licence for all fishing areas other than 23OFF&21OFF, 124OFF, 125OFF, and 27OFF. Within SMA 23OFF&21OFF, 124OFF, 125OFF, and 27OFF the maximum spacing is 19 mm. The netting directly above the grate shall have a triangular opening (escape hole) the full width of the grate.

The shrimp trawl industry has undertaken directed studies and efforts to minimize Eulachon bycatch. Preliminary results from a twin trawl comparison study are encouraging and have led to an industry recommendation that a panel of plastic lattice be installed in all otter trawl nets beginning in 2001 to reduce the incidence of Eulachon and other bycatch. It is anticipated that bycatch of Eulachon will be reduced significantly and that fishing opportunities should be extended with the use of this material. The plastic lattice is similar to the material used in snow fencing. The plastic is rigid enough to maintain a minimum 4 cm square opening while being towed to allow small fish to escape. The lattice is available in four foot wide rolls and is inexpensive. A four foot by 12 foot (48 square feet) panel was tested during the twin trawl studies. Vessel masters already using this material are convinced of its capabilities in reducing bycatch of many species and have installed more than 4.4 square metres in their nets. The STSC has recommended that more than 4.4 square metres (48 square feet) be installed. Please contact the industry representatives to the STSC (see Appendix 3) for further information on installation and sources for this material.

7.3. Experimenting with Selectivity Devices

Beam trawl catch rates for Eulachon are lower than otter trawl Eulachon catch rates and various bycatch reduction devices and other modifications to gear may help avoid bycatch of species other than shrimp (Olsen et al 1999). Fish harvesters are encouraged to conduct formal experiments with various gear configurations and amended Conditions of Licence are defined to permit testing of different gear combinations. Experimentation with selectivity devices that differ from those described in the conditions of the shrimp trawl licence will be made possible through an application for amended Conditions of Licence of shrimp trawl licence or through a scientific licence.

Those fish harvesters wishing to experiment during open times may apply for amended Conditions of Licence to the shrimp trawl licence by submitting a proposal to the Shrimp Trawl Manager or Science Branch Advisor (see Appendix 3). The proposal shall include a description of the proposed experimental gear and will require that the vessel master agree to take an observer or catch monitor on board upon request from the Department while fishing under authority of the amended Conditions of Licence. Experimental testing should be structured and conducted such that the data or outcome of the experiment can be reviewed.

Prior to issuance, the vessel master must provide a letter from a catch monitoring service bureau to Fisheries Management personnel stating that arrangements for one day of certified shrimp

observer coverage have been made. This letter shall accompany the application for a renewal. Cost of observer coverage is the responsibility of the vessel owner.

Those fish harvesters wishing to experiment with selective fishing devices during closed times or interested in pursuing a special project or initiative concerning selective fishing, developing increased value to the fleet, new management approaches, fishing in unconventional time, area, etc., will be required to apply for a scientific licence. There is special consideration given to experimentation during close times as areas are allocated TACs. Prior to the Department issuing a scientific licence, the Selective Fishing subcommittee of the STSC will review the proposal and make a recommendation to the Department for the study to be undertaken under scientific licence. Exploratory or experimental projects or initiatives should be planned well in advance of proposed implementation so that effective planning and approval can take place. Full time observer or catch monitoring coverage will be required. The Department will approve the observer or catch monitor prior to issuance of a scientific licence. Costs of the observer coverage are the responsibility of the project proponents. It should be noted that all special projects will have to be evaluated for conflicts with recent court cases regarding the Minister's authority regarding use of fish. Catch that is a target species with catch ceilings defined will be accumulated against the current catch ceiling. Where no catch ceiling has been defined, the project will be assessed against the New Emerging Fisheries Policy, before approval of fishing activity.

7.4. Future Standards for Selectivity Devices

Future standards for selectivity devices will be determined in consultation with the Department and the Industry Caucus of the STSC. Those selectivity devices that are deemed acceptable and desirable will be defined as a Condition of Licence for fishing shrimp with trawl gear. Fish harvesters that have found experimental selectivity devices to be effective are advised to submit a report to the Department (See Resource Managers and Science contacts in Appendix 3) for consideration in developing standards. The report should provide details on testing of the device and demonstrate the value of the device as legitimate selectivity gear.

7.5. Selective Fishing Practices

Fish harvesters are asked to avoid areas where there is bycatch of those species not permitted to be retained by the conditions of the shrimp trawl licence.

The ongoing Catch Sampling Program will collect information for the evaluation of selective fishing practices. Anyone who would like to provide information or feedback on bycatch and selectivity devices should contact the Selective Fishing Subcommittee. Bycatch information collected through the Catch Sampling Program, and other directed studies, will be consolidated for review by the Selective Fishing Subcommittee and the STSC. The gear questionnaire included in the Shrimp Trawl Harvest Logbook is an important component of this study and fish harvesters are reminded to submit a completed questionnaire as part of the logbook Conditions of Licence. Results of the catch sampling program are available in the document: Estimated bycatch in the British Columbia shrimp trawl fishery (Olsen *et al*. 2000), for 1997, 1998 and 1999 is available from the Canadian Scientific Advice Secretariat at: http://www.isdm-gdsi.gc.ca/csas-sccs/applications/Publications/index-eng.asp

Based on a recommendation from the STSC, the use of mechanised devices (e.g. “smelt belts”) for the purposes of automatically separating bycatch from shrimp has been prohibited. Smelt belts can be described as on board bycatch-discarding machines that use a series of sandpaper belts to

separate small fishes, such as smelts, from shrimp. The texture and slope angle of the belt allows the fish to travel up the belt and be discarded overboard while shrimp, having a hard exoskeleton, do not adhere to the belt and roll to the bottom of the machine. Smelt belts come in different sizes and configurations, generally made of aluminium and powered by several small hydraulic motors, which turn the belts. Smelt belts are not to be confused with conveyor belts that are used simply to move shrimp on deck, or grading machines (series of slotted trays) used to grade shrimp into different sizes to maximize value, although they may be used in conjunction with grading machines. Smelt belts are not as commonly used in B.C., as they may be in other jurisdictions. In particular, the B.C. shrimp trawl industry does not support high bycatch of Eulachon and believes that allowing the use of these devices may overcome the usual incentives to avoid fishing in areas with high Eulachon bycatch.

The Shrimp Trawl Industry Caucus recommends that on-board shrimp sizing graders be allowed only with certain restrictions on mesh size and use of selectivity devices for shrimp size in the trawl. The shrimp industry supports and recommends that in-water shrimp sizing grates be installed in all nets to reduce the incidence of juveniles in the catch and improve market quality and value.

The shrimp industry supports responsible fishing practices, including the recommendation that larger, better quality and better-valued shrimp be targeted, and that juvenile shrimp be avoided. To reduce the incidence of fishing on undersize and unmarketable shrimp, minimum shrimp counts (i.e. a shrimp count per pound or per litre) are under consideration. The shrimp trawl industry representatives recommend the use of in-water shrimp sizing devices to reduce the incidence of small unmarketable shrimp and improve the value of the catch. The use and effectiveness of on-board graders and "pickers" will be evaluated and additional restrictions may be implemented in the future.

8. GENERAL INFORMATION

Commercial Vessels Engaged in First Nation's Food Fisheries

Commercial vessels participating in First Nations' food fisheries authorized under an Aboriginal communal licence are required to carry a letter of designation from the appropriate First Nation's Organization office and to follow the conditions of the communal licence. Fisheries and Oceans Canada must be notified 24 hours prior to fishing when commercial vessels are harvesting under authority of a communal licence. Notification to the Conservation & Protection field supervisor is a requirement of the individual communal licence.

Human Waste Containment on Commercial Vessels

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

tight-fitting lid. (Refer to Transport Canada's Regulations for Vessel Pollution and Dangerous Chemicals Regulations under the Canada Shipping Act):

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

APPENDIX 2: POST SEASON REVIEW (2019/20 SEASON)

1. CONSERVATION AND SUSTAINABILITY

Total Catch Reported By Shrimp Management Area

Preliminary Shrimp Trawl landings for the April 1, 2019 to March 31, 2020 season were 933.3 t (2,057,512 lb) coast-wide (Table 1). Final reported landings are expected to change slightly once the final outstanding logbook records are available.

Table 1: *2019/20 Shrimp Trawl landings as reported on logbooks in pounds by major shrimp area and SMA (* indicates less than 3 vessels reporting, @ indicates data withheld to meet confidential reporting standards) - data as of November 25, 2020.*

SMA Group	ShrimpArea	Pink Shrimp	Sidestripe	Spot Prawn	Humpback	Coonstripe
North Coast	10IN		*			
	3IN	14,655	20,604	*		
	5IN	*	*		*	
	6IN	*	*		*	
	8IN		*			
	9IN	*	*			
	PRD	72,221	61,045		5,316	
West Coast	23IN	*	*			
Vancouver Island	23OFF	1,603,670	@			
Southern Inside	12IN	171,491	33,888	@	21,021	5,399
Waters	12OUT	3,235	1,962	@	721	
	17	2,720	767	@	4,586	4,029
Total		1,884,574	130,692	70	32,748	9,428
Total All Areas	2,057,512					

The BC coast has been divided into 36 Shrimp Management Areas with catch ceilings defined for all SMAs with fishing opportunity and specific species catch ceilings defined when a species specific biomass can be defined from surveys.

At the start of the 2019/20 season ten SMAs were closed with no fishing opportunity (SMAs 14, 16, 18, 19, 124OFF, 125OFF, 23IN, 23OFF&21OFF, GSTE, and FR) due to low biomass estimates in the previous year. SMA QCSND remained closed due to concerns over eulachon interactions. SMA 126OFF has not been surveyed and has not been open in recent years. Following new biomass surveys in 2019 SMAs 23IN and 23OFF&21OFF opened to commercial harvest and SMAs 14, 16, FR and GSTE remained closed. Following the survey, SMA 12IN catch ceilings were increased. Landings by SMA and species as reported in logbook records as of November 25, 2020 are provided in Table 2. Landings may be updated should additional logbook data be delivered.

Table 2: *Shrimp trawl catch ceilings and landings for 2019/20 by SMA and species catch ceiling with landings in lb as reported in logbooks (*indicates landings are confidential - less than 3 vessels reporting).*

Shrimp Management Area	Species	Initial Catch Ceiling	Catch Ceiling Nov 15 or After Survey	Catch Ceiling After Survey	Landings	
North Coast		t	t	lb	lb	
10IN	All Species Combined	10	10	22,050	*	
2IN	All Species Combined	10	10	22,050		
3IN	All Except Sidestripes	13	13	28,660	14,660	
3IN	Sidestripes	14	14	31,526	20,604	
5IN	All Species Combined	10	10	22,050	*	
5OFF	All Species Combined	10	10	22,050		
6IN	All Species Combined	10	10	22,050	*	
6OFF	All Species Combined	25	25	55,120		
7IN	All Species Combined	10	10	22,050		
8IN	All Species Combined	10	10.0	22,050	*	
9IN	Sidestripes	16.5	16.5	36,376	*	
9IN	All Except Sidestripes	25.8	25.8	56,879	*	
DXE	All Species Combined	10	10	22,050		
PRD	Sidestripes	90.3	0	-	61,045	1
PRD	All Except Sidestripes	195.5	0	-	77,537	
QCI	All Species Combined	25	25	55,120		
QCSND	All Except Sidestripes			Closed		
QCSND	Sidestripes			Closed		
Total North Coast	All Species Combined	485.4	199.6	440,081	199,025	
South Coast						
11IN	All Species Combined	10	10	22,050		
124OFF	All Species Combined	0	0	Closed		
125OFF	All Species Combined	0	0	Closed		
126OFF	All Species Combined			Closed		
12OUT	All Other Species	4	4	8,818	3,958	
12OUT	Sidestripes	8	8	17,637	1,962	
20	All Species Combined	10	10	22,050		
23OFF	&21OFF Sidestripes	0	1.7	3,748	*	
23OFF	&21OFF All Execpt SS	0	2077.5	4,580,057	1,603,670	
24IN	All Species Combined	10	10	22,050		
25IN	All Species Combined	10	10	22,050		
26IN	All Species Combined	10	10	22,050		
27IN	All Species Combined	10	10	22,050		
27OFF	All Species Combined	25	25	55,120		
Total South Coast	All Species Combined	97.0	2,176.2	4,797,680.0	1,609,840	
Sothern Inside Waters						
12IN	All Except HB & SS	141.3	705.1	1,554,463	21,021	
12IN	Humpbacks	12.5	186.7	411,599	176,914	
12IN	Sidestripes	32.4	68.5	151,015	33,888	
14	Sidestripes	0	0	0		
14	All Except Sidestripes	0	0	0		
16	All Except Sidestripes	0	0	0		
16	Sidestripes	0	0	0		
17	All Species Combined	8	8	17,637	12,141	
18	18 & 19 Coonstripes Combined	0	0	0		
18	18 & 19 Pinks Combined	0	0	0		
18	18 & 19 Sidestripes Combined	0	0	0		
23IN	All Except Sidestripes	0	381.8	841,716		
23IN	Sidestripes	0	0.9	1,984		
FR	All Except Sidestripes	0	0	0		
FR	Sidestripes	0	0	0	*	
GSTE	Sidestripes	0	0	0	*	
GSTE	All Except Sidestripes	0	0	0		
Total S. Inside	All Species Combined	194.2	1,351.0	2,978,414	248,647	
	Total Coastwide	776.6	3,726.8	8,216,175	2,057,512	

See Notes: Landings Higher Than Catch Ceilings Following Surveys

The in-season catch estimates hailed by skippers (Shrimp Trawl Landings Quota Status Report) are provided by the service provider to the industry each week. These catch estimates are used to monitor the effort and in-season management actions are based on these numbers. As of April 3, 2020, the catch on the final 2019/20 Landings Quota Status Report was 2,078,163 lb; 1% higher than the logbooks as of November 25, 2020.

Random dockside observations are included in management measures as a means to monitor discrepancy between hailed catch and landings, however, scheduling observer deployment and difficulties in estimating total catch at the dock have resulted in few dockside observations. The budget for the dockside program is often used for at-sea observations to maintain coverage for priority areas. No dockside observations were conducted in 2019/20.

Changes to Catch Ceilings Following Surveys

Initial catch ceilings are defined following the Precautionary Approach (See IFMP Appendix 1 Section 2.4 Setting Catch Ceilings) and adjusted in-season if a survey provides a biomass estimate of shrimp by species. For offshore West Coast Vancouver Island (WCVI) areas 124OFF, 125OFF and SMA PRD if hailed catches in the previous year are low compared to catch ceilings – 30% of previous year's catch ceiling remaining – the areas may be open April 1 - called "early openings". These criteria were not met for 2019, since the previous surveys for WCVI SMAs indicated significant declines and the pink shrimp biomasses were in the Critical Zone so no early opening was defined. There was no early opening in SMA PRD since the last survey was in 2015.

The 2019 survey results for the nine SMAs surveyed by the regular DFO are summarized in the shrimp bulletins (124OFF, 125OFF, 23OFF&21OFF, 23IN, 12IN, 14, 16, FR and PRD). The bulletins can be requested from Resource Managers. The only SMA that had shrimp biomass above the Limit Reference Points was 12IN, and the catch ceilings were amended to be the highest ever. The lack of fishing opportunity was an issue for industry, and the BC Shrimp Trawlers Association decided to conduct an industry funded biomass survey in addition to the scheduled DFO surveys. The industry association decided upon SMA GSTE – the shrimp biomass in the 2018 survey was very close to the LRPs and on an increasing trend. Unfortunately, the biomasses for both pink and sidestripe resulting from the survey were below the Limit Reference Point, and no fishing opportunity was provided. The fishing opportunity in SMAs 23IN and 23OFF&21OFF resulting from the 2019 surveys was 92% of the overall fishing opportunity (3,422 t or 7.5 million lbs). This opportunity was made available on Aug 7, 2019 and a total of 1.6 million lbs were landed. Since most of the surveyed areas stayed closed, only 24% of the landings came from areas surveyed in-season.

The survey results indicated that the shrimp biomass was in the Critical Zone for Pink Shrimp in SMAs 124OFF, 125OFF, 16, and FR. Sidestripe shrimp were in the critical zone for SMA 14 and 16. Shrimp stocks were in the Healthy zone in SMA 12IN.

Table 3: *Shrimp biomass surveys in 2019/20 by SMA and species, changes to catch ceilings following surveys and stock status (Healthy, Cautious or Critical Zone) according to the Provisional Harvest Control Rules compliant with the Precautionary Approach (PA) and last survey year.*

Survey Date 2019	SMA Surveyed	Species	Change in Biomass Since Last Survey	PA Zone	Last Survey Year
May 1 to	124OFF	Smooth Pink	Increase	Critical	
May 14	125OFF	Smooth Pink	Increase	Critical	2018
	23OFF&21OFF	Smooth Pink	Increase	n/a	
	&23IN	Sidestripes	Decrease	n/a	
Jun 11 to 16	FR	Smooth Pink	Decrease	Critical	
		Spiny Pink	Increase	Critical	2018
		Sidestripes	Decrease	Cautious	
Jun 17 to 23	14	Smooth Pink	Increase	Healthy	2018
		Sidestripes	Decrease	Critical	
Jun 16 -17	16	Spiny Pink	Decrease	Critical	2018
		Smooth Pink	Decrease	Critical	
		Sidestripes	Decrease	Critical	
Sep 9 - 14	PRD	All Except Sidestripes	Decrease	Critical	2015
		Sidestripes	Decrease	Critical	
Sep 18 - 20	12IN	All Except Sidestripes & Humpback	Increase	Healthy	2015
		Humpback	Increase	n/a	
		Sidestripes	Increase	Healthy	
Jan 13-16	GSTE	Smooth Pink	n/a	Critical	2018
Industry		Sidestripes	n/a	Critical	

When surveys were conducted in 2019, continued decline or low biomasses in SMAs 124OFF and 125OFF pinks, FR Pink and Sidestripes, SMA 14 Sidestripes, and pink and Sidestripe shrimp in both SMA 16 and GSTE resulted in these areas remaining closed (Table 4). These areas will not open in 2020 until a stock assessment is completed and the shrimp biomass is determined to be above the Limit Reference Points for all species of shrimp.

Table 4. *Initial catch ceiling, catch ceiling after shrimp biomass surveys in 2018, changes to catch ceilings following surveys, landings and final closure dates (* indicates less than 3 vessels reporting landings – confidential).*

Survey Date 2019	SMA Surveyed	Species	Initial Catch Ceiling (t)	Change in Catch Ceiling (t)	Catch Ceiling After Survey (lb)	Landings (lb)	Final Closure Date
May 1 to	124OFF	All Species Combined	Closed				
May 14	125OFF	All Species Combined	Closed		Closed		
	23OFF&21OFF	All Except Sidestripes	Closed	2077.5	4,580,057	1,607,700	18-Sep-20
	Opened Aug 7	Sidestripes	Closed	1.7	3,748	267	18-Sep-20
	23IN	All Except Sidestripes	Closed	381.8	841,716	16,180	18-Sep-20
	Opened Aug 7	Sidestripes	Closed	0.9	1,984	65	18-Sep-20
Jun 11 to 16	FR	All Except Sidestripes	Closed				
		Sidestripes	Closed		Closed		
Jun 17 to 23	14	All Except Sidestripes	Closed				
		Sidestripes	Closed		Closed		
Jun 16 -17	16	All Except Sidestripes	Closed				
		Sidestripes	Closed		Closed		
Sep 9 - 14	PRD	All Except Sidestripes	195.5	-195.5		72,667	28-Oct-28
		Sidestripes	90.3	-90.3	Closed	63,700	28-Oct-20
Sep 18 - 20	12IN	All Except Sidestripes and Humpback	141.3	563.8	1,554,463	21,021	31-Mar-20
		Humpback	12.5	174.2	411,599	176,914	31-Mar-20
		Sidestripes	32.4	36.1	151,015	33,888	31-Mar-20

Following the WCVI stock assessments, the catch ceilings for SMA 23OFF&21OFF and 23IN were adjusted based on a fixed harvest rate. No reference points are currently in place for SMAs 23OFF&21OFF and 23IN .

Initial catch ceilings from biomass forecasts or from lowest previous catch ceilings in the last five stock assessments are defined to allow fishing opportunity before the surveys. Initial catch ceilings for six SMAs were defined based on the lowest catch ceiling determined from the last five stock assessments (PRD, 9IN, 12IN, 14, 16, and GSTE). There were continued decreases resulting from the 2019 survey information resulting in the decrease in the catch ceilings from the Initial Catch Ceilings for most of the areas surveyed. Low pink shrimp biomasses in 124OFF, 125OFF, 14, 16 FR and GSTE resulted in these areas not opening for 2019/20 even though a survey was conducted. Area 12IN opened June 1 based on the lowest catch ceiling in the last five surveys, then following the 2019 survey the catch ceilings were increased. It seems the conditions that decreased the Strait of Georgia shrimp stocks resulted in increases in the SMA 12IN shrimp stocks. Industry was interested in conducting a stock assessment and participated in a survey in SMA GSTE using a commercial vessel, Caligus, and a different net than normally used. The resulting biomass estimate showed stocks were below the Limit Reference Points and the area did not open. SMA PRD was opened June 1 (using a catch ceiling based on the lowest catch ceiling from the last 5 surveys). Following the 2019 survey, it was determined that shrimp biomasses in PRD were below the LRP so the area closed on September 18.

No survey was conducted in SMAs QCSND or 9IN since the DFO science vessel WE Ricker was retired in 2017 and no resources for a charter vessel were committed to these areas.

Landings Higher Than Catch Ceilings Following Surveys

Landings for the season were higher than the catch ceilings in the following SMAs:

Notes:

1. SMA PRD - there was no forecast biomass for PRD and the last survey was 2015. An attempted survey in 2017 failed due to vessel breakdown. The management decision rule for an area with no stock assessment is to use the lowest catch ceiling derived from a survey/stock assessment, so PRD was opened based on the catch ceiling for All Except Sidestripes following the 2015 survey and the Sidestripe catch ceiling for 2013. When the stock assessment bulletin was finalized, it was determined that the pink shrimp biomass was below the Limit Reference Point and in the Critical Zone so the area was closed on October 27 and the annual catch ceiling reduced to zero. The Sidestripe biomass was in the Cautious Zone, however, since the area was closed due to pink shrimp abundance there was no further fishing activity. The landings prior to October 27 results in the landings being higher than the catch ceiling...

Catch Ceilings With No In-season Survey

Catch ceilings for 20 SMAs were set based on a fixed 10 tonne, 25 tonne or long term average catch ceiling (these represented 39% of Initial Catch Ceilings and 26% of fishing opportunities after surveys for the coast). The catch ceilings in these areas were not reached and these areas stayed open until March 31. The landings for these arbitrary areas was 30% of the coast wide total landings.

Fishing Effort

The number of vessels active in the shrimp trawl fishery peaked in 1996 at 238. The number of shrimp trawl vessels active declined to 45 in 2014/15, then due to high shrimp biomass in the West Coast Vancouver Island areas, 20 otter trawl vessels returned to the fishery. The shrimp biomasses declined following the peak in 2016 and due to the many closed areas, the effort in 2019/20 was the lowest ever at 31 vessels out of a current 207 licensed vessels and 26 FS communal licences (Figure 1).



	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Otter		44	40	45	39	34	27	22	21	16	18	19	15	13	13	7	8	9	10	9	24	30	11	12	9
Beam		170	144	152	141	128	110	103	83	74	69	64	59	46	47	43	38	43	45	36	37	35	29	23	22
Unknown		21	3	2	1	3																			

Figure 1. *Number of Shrimp Trawl active vessels by gear type from logbook data by shrimp season 1996 to 2019.*

Once an area opens, any licensed vessel is allowed to fish until a catch ceiling for any one species is reached. The official catch record is the logbook and landings are 1% lower than the in-season skippers hailed catch estimates. The logbook records may be amended as more logbook data is received (two vessels logbooks are not in the logbook database).

The coast wide Total Allowable Catch (TAC) for all species combined was 933.2 t, lower than record 2014/15 TAC of 21,725 t (Figure 2). Landings of 390.6 t did not reach the TAC and were below average as a result of many of the preferred areas being closed due to low shrimp biomass.

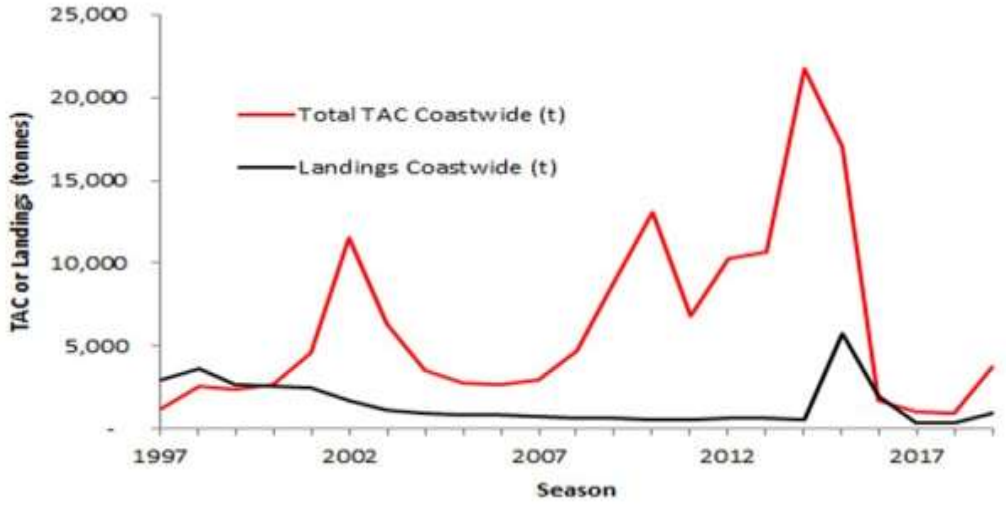


Figure 2. Shrimp Trawl Coastwide Total Allowable Catch (TAC) following surveys and landings *from logbooks for all species combined for shrimp seasons 1996 to 2018. Landings for 1996 are Jan 1, 1996 to Mar 31, 1997; 1997 to 2018 are shrimp season (Apr 1 to Mar 31).*

The effort measured in tow time is available from logbook records after the season is over. The total effort was 6,348 tow hours (Figure 3), just over half of the 11,773 tow hours in 2018/19.

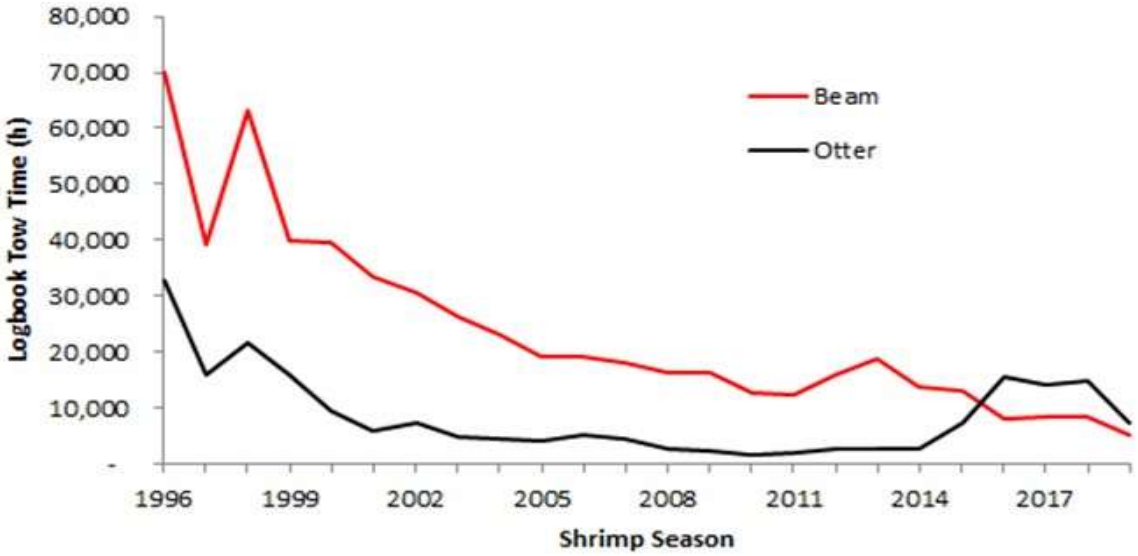


Figure 3*. Shrimp trawl effort as measured in total tow hours 1996 to 2019 for all SMAs in B.C.*

The effort measured in landings as recorded in logbooks for beam trawl vessels was 589,049 lb only slightly higher than the lowest seasonal landings for beam trawl last year of 439,673 lb (Figure 4). Landings for otter trawl vessels was 272,013 lb, 18% higher than in 2017. The low landings by otter trawl is due to the closure of offshore areas where landings by the larger otter trawl vessels typically have high catches when shrimp biomass was high. The slightly higher landings in 2018 is likely due to more small vessels using otter trawl gear.

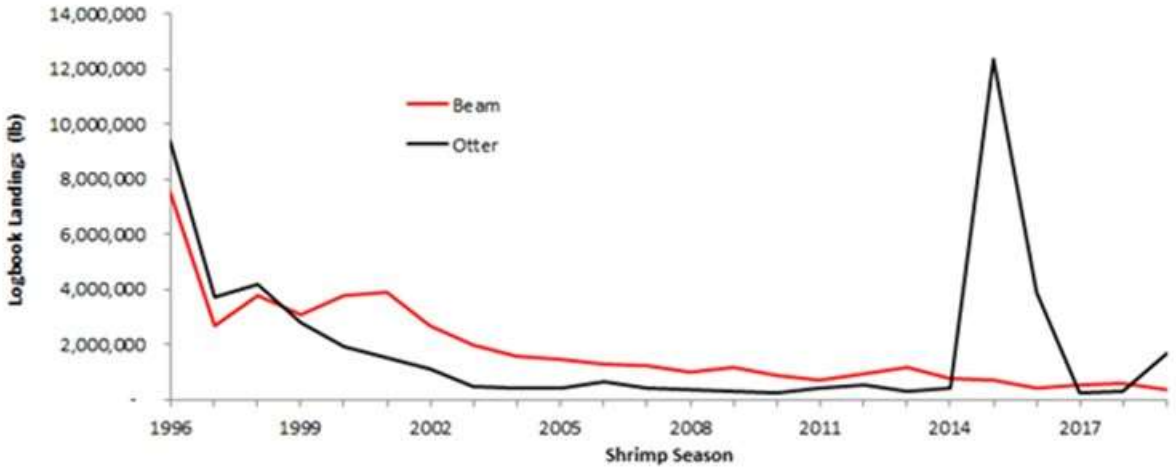


Figure 4. *Shrimp trawl effort as measured by logbook landings in lb for all SMAs in B.C. 1996 to 2018 Season. The 1996 season was Jan 1, 1996 to Mar 31, 1997- all other seasons were Apr 1 to Mar 31.*

Weekly Effort

Weekly effort varied from 2 to 17 vessels per week coastwise with the highest number of active vessels in the North Coast (Figure 5). A total of 31 vessels hailed to fish, with logbooks from two vessels still outstanding as of the time of this summary.

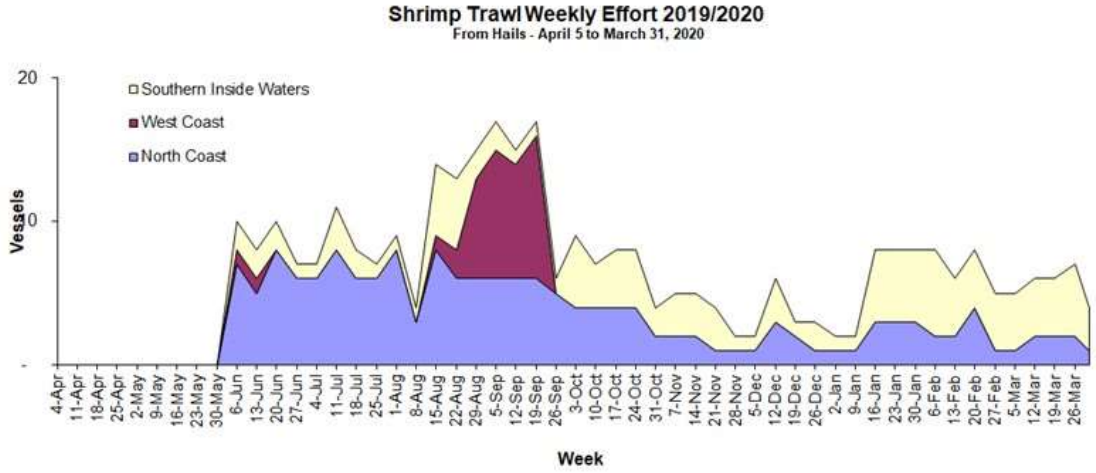


Figure 5. *Number of S licensed vessels active in the B.C. shrimp trawl fishery in 2019/20 on a weekly basis for major groups of SMAs.*

The West Coast Vancouver Island accounted for most of the landings (Figure 6). Although the areas were open, there was little to no activity in SMAS 2IN, 5IN, 5OFF, 6OFF, 7IN, 8IN, DXE, QCI, 10IN, 11IN, 20, 24IN, 25IN, 26IN, 27IN or 27OFF.

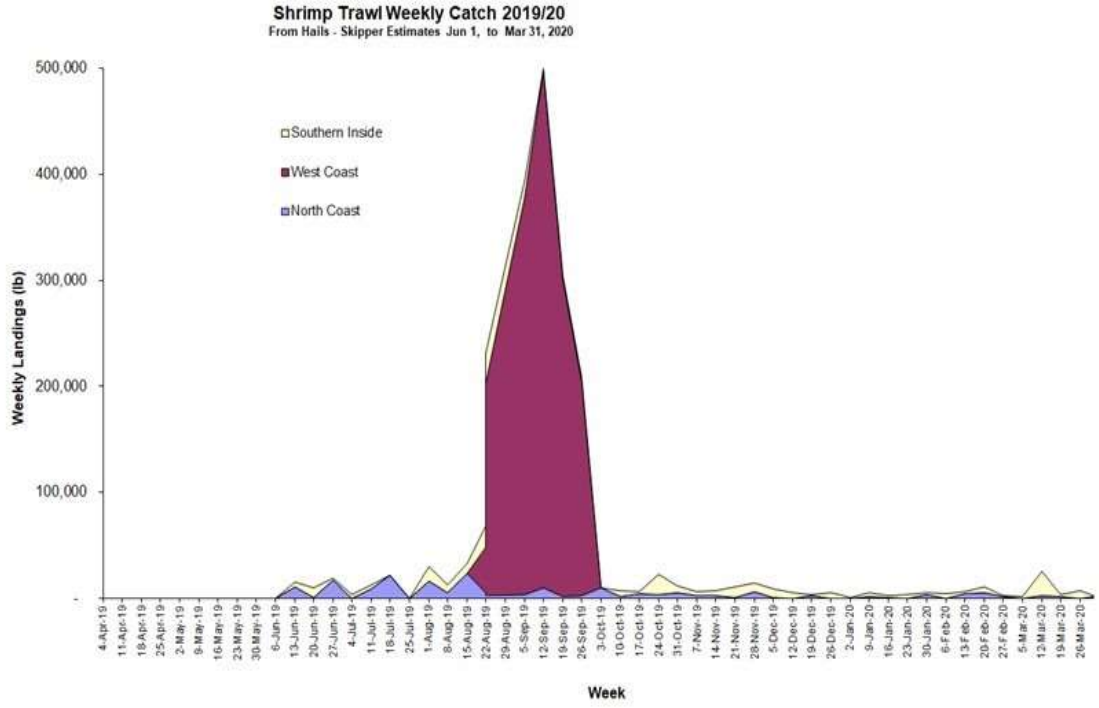


Figure 6. *Shrimp trawl weekly catch from skippers hailed estimates for 2019/20 for all areas June 1, 2019 to March 31, 2020 grouped by North Coast, WCVI and Southern Inside Waters SMAs.*

2. SOCIAL, CULTURAL AND ECONOMIC

The management of hails, landings, observer deployment, dockside observations, and logbook data entry was conducted by a service provider, Archipelago Marine Research Ltd. (AMR

The landed value of the 2109 shrimp trawl fishery was significantly lower than the previous years due to the reduced landings. No estimate of the landed value is available at this time. The shrimp species targeted in 2019/20 in the North Coast were the higher value Sidestripe Shrimp (as indicated by the landings of Sidestripe being higher than pink shrimp in SMA 3IN and PRD – Table 1). The low fishing opportunity in Southern SMAs South of Port Hardy required that shrimp markets that were traditionally supplied with fresh shrimp required frozen shrimp to be offered at places like Steveston. The shrimp from SMA 12IN supplied the local hand peeled market. Only SMA 17 was open in the Southern Inside Waters and landings were not sufficient to maintain the fresh shrimp market (approximately 12,000 lb).

3. COMPLIANCE

Shrimp trawl vessels encountered during regular patrols were monitored for compliance with licensing and conditions of licence as time and opportunities presented. The Air Surveillance Program identified shrimp trawl vessels actively fishing and these vessels were checked for active fishing hail numbers.

4. ECOSYSTEM

At-sea Observer Sampling Goals

Low eulachon returns to many of the rivers within British Columbia continues to be a concern. Priorities for the at-sea observer program for 2019/20 were defined as monitoring the interaction of vessels active in WCVI with eulachon and monitoring fishing in inside waters.

The 2019/20 season required 100% At-Sea Observer Coverage of all fishing activity in SMA 124OFF and 125OFF, however, these areas did not open due to low shrimp forecasts and very low biomass in the survey.

For SMAs 23OFF&21OFF and 23IN the coverage goal was 25% of all fishing days in these areas during the season.

An additional 20 at-sea observer days was required to be funded and arranged by licence holders for deployment in other SMAs on the coast during the fishing year.

At-sea Sampling Results

The offshore SMAs of 124OFF and 125OFF were not open due to low shrimp biomass, resulting in no at-sea observer coverage for these areas.

SMAs 23IN and 23OFF&21OFF stayed closed along with rest of WCVI until 2019 stock assessment was complete. Survey results based on a combined shrimp biomass for 23IN and 23OFF&21OFF showed the highest biomass ever (later a review of last year 2018/19 stock estimate was incorrect and the biomass was defined as again higher that it had ever been for this area). SMAs 23IN and 23OFF&21OFF opened with observers being deployed on approximately

every fourth trip for most vessels. These areas were closed September 18 when eulachon bycatch estimates indicated the Eulachon Action Level would be reached.

At-Sea Observers were also deployed in SMA 12IN late in the season to monitor interaction with eulachon.

The total landings observed in all at-sea observed trips (66.4 t or 146,475 lb) were 7.1% of the coast wide shrimp landings for 2019/20 (933.2 t or 2,057,297 lb). There were a total of 139 sets observed for a total of 159.6 tow hours (Table 6).

Table 6. *At-sea observer coverage in the B.C. shrimp trawl fishery in 2019/20 all sets observed.*

SMA	Vessels Observed	Sets	Tow hours
12IN	3	43	34.5
23OFF & 23IN	9	96	125.1
Totals	11 different vessels	139	159.6

Eulachon Bycatch Estimates WCVI

An Eulachon Action Level (EAL) for WCVI was defined to limit the eulachon bycatch. The EAL was 4 tonnes. The EAL is further divided as 2 t for 124OFF+125OFF and 2 t for 23IN+23OFF&21OFF.

There was no fishing and no eulachon bycatch occurred in SMAs 124OFF and 125OFF.

SMA 23OFF&21OFF was opened Aug 7 with 4.6 million lb pink shrimp catch ceiling. By Aug 22 - 2 otter boats were active and up to 10 vessels were active. Observers were deployed on Aug 28 – catch was already 250,000 lb with 9 boats active. Observer results received Sep 6 – eulachon bycatch low on two vessels observed. By Sep 12 results of observer coverage indicated that some sets had significant eulachon (up to 168 lb) indicating that the Eulachon Action Level for 23OFF&21OFF of 2 tonnes may be exceeded when the Pooled Eulachon to Shrimp ratio in observed sets was applied to the total catch (with 5% of catch observed). When more at-sea observer coverage was obtained, the eulachon bycatch estimate approached 4 tonnes and the decision to close the area was made Sep 16 – closing at midnight Sep 18. Final at-sea observer coverage was obtained on 8 of the 10 active vessels (96 sets 9% of effort – hails 1,624,212 lb).

Table 7. *At-sea observer coverage in the Shrimp Trawl fishery for WCVI SMAs for 2019/20.*

SMA	Gear	Vessels Observed	Sets Observed	Tow Hours	Eulachon kg	Shrimp kg	Total Catch kg	Eulachon/Shrimp Ratio
23OFF + 23IN	Otter	9 vessels	96	125.1	375.6	65,255	66,064	0.0058

The WCVI was closed Sep 18 at 23:59 hours and did not re-open based on eulachon bycatch EAL being reached for the WCVI – 4.0 tonne limit. Total hailed catch was 1.6 million lb of pink shrimp with 2.9 million lbs remaining. Pooled In-season eulachon bycatch estimate was 4.2 tonnes (Table 8). This estimate is conducted using the non-verified at-sea observer trip reports (as recorded in lb at sea). Changes to the eulachon to shrimp ratio may occur when the data has been proofed, verified and adjusted to kg in the ShrimpTrawlBio.mdb.

Table 8. *Pooled In Season Eulachon Bycatch estimated WCVI 2019/20.*

SMA	Trawl Type	Eu/Shr Ratio	Hailed Landings lb	Pooled In-Season Eulachon bycatch lb	
23IN	Beam	0.0016	*	*	
	Otter	0.0058	*	*	
23OFF	Beam	0.0016	-	-	
	Otter	0.0058	1,607,967	9,255.2	
21OFF	Beam	0.0016	-	-	
	Otter	0.0058	-	-	
23IN+23OFF+21OFF TOTAL			1,624,212	9,343.6	lb
				4.2	t

Eu/Shr Ratio	Sets	Source
0.0016	n=20	2018/19 23OFF B at-sea observer coverage
0.0058	n=96	2019 - 8 vessels 96 sets as of Sept 18 - 9% observed
*	hidden to meet confidentiality rules	

At-sea Observer Results for SMA 12IN

There are 20 days of observer program available for monitoring the shrimp trawl fishery, other than the WCVI. Observers were deployed in SMA 12IN and seven days of fishing were monitored for a total of 43 sets were observed (Table 8).

Table 8. *At-sea observer coverage in SMA 12IN in 2019/20.*

SMA	Vessels Observed	Dates	Subarea	Sets Observed	Tow hours	Total Catch lb	Eulachn lb	Shrimp lb
12IN	2 Beam, 1 Otter	Feb 7 to Mar 9	12-39	43	34.5	7148	0	2613

Exploratory Fishing or Scientific Studies

No applications were received or licences issued for any scientific studies or experimental investigations for 2019/20.

APPENDIX 3: DEPARTMENTAL AND INDUSTRY CONTACTS

Observe, Record, and Report (Enforcement Line)		(800) 465-4336
Fishery Notice Voice-information system		(604) 666-2828 or (866) 431-3474
Shrimp Information Line		(888) 978-7888
Fishery Notices online: http://notices.dfo-mpo.gc.ca/fns-sap/index-eng.cfm		

Resource Management

Regional Resource Manager - Invertebrates	Lisa Mijacika	(604) 666-3869
Lead Shrimp Trawl Resource Manager	Guy Parker	(250) 756-7163
Regional Recreational Fisheries Coordinator	Greg Hornby	(250) 286-5886

North Coast Area (Areas 1 through 10)		
417 2nd Avenue West		
Prince Rupert, B.C. V8J 1G8		
Resource Management Biologist, North/Central Coast	Coral Cargill	(250) 627-3021
Resource Manager - First Nations Fisheries	Amy Wakelin	(250) 627 3492

South Coast Area (Areas 11 through 27)	General Inquiries	(250) 756-7270
3225 Stephenson Point Road	Fax	(250) 756-7162
Nanaimo, B.C. V9T 1K3		
Program Coordinator	Beth Pechter	(250) 756-7268
Resource Management Biologist	Dan Clark	(250) 756-7327
Resource Manager - First Nations Fisheries	Jonathan Joe	(250) 756-7243
Resource Management Biologist – Prawn/Shrimp Trap	Laurie Convey	(250) 756-7233
Resource Manager - Recreational Fisheries	Erika Watkins	(250) 286-5882

Lower Fraser/Interior Area, Areas 28 and 29	General Inquiries	(604) 666-8266
Unit 3, 100 Annacis Parkway	Fax	(604) 666-7112
Delta, B.C. V3M 6A2		
Resource Manager – Non-salmon	Karen Vaudry	(778) 834-8127
Resource Manager - First Nations Fisheries	Brian Matts	(604) 666-2096
Resource Manager - Recreational Fisheries	Barbara Mueller	(604) 666-2370

Science Branch

Stock Assessment and Research (STaR) Division		
Pacific Biological Station	Andres Araujo	(250) 756-3367
3190 Hammond Bay Road	Fax	(250) 756-7138
Nanaimo, BC V9T 6N7		

Shellfish Data Unit email: DFO.PACSDU-UDMCPAC.MPO@dfo-mpo.gc.ca

Conservation and Protection

Compliance Plan	Eric Jean	(604) 892-3292

Commercial Fishing Licence Information

National On-line Licensing System (NOLS) Email: fishing-peche@dfo-mpo.gc.ca		(877) 535-7307

Fisheries Protection Program **(**866) 845-6776

Aboriginal Programs Directorate

Director	Duncan Stephen	(604) 666-6622

Aquaculture Management Division

Director	Tracey Sandgathe	(604) 666-7009

British Columbia Ministry of Agriculture, Food and Fisheries

Industry Specialist-Marine Fisheries Seafood Sector Development Branch	Darah Gibson	(250) 893-0260

Canadian Food Inspection Agency

Vancouver 400 - 4321 Still Creek Drive Burnaby, B.C. V5C 6S7	 Fax	(604) 666-6513 (604) 666-4440
Victoria 4475 Viewmont Ave. Victoria, B.C. V8Z 6L8		(250) 363-3455
Parksville 457 E. Stanford Ave. Parksville, BC V6P 1V7		(250) 248-4772

BC Shrimp Trawlers' Association

President Email: frozen_at_sea@telus.net	Phil Burgess	(250) 954-9312

Pacific Shrimp Harvesters Association

Executive Director/Advisor PO Box 144 Lantzville, BC V0R 2H0 Email: ddawson@pacseafood.com	Dave Dawson	(604) 726-0449

Shrimp Trawl Service Provider

Archipelago Marine Research Ltd. Catch Monitoring At-sea observer Coordinator Catch Monitoring Hails	www.archipelago.ca Jennifer Toole Ian Hamilton Matt Jessop	(250) 383-4535

SHRIMP TRAWL SECTORAL COMMITTEE

A consultative process exists for the shrimp by trawl fishery and is a major part of the planning for the fishery. The primary consultative body for shrimp by trawl is the Shrimp Trawl Sectoral Committee (STSC). This committee includes representatives from Fisheries and Oceans Canada, commercial licence holders, processors, First Nations, the Province of B.C., and others with an interest in the resource. The STSC meets annually to review and provide advice to the Department regarding management issues pertaining to the fishery and on the proposed management plan.

The STSC terms of reference and meeting calendar are available from the Resource Managers (see Contacts) or from the Department's consultation internet site at:
http://www.pac.dfo-mpo.gc.ca/consultation/shell-crust/stsc-cspcc/index-eng.html

The STSC was appointed in the fall of 2018 for a three-year term (fall 2018 – fall 2021).

Elected S Licensed Vessel Owner Representatives

Phil Burgess
Box 1022
Parksville, BC V9P 2H1
Tel: (250) 954-9312
Email: frozen_at_sea@telus.net

(Alternate)
To Be Determined

Vance Whyte
10305 Bishop Drive
Port Alberni, BC
Tel: (778) 421-2500
Email: mvnotorious@gmail.com

(Alternate)
To Be Determined

Troy Sawyer
P.O. Box 916, 1070 Cold Water Road
Parksville, BC V9P 2G9
Tel: (250) 616-1399
Email: offmyboat@gmail.com

(Alternate)
To Be Determined

Don Thompson
327 Dogwood Street
Parksville, BC V9P 1E1
Tel: (250) 954-7403
Email: oceanisle@telus.net

(Alternate)
To Be Determined

Bill Gilker
1301 Immanuel Street
Prince Rupert, BC V8J 3A4
Tel: (250) 624-6270
Email: bdgilker@citytel.net

(Alternate)
To Be Determined

Processor Representatives - Shrimp Trawl Sectoral

Bornstein Seafoods of Canada Ltd. 6 – 1025 Lee Rd., Parksville, BC V9P 2E1 Email: harry@pacificboatbrokers.com	Harry Mose	(250) 927-1545
Pacific Seafood Email: ddawson@pacseafood.com	Dave Dawson	(604) -726-0449
Hub City Fisheries 262 Southside Drive Nanaimo, BC V9R 6Z5 Email: rogerhubcityfisheries@shaw.ca	Roger Paquette	(250) 753-4135

APPENDIX 4: FISHING VESSEL SAFETY

1. OVERVIEW – FISHING VESSEL SAFETY

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

In the federal government, responsibility for shipping, navigation, and vessel safety regulations and inspections lies with TC; emergency response with the Canadian Coast Guard (CCG) and DFO has responsibility for management of the fisheries resources. The Transportation Safety Board is an independent agency that advances transportation safety by investigating selected occurrences in the air, marine, pipeline and rail modes of transportation including fishing vessel occurrences. In BC, WorkSafeBC exercises jurisdiction over workplace health and safety and conducts inspections on commercial fishing vessels in order to ascertain compliance with the Workers Compensation Act (WCA) and the Occupational Health and Safety Regulation (OHSR).

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

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

- Education and training programs
- Marine emergency duties training
- Fish Safe – Stability Education Program & 1 Day Stability Workshop
- Fish Safe – SVOP (Subsidized rate for BC commercial fishers provided)
- Fish Safe – *Safest Catch* program – **FREE** for BC commercial fishers
- Fish Safe *Safe At Sea* DVD Series – Fish Safe
- Fish Safe Stability Handbook – *Safe at Sea* and *Safest Catch* – DVD Series
- Fish Safe *Safest Catch* Log Book
- Fish Safe *Safety Quiz*
- First Aid training
- Radio Operators Course (Subsidized rate for BC commercial fishers provided)
- Fishing Masters Certificate training
- Small Vessel Operators Certificate training

Publications:

- *Gearing Up for Safety* - WorkSafeBC
- Transport Canada Publication TP 10038 Small Fishing Vessel Safety Manual (can be obtained at Transport Canada Offices from their website at: http://www.tc.gc.ca/eng/marinesafety/tp-tp10038-menu-548.htm
- Amendments to the Small Fishing Vessel Inspection Regulations (can be obtained from: http://www.gazette.gc.ca/rp-pr/p2/2016/2016-07-13/html/sor-dors163-eng.php)
- Safety Issues Investigation into Fishing Safety in Canada report can be accessed: https://www.tsb.gc.ca/eng/rapports-reports/marine/etudes-studies/M09Z0001/M09Z0001.html

For further information see: https://tc.canada.ca/en/marine-transportation
www.fishsafebc.com
www.worksafebc.com
www.tsb.gc.ca/eng/rapports-reports/marine/index.html

2. IMPORTANT PRIORITIES FOR VESSEL SAFETY

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

2.1. Fishing Vessel Stability

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

Fishing vessel owners are required to develop detailed instructions addressing the limits of stability for each of their vessels. These instructions must include detailed safe operation documentation kept on board the vessel.

In 2017, Transport Canada Marine Safety (TC) issued Ship Safety Bulletin (SSB) No. 03/2017 announcing the coming into force of the New Fishing Vessel Safety Regulations. The initial regulations were published in the Canada Gazette Part II on July 13, 2016 and came into force on July 13, 2017. The bulletin includes important information on changes to requirements for Written Safety Procedures, Safety Equipment and Vessel Stability.

As of July 13, 2017, new regulations pertaining to stability assessments to be performed by a competent person came into effect, as follows:

- A new fishing vessel that has a hull length of more than 9 m where the vessel construction was started or that a contract was signed for the construction after July 13, 2018;
- A fishing vessel more than 9 m and that has undergone a major modification or a change in activity that is likely to adversely affect its stability;
- A fishing vessel that is fitted with an anti-roll tank at any time;
- A fishing vessel more than 15 gross tonnage and used for catching herring or capelin during the period beginning on July 6, 1977 and ending on July 13, 2017
- For an existing fishing vessel that is not required to undergo a stability assessment, the owner shall be capable of demonstrating that their vessel has adequate stability to safely carry out the vessel's intended operations. Guidelines have been developed and are available online to help small fishing vessel owners and operators meet their regulatory requirements
- Two good resources can be found here: TP 15393 - Adequate stability and safety guidelines for fishing vessels (2018) and TP 15392 – Guidelines for fishing vessel major modification or a change in activity (2018)

Further, the new Regulation requires a "Stability Notice" to be developed after a stability assessment. This notice includes a simple diagrammatic of the vessel, its tanks and fish holds, or deck storage as the case may be. It is intended to assist fishing vessel crews in quickly determining the safe carriage limits of the vessel without having to reference a complicated Trim and Stability Book.

Additionally, Transport Canada published a Stability Questionnaire (SSB No. 04/2006) and Fishing Vessel Modifications Form (SSB No. 01/2008) which enable operators to identify the criteria which will trigger a stability assessment. Please contact the nearest Transport Canada office if you need to determine whether your vessel requires a stability assessment, or to receive guidance on obtaining a competent assessor.

In 2019, TC provided an updated SSB 03/2019, which sets out a voluntary record of modifications for the benefit of owners/masters of any fishing vessels. For vessels of more than 15 gross tons, the record of modifications was to be reviewed by TC inspectors during regular inspections and entered on the vessel's inspection record. However, information gathered during the Transportation Safety Board's (TSB) Safety Issues Investigation into the fishing industry showed minimal recording of vessel modifications prior to this date.

The TSB has investigated several fishing vessel accidents since 2005 and found a variety of factors that effected the vessel's stability were identified as contributing factors in vessels capsizing, such as with: M05W0110 - *Morning Sunrise*, M07M0088 - *Big Sisters*, M08W0189 - *Love and Anarchy*, M09L0074 – *Le Marsouin I*, M10M0014M - *Craig and Justin*, M12W0054 – *Jessie G*, - *Pacific Siren*, M14P0121 – *Five Star*, M15P0286 – *Caledonian*, M16A0140 – *C19496NB*, M17C0061 – *Emma Joan*, M17P0052 – *Miss Cory*, M18P0073 – *Western Commander* and M18A0425 – *Charlene A.*

Vessel masters are advised to carefully consider stability when transporting gear. Care must be given to the stowage and securing of all traps, cargo, skiffs, equipment, fuel

containers and supplies and also to correct ballasting. Know the limitations of your vessel; if you are unsure contact a reputable marine surveyor, naval architect or the local Transport Canada Marine Safety office.

WorkSafeBC's Occupational Health and Safety Regulations (OHSR) require owners of fishing vessels to provide documentation on board, readily accessible to crew members, which describes vessel characteristics, including stability.

Fish Safe has developed a code of best practices for the food and bait/roe herring fisheries and the prawn fishery: These Best Practices are available on Fish Safe's website for convenient download here: https://www.fishsafebc.com/best-practices Please contact Ryan Ford at Fish Safe for a copy of the program materials they developed to address safety and vessel stability in these fisheries. Ryan Ford – office: (604) 261261-9700 - Email: ryan@fishsafebc.com.

2.2. Emergency Drill Requirements

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

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

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

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

Between 2011 and 2015 the TSB investigated 17 fishing vessel accidents which resulted in 17 fatalities. The report's findings highlighted the lack of safety drills and safety procedures and practices. The *Safest Catch* program, delivered by Fish Safe and free to BC

commercial fishers, includes comprehensive practice of drills such as abandon ship, man overboard and firefighting drills.

2.3. Cold Water Immersion

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

Under the recently amended (June 2019) OHS Regulation, section 24.96.1, a crewmember must wear a PFD or lifejacket when on board a fishing vessel that has no deck or deck structure or when on the deck of a fishing vessel that has a deck or deck structure. The use of a PFD will prepare a crewmember to remain afloat, to survive the effects of cold shock, reduce the need to swim and give rescuers time to respond.

Section 8.26, which requires workers to wear a PFD or lifejacket when working "under conditions which involve a risk of drowning", would continue to apply to fishing crewmembers and other workers (e.g. when they are working on shore, docks and other vessels). The specific requirements can be found on WorkSafeBC's PFD Primer provided on Fish Safe's website here: https://www.fishsafebc.com/cold-water-survival

It has been demonstrated time and again that, when worn, PFD's save lives - and the chance of surviving a mishap increases significantly when these devices are worn while working on deck.

Resulting from the TSB investigations into the *Diane Louise* - M14P0110 and the *Caledonian* – M15P0286 fishing vessel accidents the Board recommended that both TC and WorkSafeBC require that persons wear a suitable personal flotation devices (PFDs) at all times when: on the deck of a commercial fishing vessel; or, when on board a commercial fishing vessel without a deck or deck structure, and ensure that programs are developed to confirm compliance.

2.4. Other Issues

2.4.1. Weather

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

2.4.2. Emergency Radio Procedures

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. The TSB notes that there have been several recent occurrences on board vessels not equipped with an EPIRB, and that were either unable or did not use any other means of emergency signaling distress (e.g. M14P0121, M14A0289, M150189, M16A0327, M18A0076, M18A0303, M18A0078, M18P0184, M19A0082, M19P0242, M20A0258, M20A0160) which resulted in 24 fatalities.

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

Since August 1, 2003 all commercial vessels greater than 8 metres in length are required to carry a Class D VHF Digital Selective Calling (DSC) radio. A registered DSC VHF radio has the capability to alert other DSC equipped vessels in your immediate area and MCTS that your vessel is in distress. Masters should be aware that they should register their DSC radios with Industry Canada to obtain a Marine Mobile Services Identity (MMSI) number or the automatic distress calling feature of the radio may not work. For further information see the Coast Guard website at: http://www.ccg-gcc.gc.ca/eng/CCG/Home or go directly to the Industry Canada web page: www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf01032.html

A DSC radio that is connected to a GPS unit will also automatically include your vessel's current position in the distress message. More detailed information on DSC can be found here: TC DSC Safety Bulletin. Questions regarding Coast Guard DSC capabilities can be obtained by contacting your local MCTS centre (Prince Rupert MCTS (250)627-3070 or Victoria MCTS (250)363-6333).

2.4.3. Collision Regulations

Fish harvesters must be knowledgeable of the *Collision Regulations* and the responsibilities between vessels where risk of collision exists. Navigation lights must be kept in good working order and must be displayed from sunset to sunrise and during all times of restricted visibility. To help reduce the potential for collision or close quarters

situations which may also result in the loss of fishing gear, fish harvesters are encouraged to monitor the appropriate local Vessel Traffic Services (VTS) VHF channel when travelling or fishing near shipping lanes or other areas frequented by large commercial vessels. Vessels required to participate in VTS include:

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

Exceptions include:

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

More detailed information on VTS can be obtained by calling either Prince Rupert MCTS (250)627-3070 or Victoria MCTS (250)363-6333 or from the Coast Guard website: MCTS Radio Aids to Marine Navigation Traffic.

2.4.4. Buddy System

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

3. WORKSAFEBC

WorkSafeBC exercises jurisdiction over workplace health and safety, including the activities of crews of fishing vessels. Commercial fishing, diving and other marine operations are subject to the provisions of the *Workers Compensation Act (WCA)* and requirements in Part 24 of the Occupational Health and Safety Regulation (OHSR). Examples of Part 24 regulatory requirements related to fishing include, but are not limited to, the requirement to establish emergency procedures, to conduct emergency drills, to provide immersion suits for the crew, to provide stability documentation for the vessel, safe work procedures, injury reporting, correction of unsafe working conditions, the requirement to wear personal floatation devices (PFDs), etc.

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

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

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

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

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

For further information, contact an Occupational Safety Officer:

Bruce Logan	Vancouver/ Richmond/Delta	(604) 244-6477
Mark Lunny	Courtenay	(250) 334-8732
Cody King	Courtenay	(250) 334-8733
Gregory Matthews	Courtenay	(250) 334-8734
Paul Matthews	Courtenay	(250) 334-8741
Jessie Kunce	Victoria	(250) 881-3461

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

For information on projects and initiatives related to commercial fishing health and safety please contact Tom Pawlowski, Manager, OHS Consultation and Education Services, at (604) 233-4062 or by email: tom.pawlowski@worksafebc.com or Tim Pryde, OHS Consultant at (604) 802-2954 or by email: mailto:tim.pryde@worksafebc.com.

4. FISH SAFE BC

Fish Safe encourages Vessel masters and crew to take ownership of fishing vessel safety. Through this industry driven and funded program Fish Safe provides fishing relevant tools and programs to assist fishers in this goal. The Fish Safe Stability Education Program and 1 Day Stability Workshop are available to all fishers who want to improve their understanding of stability and find practical application to their vessel's operation. The SVOP (Small Vessel Operator Proficiency) Course is designed to equip crew with the skills they need to safely navigate during their wheel watch. The *Safest Catch* Program, along with fisher-trained Safety Advisors, is designed to give fishers the tools they need to create a vessel specific safety management system.

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

Fish Safe is managed by Ryan Ford, Program Manager and support staff including John Krgovich, Program Coordinator, Stephanie Nguyen, Program Assistant, Rhoda Huey, Bookkeeper/Administrative Assistant, and an experienced team of fisher Safety Advisors. All activities and program development is directed by the Fish Safe Advisory Committee (membership is open to all interested in improving safety on board fishing vessels). The Advisory Committee meets two to three times annually to discuss safety issues and give direction to Fish Safe in the development of education and tools for fish harvesters.

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

Ryan Ford
Program Manager
Fish Safe
#100, 12051 Horseshoe Way
Richmond, BC V7A 4V4

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

5. TRANSPORTATION SAFETY BOARD

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

In 2014 the TSB pacific region released three investigation reports:

- the collision between trawl fishing vessel *Viking Storm* and US long line fishing vessel *Maverick* and the subsequent fatality,

- the person over board off the prawn fishing vessel *Diane Louise* and the subsequent fatality, and
- the capsizing of the crab fishing vessel *Five Star* and subsequent fatality.

In 2016 the TSB pacific region released one investigation report:

- the capsizing of the trawl *Caledonian* and subsequent fatalities.

In 2018 the TSB pacific region released two investigation reports:

- the capsizing and sinking of the *Miss Cory* and subsequent fatality
- the sinking of the *Western Commander* and loss of life

In 2020 the TSB pacific region is currently investigating the fatal accident involving the *Arctic Fox II* on August 11.

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

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

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

The other two recommendations address the most basic step that harvesters can take: wearing a personal flotation device. Here in British Columbia, roughly 70 percent of all fishing-related fatalities in the past decade came while not wearing a PFD. Yet many harvesters still do not wear them. TC regulations currently require that PFDs be worn only if harvesters identify a risk, however; you never know when you could end up in the water. So the TSB is recommending to TC to require persons to wear suitable personal flotation devices at all times when on the deck of a commercial fishing vessel or when on board a commercial fishing vessel without a deck or deck structure and that programs are developed to confirm compliance. In June 2019, WorksafeBC amended its fishing regulation related to the use of PFDs. Under the amendments, crewmembers must wear a PFD or lifejacket when on board a fishing vessel that has no deck or deck structure, or when on the deck of a fishing vessel that has a deck or deck structure. Crewmembers are not required to wear lifejackets or PFDs below deck or when inside a deck structure where there is risk of entrapment. This amendment removes the need for a risk of drowning to be present before a PFD must be worn.

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

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

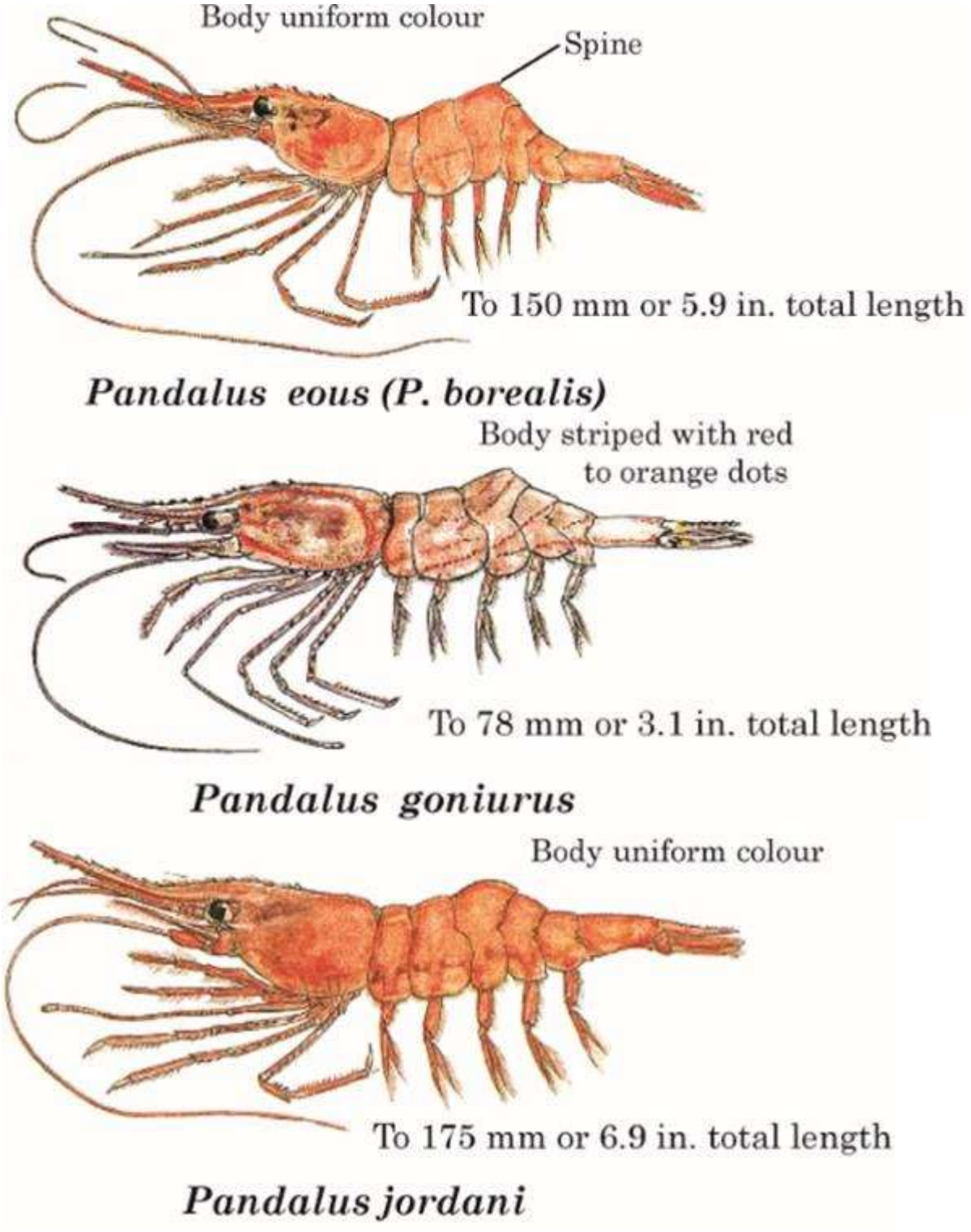
To view information on the TSB's recent safety Watchlist, visit: http://www.bst-tsb.gc.ca/eng/surveillance-watchlist/marine/2018/marine.html

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

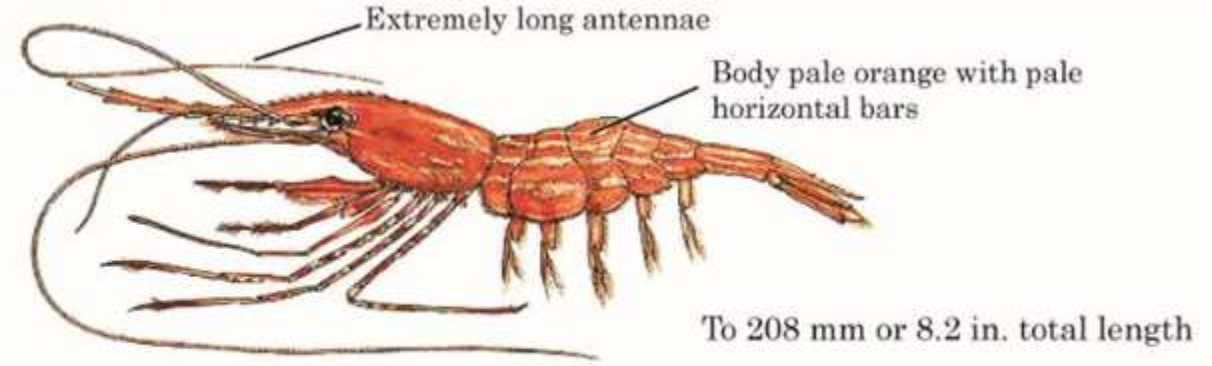
Recently the TSB produced a Safe at Sea: Activity book on fishing safety intended for the next generation of fish harvesters (ages 4-7). Download a copy.
www.tsb.gc.ca › eng › medias-media › prudence-safe › safe-at-sea

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

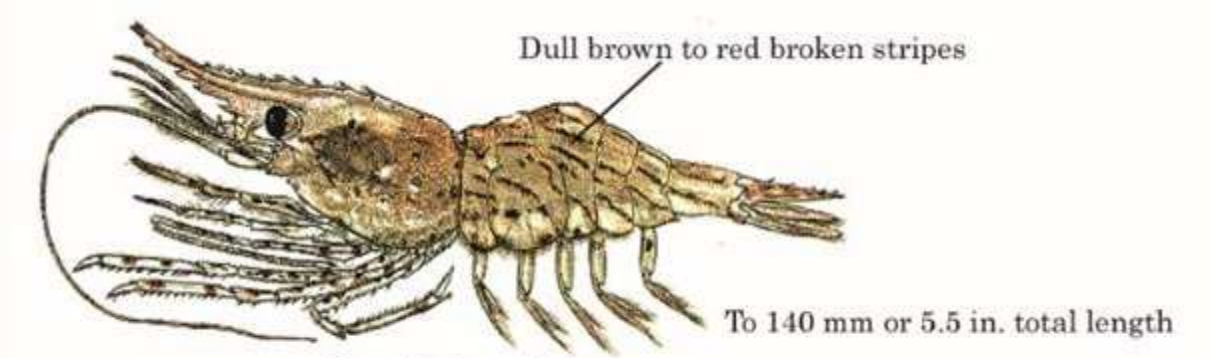
APPENDIX 5: IDENTIFICATION OF COMMERCIAL SHRIMP SPECIES



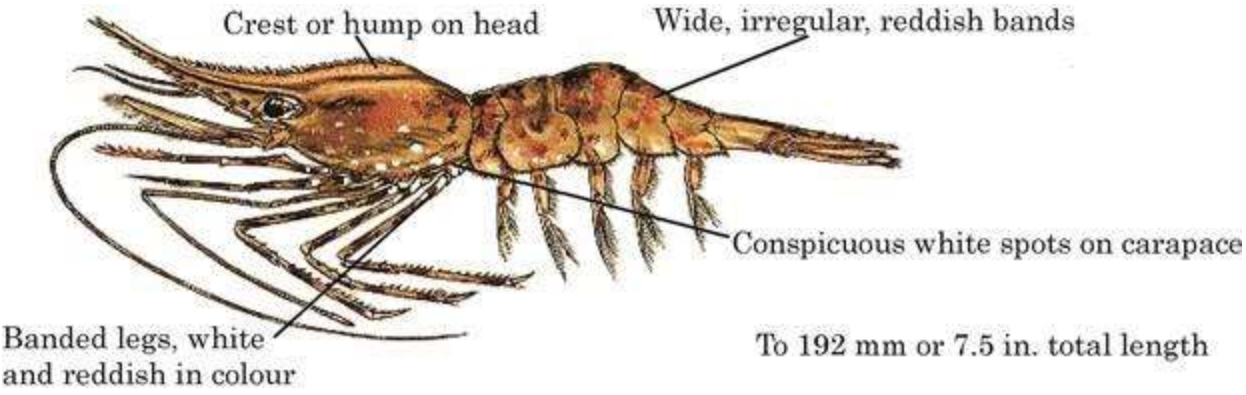
Pink Shrimp – Spiny, Flexed and Smooth



Pandalopsis dispar
Sidestripe Shrimp



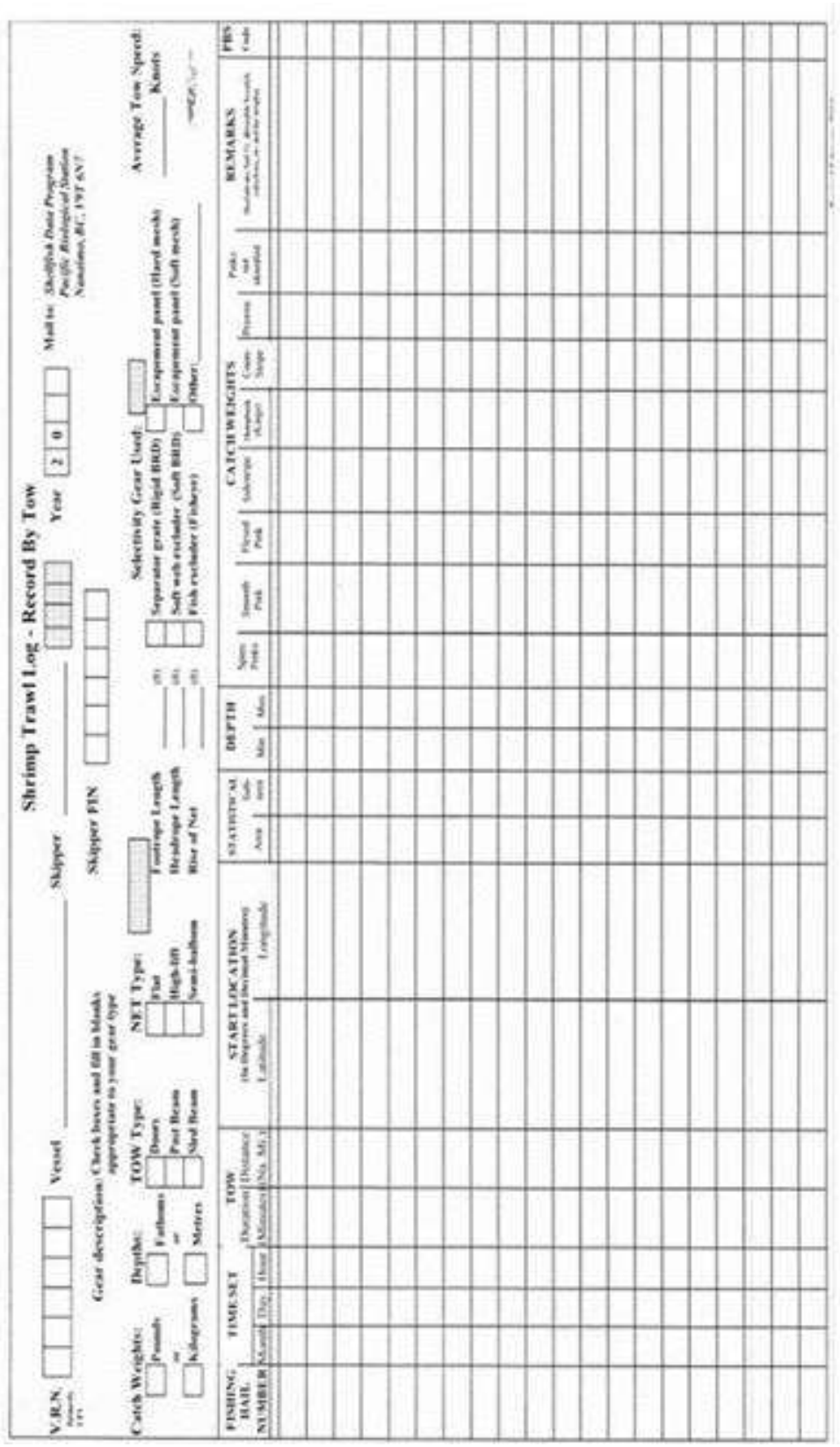
Pandalus danae
Coonstripe Shrimp (Dock)



Pandalus hypsinotus
Humpback Shrimp (King)

Illustrations by A. Denbigh
Graphic Design by T. Boxwell and R. Harbo.

APPENDIX 6: EXAMPLE OF SHRIMP TRAWL LOG (HARVEST LOGBOOK) RECORD



Shrimp Trawl Log - Record By Tow

V.R.N. | Vessel | Skipper | Year 2 0 | Mail to: Shellfish Data Program, Pacific Biological Station, Nanaimo, BC, V9T 6N7

Gear description: Check boxes and fill in blanks appropriate to your gear type

Skipper FIN

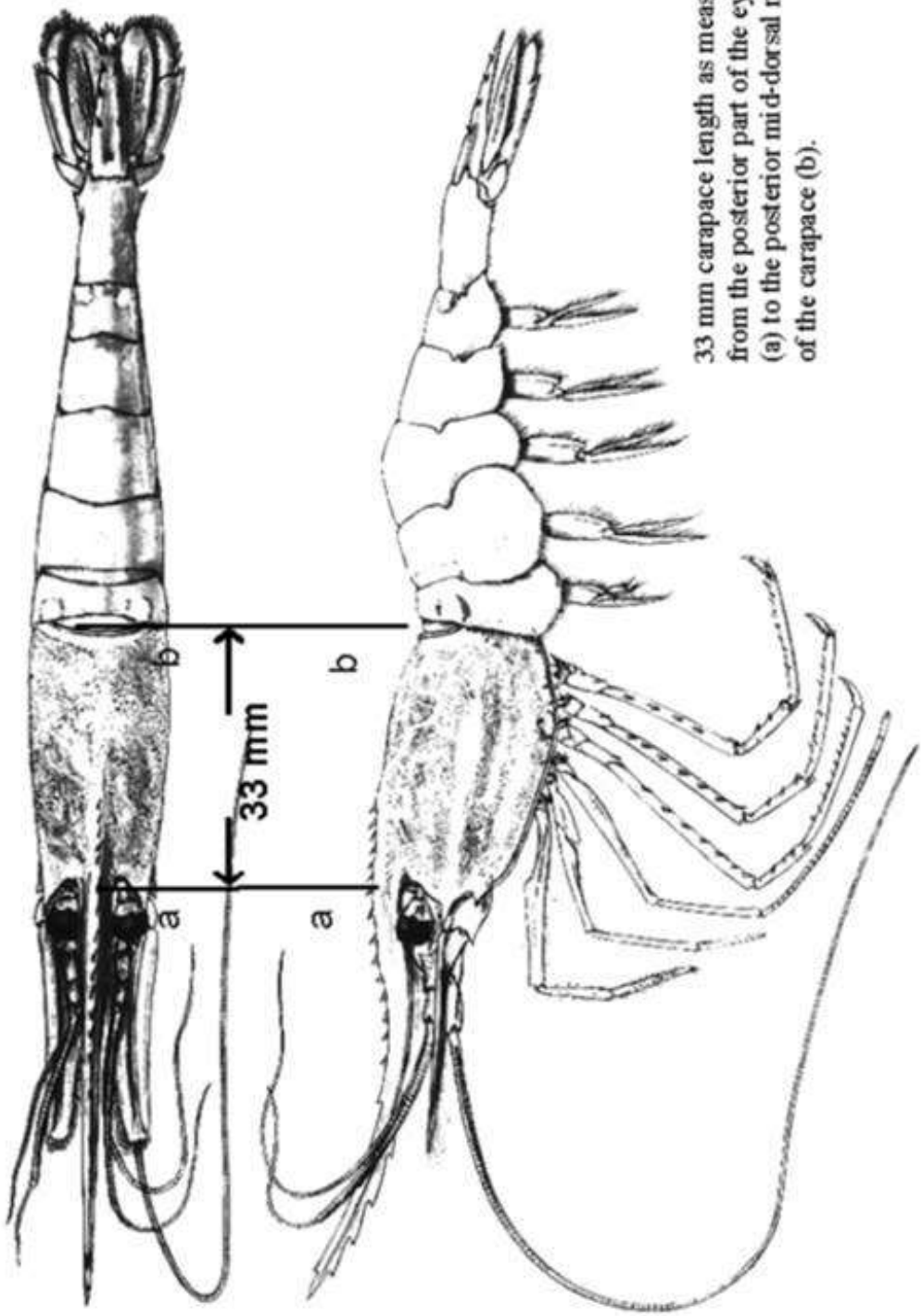
Catch Weights: Pounds or Kilograms | Depths: Fathoms or Metres | TOW Type: Otter / Post Beam / Sled Beam | NET Type: Flat / High-lift / Semi-balloon | Footrope Length | Headrope Length | Size of Net

Selectivity Gear Used: Separator grate (Rigid BRD) / Soft-web excluder (Soft BRD) / Fish excluder (Fisheye) | Escapement panel (Hard mesh) / Escapement panel (Soft mesh) / Other

Average Tow Speed: Knots

FISHING HAUL NUMBER	TIMESET Month	Day	Hour	TOW Duration (Minutes)	TOW Distance (Nautical Miles)	START LOCATION (in Degrees and Decimal Minutes) Latitude	Longitude	STATISTICAL Area	Sub-area	DEPTH Min	Max	Spiny Pinks	Smooth Pink	Flyted Pink	CATCH WEIGHTS Sidewipe	Headrope Halibut	Cross-Slope	Prawns	Pinks not identified	REMARKS	PBS Code

APPENDIX 7: PRAWN MINIMUM SIZE LIMIT



APPENDIX 8: LOCATIONS OF GLASS SPONGE REEFS IN HECATE STRAIT AND QUEEN CHARLOTTE SOUND

The Hecate Strait and Queen Charlotte Sound Glass Sponge Reefs Marine Protected Area (Hecate MPA) was designated under the *Oceans Act* in February 2017 to conserve the biological diversity, structural habitat and ecosystem function of the glass sponge reefs. The Hecate MPA is located in the Northern Shelf Bioregion of the Pacific Region southeast of Haida Gwaii, North and South of the entrance to the Douglas Channel, covering an area of approximately 2,410 square kilometers. The Hecate MPA Regulations are available online at: http://www.dfo-mpo.gc.ca/oceans/mpa-zpm/hecate-charlotte/index-eng.html.

The Hecate MPA zoning approach involves different management measures within each zone. Under the Hecate MPA Regulations, each glass sponge reefs' Core Protection Zone (CPZ) is closed to all commercial, recreational, and Aboriginal fishing. Anchoring, cable installation, maintenance and repair are also prohibited in the CPZ. The Vertical Adaptive Management Zone (VAMZ) and Adaptive Management Zone (AMZ) is currently closed to all commercial bottom contact fishing activities for prawn, shrimp, crab and groundfish (including halibut), as well as for midwater trawl for hake.

For more detail on the fishery closure within the Hecate MPA, review Fishery Notice FN0198 found here: https://notices.dfo-mpo.gc.ca/fns-sap/index-eng.cfm?DOC_ID=194216&ID=all&pg=view_notice.

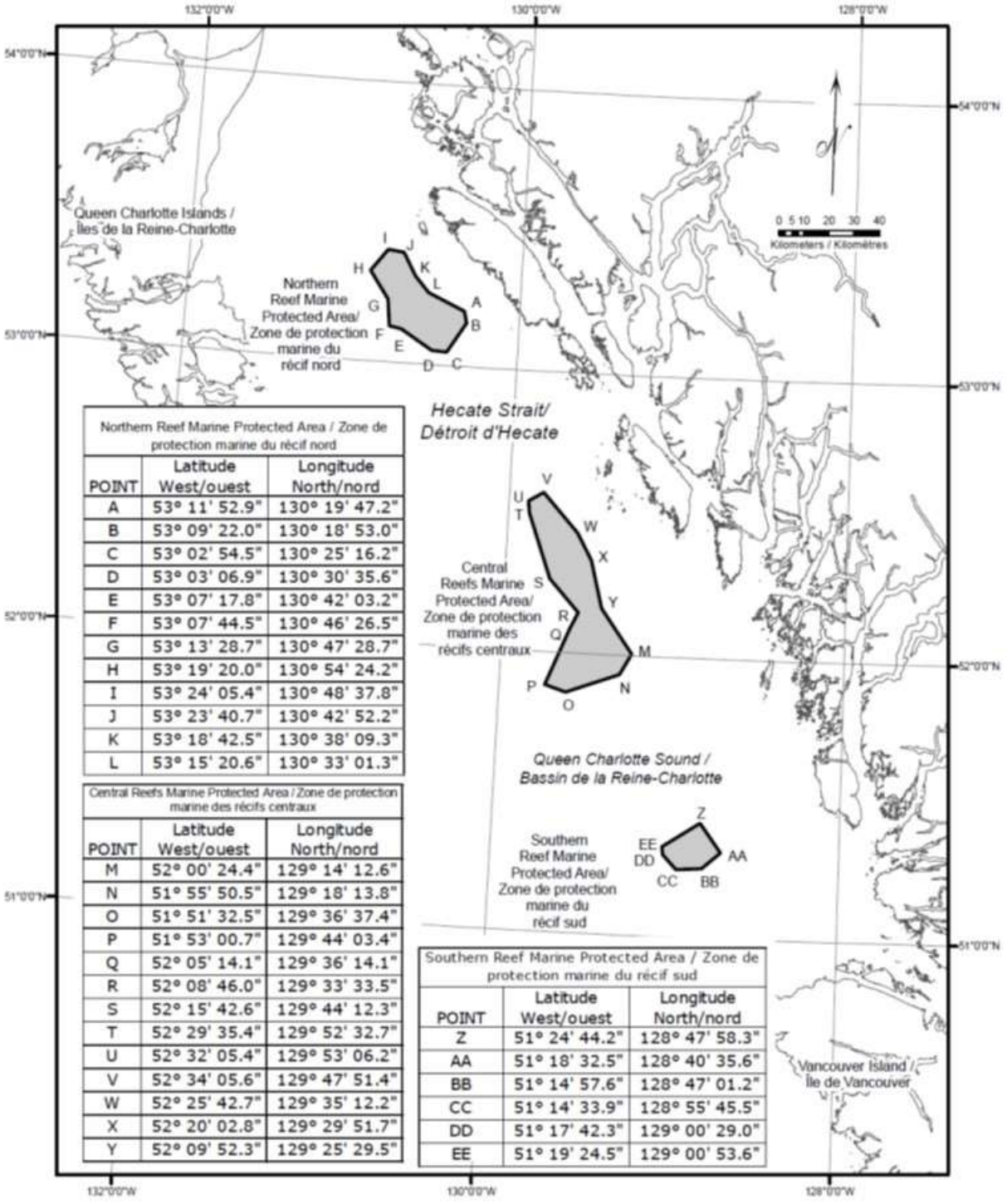
Scientific research, monitoring, and educational activities are allowed in the Hecate MPA if a proponent submits an activity plan to DFO and it receives Ministerial approval. Additional maps and shapefiles of the Hecate MPA are available at: https://open.canada.ca/data/en/dataset/a1e18963-25dd-4219-a33f-1a38c4971250.

As part of the MPAs adaptive management cycle, MPAs undergo a review of associated management and regulatory measures; and new information is reviewed. This approach promotes adherence with the conservation objective and responds to potential changes in the MPA and adjoining area . A review is currently underway for this MPA.

The following graphic illustrations of each closed area are for information purposes only.

SCHEDULE 1 / ANNEXE 1

HECATE STRAIT / QUEEN CHARLOTTE SOUND GLASS SPONGE REEFS MARINE PROTECTED AREAS
ZONES DE PROTECTION MARINES DES RÉCIFS D'ÉPONGES SILICEUSES DU DÉTROIT D'HÉCATE ET DU BASSIN DE LA REINE-CHARLOTTE



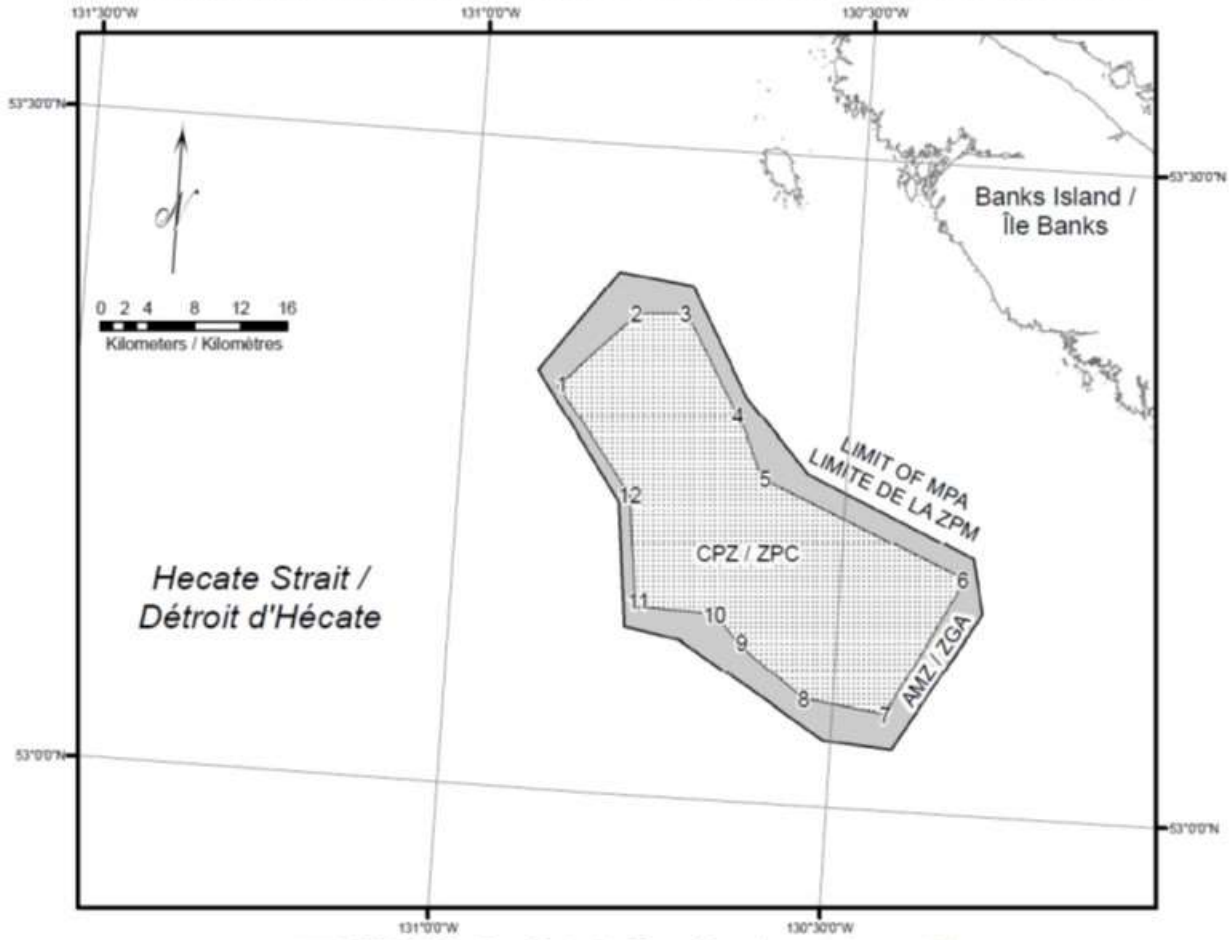
Northern Reef Marine Protected Area / Zone de protection marine du récif nord		
POINT	Latitude West/ouest	Longitude North/nord
A	53° 11' 52.9"	130° 19' 47.2"
B	53° 09' 22.0"	130° 18' 53.0"
C	53° 02' 54.5"	130° 25' 16.2"
D	53° 03' 06.9"	130° 30' 35.6"
E	53° 07' 17.8"	130° 42' 03.2"
F	53° 07' 44.5"	130°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

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

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

SCHEDULE 2 / ANNEXE 2

HECATE STRAIT / QUEEN CHARLOTTE SOUND GLASS SPONGE REEFS MARINE PROTECTED AREAS
ZONES DE PROTECTION MARINES DES RÉCIFS D'ÉPONGES SILICEUSES DU DÉTROIT D'HÉCATE
ET DU BASSIN DE LA REINE-CHARLOTTE
NORTHERN REEF MARINE PROTECTED AREA / ZONE DE PROTECTION MARINE DU RÉCIF NORD

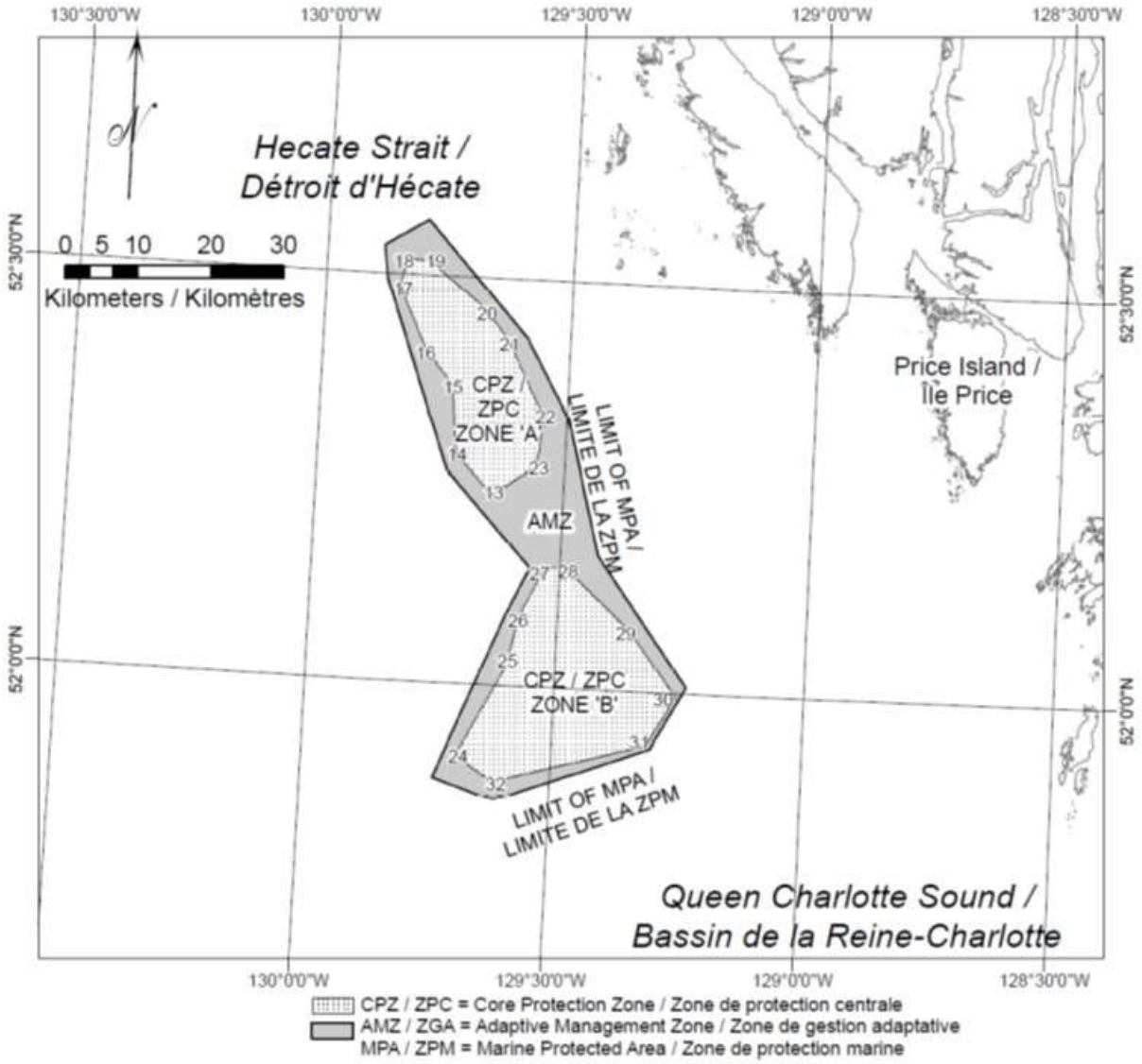


Northern CPZ / ZPC nord		
POINT	Latitude North/nord	Longitude West/ouest
1	53° 18' 40.4"	130° 52' 46.5"
2	53° 22' 12.1"	130° 47' 01.7"
3	53° 22' 20.2"	130° 43' 12.5"
4	53° 17' 22.8"	130° 38' 18.2"
5	53° 15' 01.7"	130° 36' 35.5"
6	53° 10' 55.2"	130° 20' 19.3"
7	53° 04' 30.2"	130° 25' 53.6"
8	53° 04' 58.0"	130° 32' 16.9"
9	53° 07' 22.2"	130° 37' 37.6"
10	53° 08' 36.6"	130° 39' 29.5"
11	53° 08' 41.8"	130° 45' 40.0"
12	53° 13' 51.2"	130° 46' 41.2"

SCHEDULE 3 / ANNEXE 3

HECATE STRAIT / QUEEN CHARLOTTE SOUND GLASS SPONGE REEFS MARINE PROTECTED AREAS
ZONES DE PROTECTION MARINES DES RÉCIFS D'ÉPONGES SILICEUSES DU DÉTROIT D'HÉCATE ET DU BASSIN DE LA REINE-CHARLOTTE

CENTRAL REEFS MARINE PROTECTED AREA / ZONE DE PROTECTION MARINE DES RÉCIFS CENTRAUX

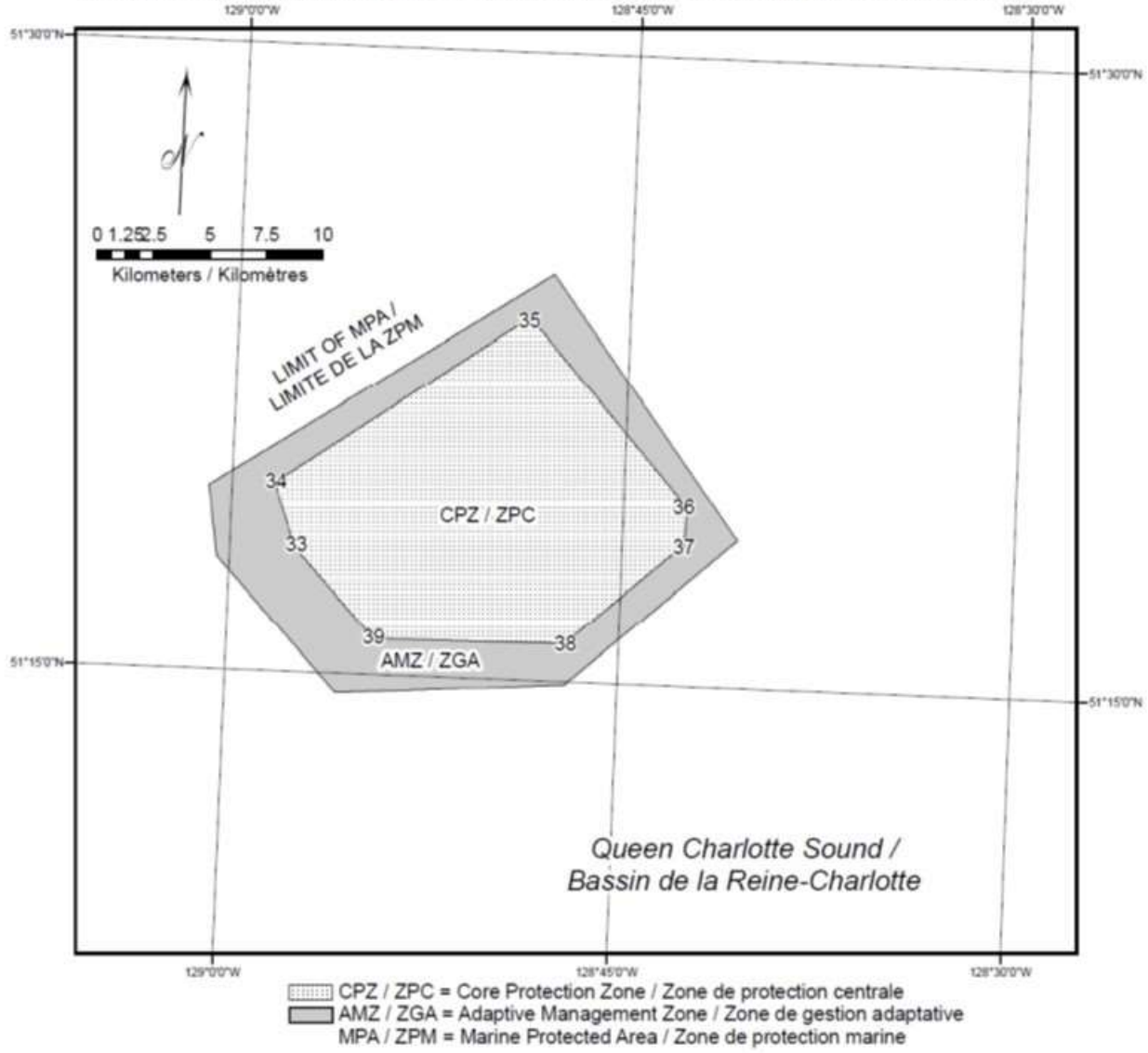


Central CPZ / ZPC centrale - Zone 'A'		
POINT	Latitude North/nord	Longitude West/ouest
13	52° 14' 03.4"	129° 38' 33.2"
14	52° 16' 54.8"	129° 43' 13.4"
15	52° 21' 57.1"	129° 43' 56.5"
16	52° 24' 24.5"	129° 47' 22.8"
17	52° 29' 05.9"	129° 50' 59.4"
18	52° 31' 05.2"	129° 50' 13.9"
19	52° 31' 06.7"	129° 47' 40.9"
20	52° 27' 42.0"	129° 40' 25.1"
21	52° 25' 22.9"	129° 37' 24.0"
22	52° 19' 47.0"	129° 32' 43.2"
23	52° 16' 18.2"	129° 33' 22.8"

Central CPZ / ZPC centrale - Zone 'B'		
POINT	Latitude North/nord	Longitude West/ouest
24	51° 54' 43.1"	129° 41' 22.2"
25	52° 01' 22.5"	129° 35' 48.4"
26	52° 05' 13.5"	129° 34' 32.5"
27	52° 08' 48.5"	129° 31' 44.1"
28	52° 08' 51.3"	129° 29' 18.0"
29	52° 04' 27.1"	129° 21' 17.3"
30	51° 59' 40.8"	129° 15' 23.9"
31	51° 56' 04.5"	129° 18' 46.2"
32	51° 52' 55.7"	129° 36' 49.8"

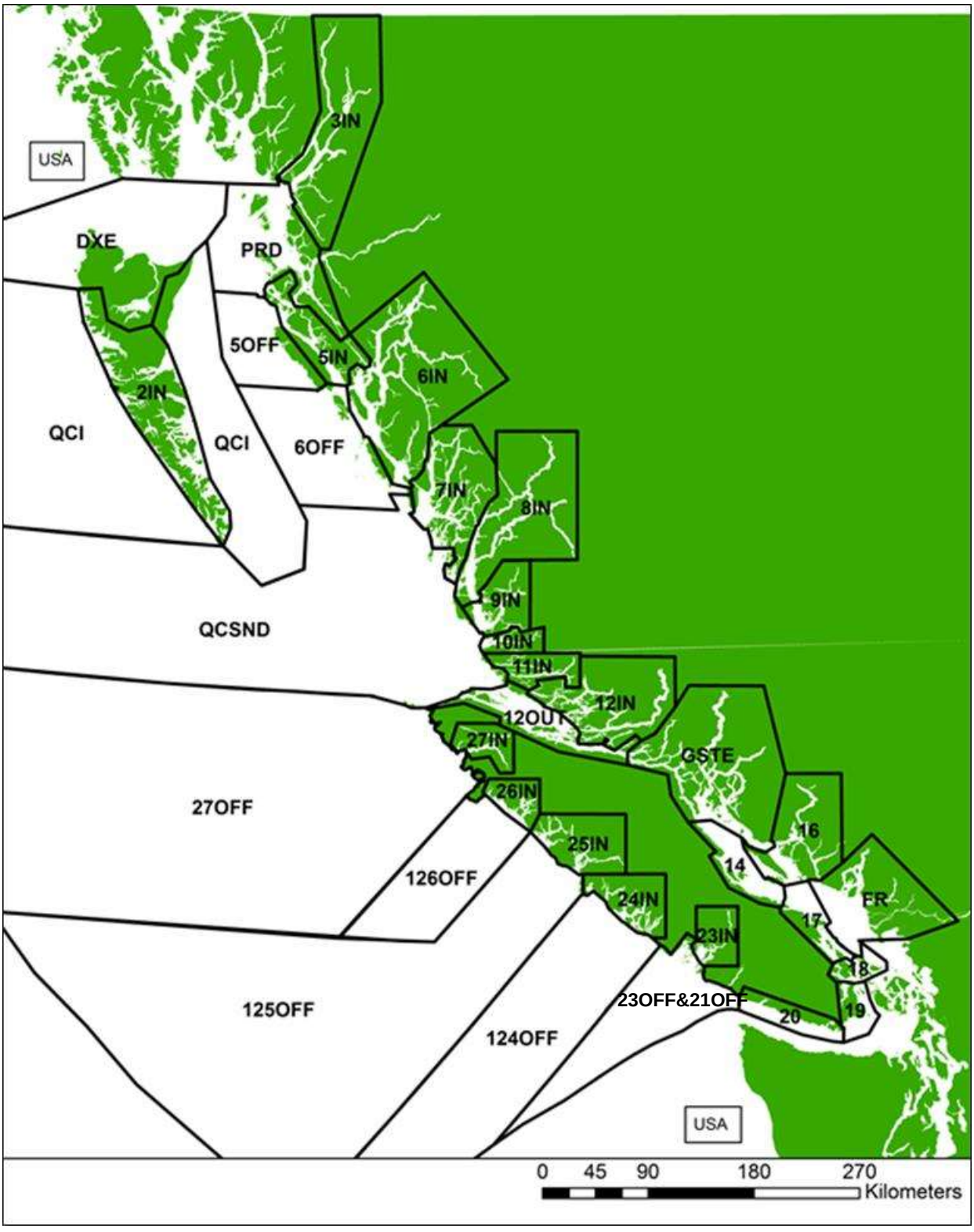
SCHEDULE 4 / ANNEXE 4

HECATE STRAIT / QUEEN CHARLOTTE SOUND GLASS SPONGE REEFS MARINE PROTECTED AREAS
ZONES DE PROTECTION MARINES DES RÉCIFS D'ÉPONGES SILICEUSES DU DÉTROIT D'HÉCATE ET DU BASSIN DE LA REINE-CHARLOTTE
SOUTHERN REEF MARINE PROTECTED AREA / ZONE DE PROTECTION MARINE DU RÉCIF SUD



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

APPENDIX 9: MAPS OF SHRIMP MANAGEMENT AREAS



Shrimp Management Areas (SMA) of the British Columbia Coast

Pacific Fishery Management Area and Subarea Boundaries and Shrimp Management Area Maps

Pacific Fishery Management Area (PFMA) maps are available at:
http://www.pac.dfo-mpo.gc.ca/fm-gp/maps-cartes/areas-secteurs/index-eng.html
Boundaries of PFMAs are defined in the Pacific Fishery Management Area Regulations, 2007. See:
http://laws-lois.justice.gc.ca/eng/regulations/SOR-2007-77/index.html

Map Legend	Description of Closure
Rockfish Conservation Area	Closed to shrimp trawl
ONC Cables 2017	See Notice to Mariners - Ocean Networks Canada
ONC Infrastructure 2017	See Notice to Mariners - Ocean Networks Canada
Conservation	Closed to shrimp trawl
Conservation Bycatch	Closed due to bycatch of herring, coonstripe shrimp
Conservation Crab	Closed for conservation of juvenile crab and to avoid crab gear
Conservation Halibut	Closed for conservation of juvenile halibut
Conservation Prawns	Closed to retention of prawns year-round
Marine Reserve	Closed to shrimp trawl
National Marine Conservation Area	Closed to shrimp trawl
Navigation	Closed to fishing
New Emerging Policy	Closed due to New Emerging Fishery Policy - humpback shrimp
Park	Closed to fishing
Seasonal Crab Softshell	Closed March 1 to August 1 - unless softshell monitoring in place
Seasonal Eulachon	Closed February 1 to March 31 to avoid interaction with eulachon
Seasonal Observer	Closed subject to arrangements for at-sea observer
Satellite Ecological Reserve	Closed to fishing
Sponge Reef	Closed to shrimp trawl

Terms of Use, Disclaimer and Limitation of Liability:

The following maps are intended for general reference and to provide a guide of the Shrimp Management Area (SMA) and PFMA and Subarea boundaries and the closures to fishing by shrimp beam trawl and otter trawl as listed in the Shrimp Trawl Integrated Fisheries Management Plan (IFMP). Other areas may be closed to fishing by shrimp trawl and are not shown on these maps (navigational closures, parks, ecological reserves, etc.). It is the responsibility of the vessel master to determine if an area is open to fishing by trawl net, and be aware of all Fishery Notices and closures. Changes may occur in-season to specific closures and Fishery Notices may be issued to indicate changes. The maps are not intended to be used for navigation. The scale of each map changes with each SMA for visual purposes only. An area identified as open to fishing by beam or otter trawl is not necessarily suitable to fishing by trawl net.

Map geometric projection is North American Datum 1983 CSRS BC Environment Albers.

```
NAD_1983_CSRS_BC_Environment_Albers
Projection: Albers
False_Easting: 1000000.000000
False_Northing: 0.000000
Central_Meridian: -126.000000
Standard_Parallel_1: 50.000000
Standard_Parallel_2: 58.500000
Latitude_Of_Origin: 45.000000
Linear Unit: Meter

GCS_North_American_1983_CSRS
Datum: D_North_American_1983_CSRS
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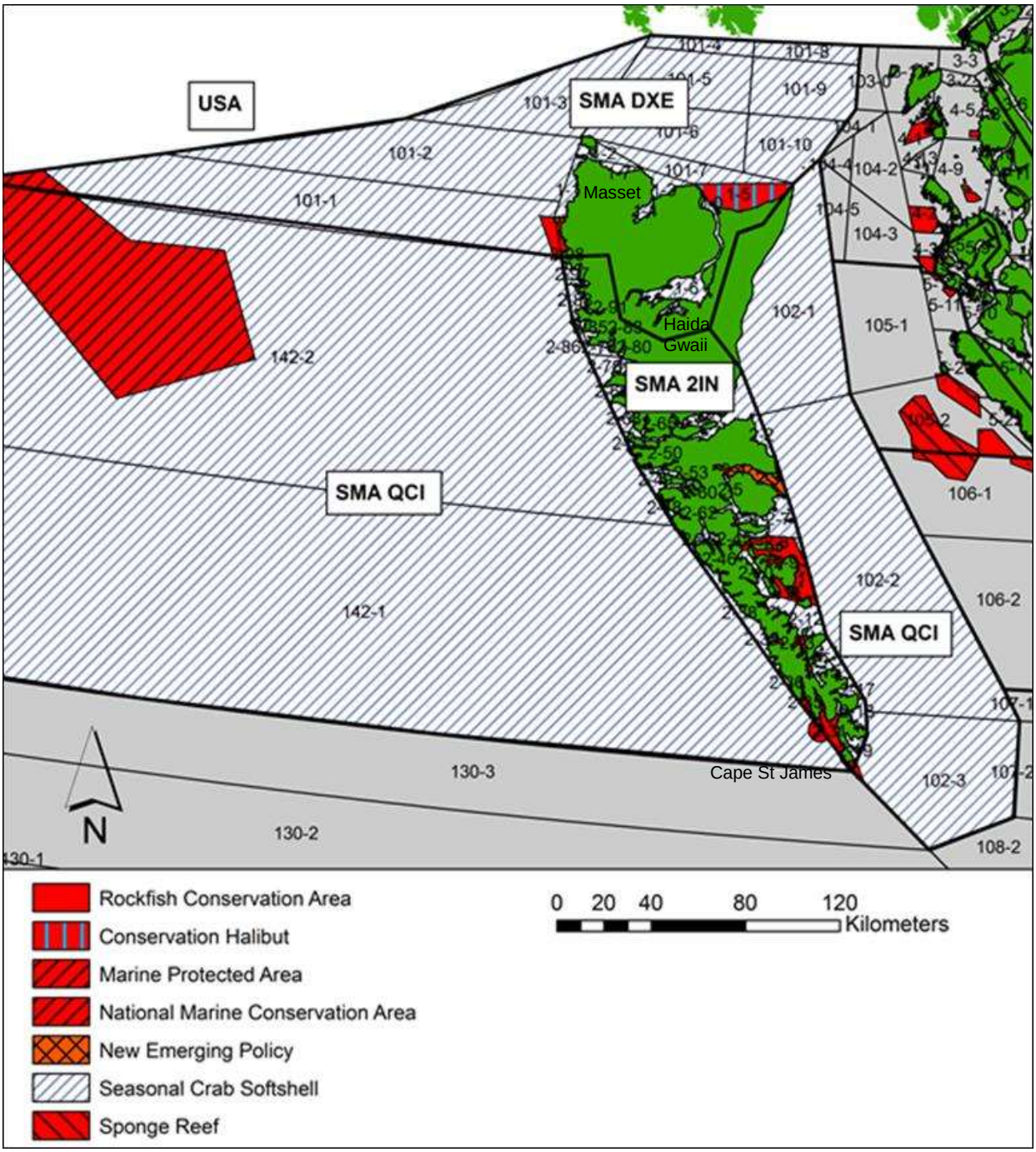


Figure 1. Shrimp Management Areas: DXE (Areas 1, 101), SMA QCI (Areas 102, 142) and SMA 2IN (Area 2 except Subareas 2-3, 2-4, 2-13, 2-16, 2-31 to 2-37 and 2-41).

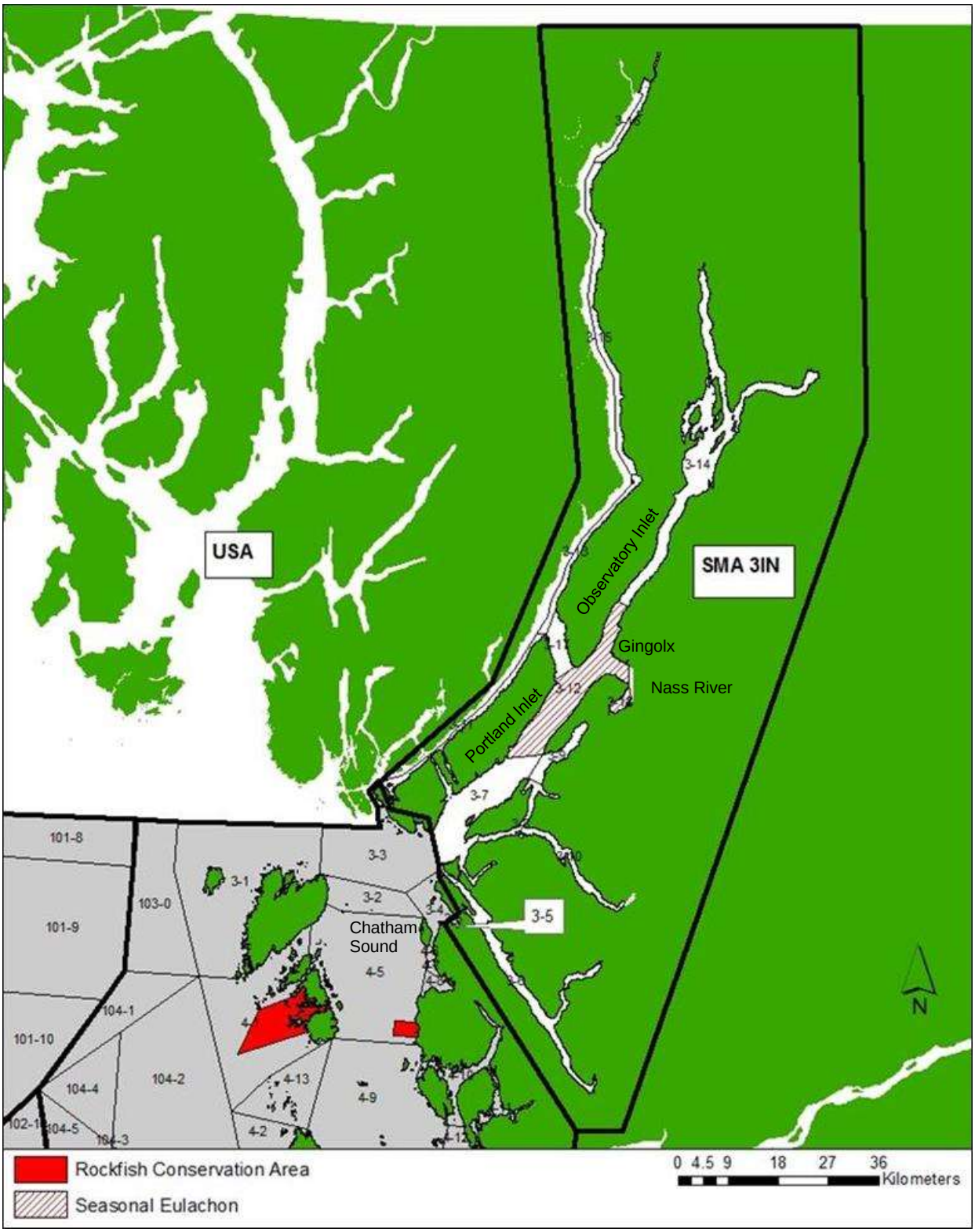


Figure 2. Shrimp Management Area: 3IN (Subareas 3-5 to 3-18). Subareas 3-12 and 3-18 closed February 1 to March 31.

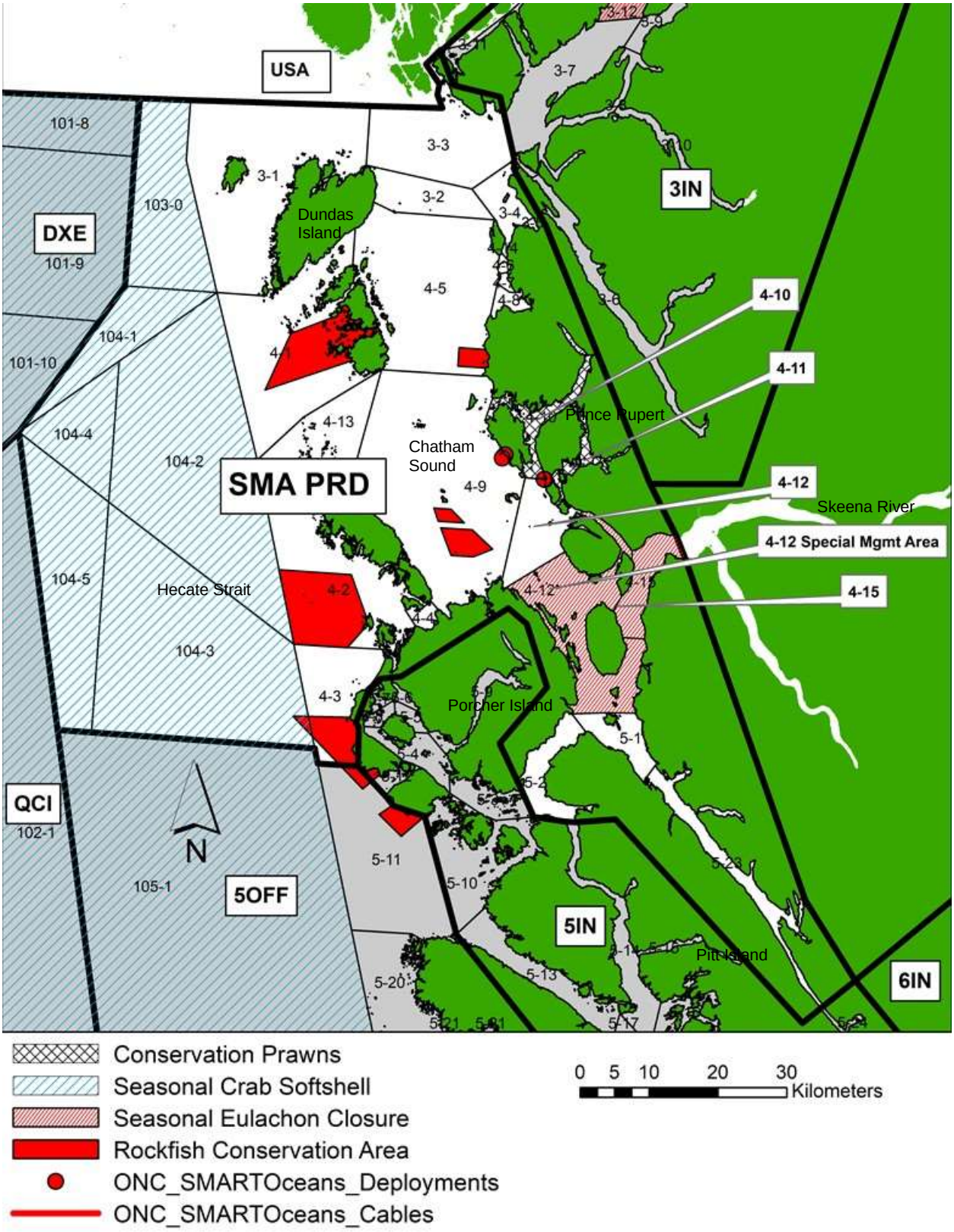


Figure 3. Shrimp Management Area: PRD (Subareas 3-1 to 3-4, 103, 4-1 to 4-15, 104, 5-1, 5-2 and 5-23). Subarea 4-15 and 4-12 Special Management Area closed Feb 15 to Mar 31.

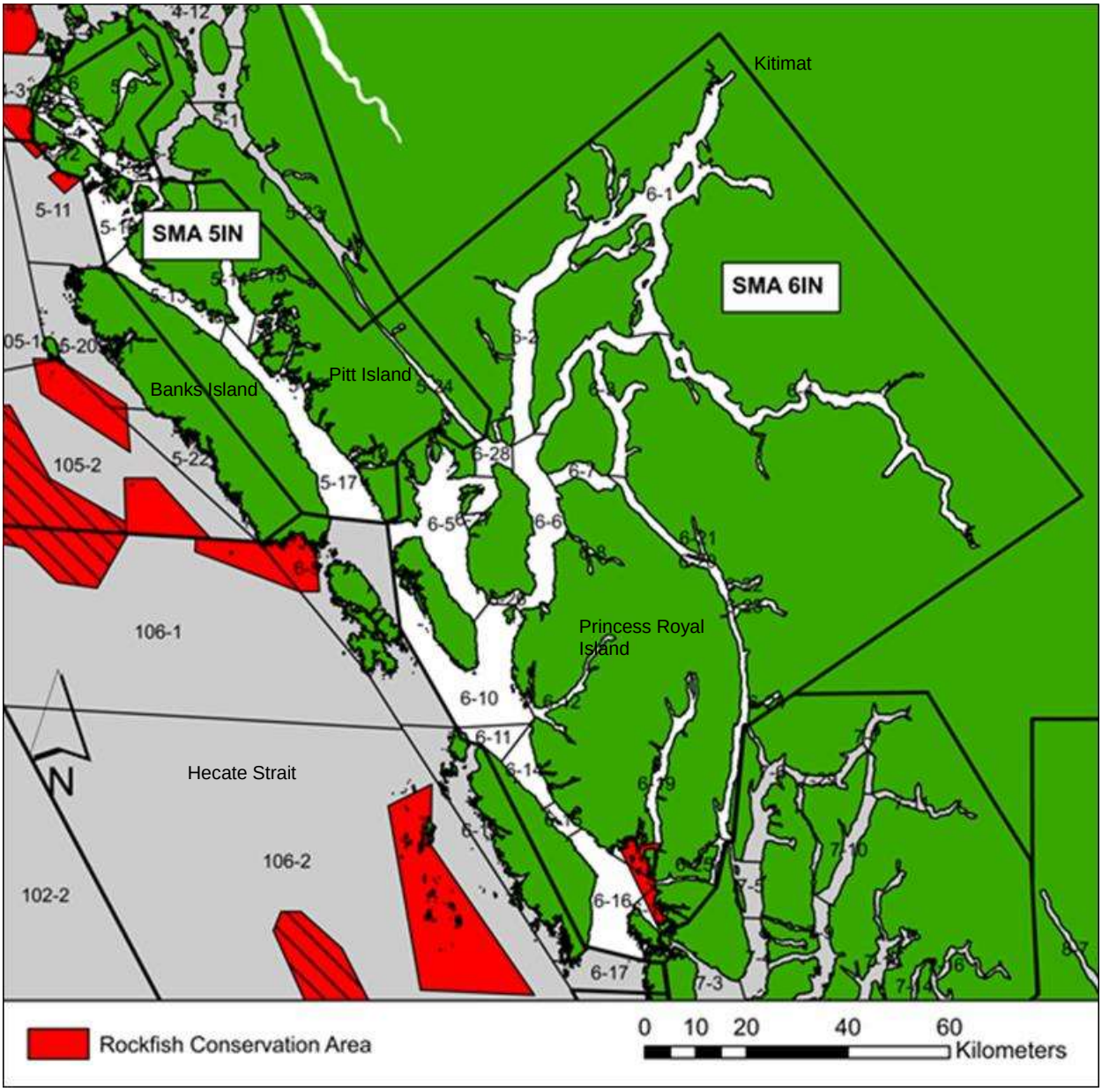


Figure 4. Shrimp Management Areas: 5IN (Subareas 5-3 to 5-10, 5-12 to 5-19, 5-21, 5-24) and SMA 6IN (Subareas 6-1 to 6-8, 6-10 to 6-12, 6-14 to 6-16, 6-18 to 6-28).

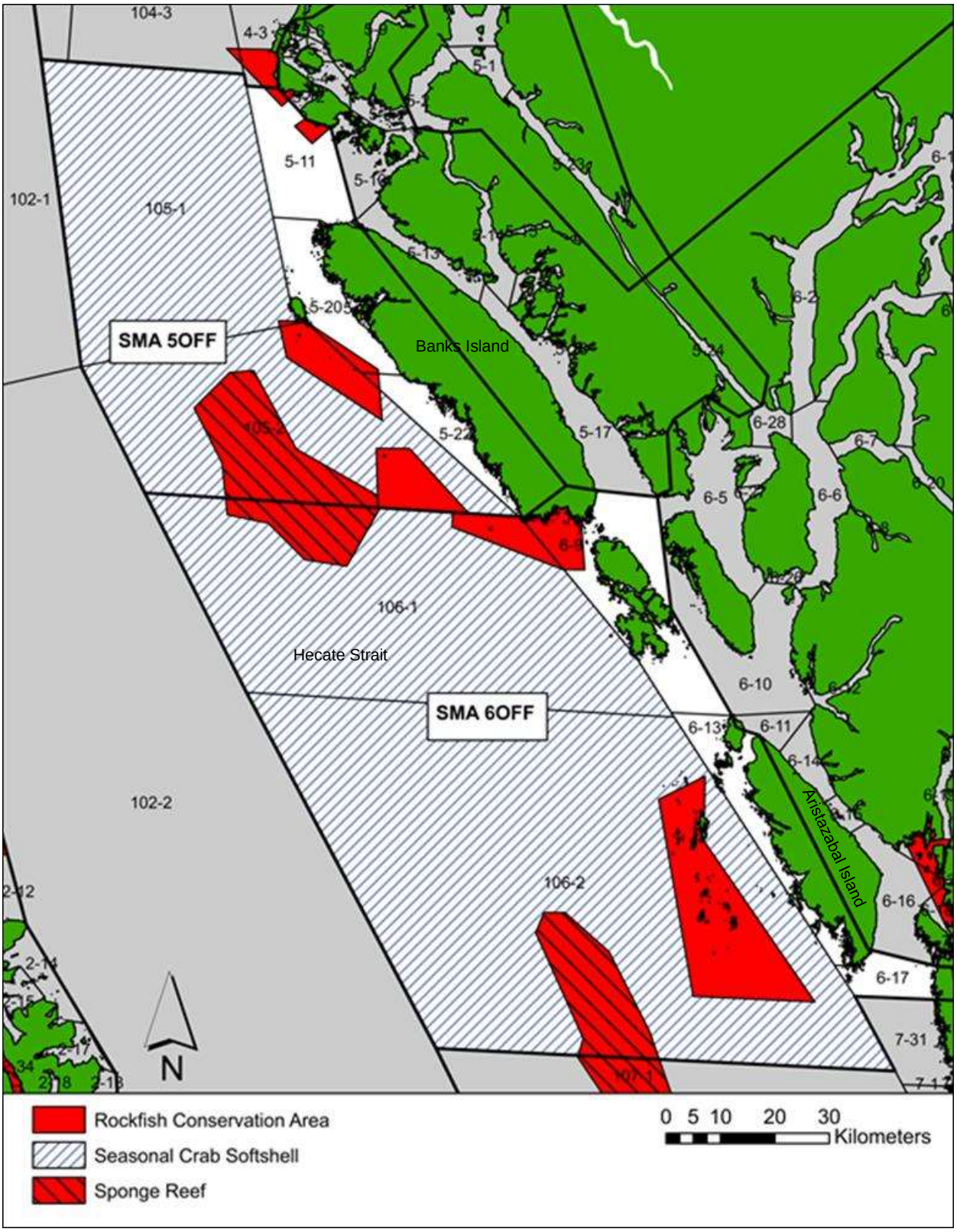


Figure 5. Shrimp Management Areas: 5OFF (Subareas 5-11, 5-20, 5-22, Area 105) and SMA 6OFF (Subareas 6-9, 6-13, 6-17, Area 106).

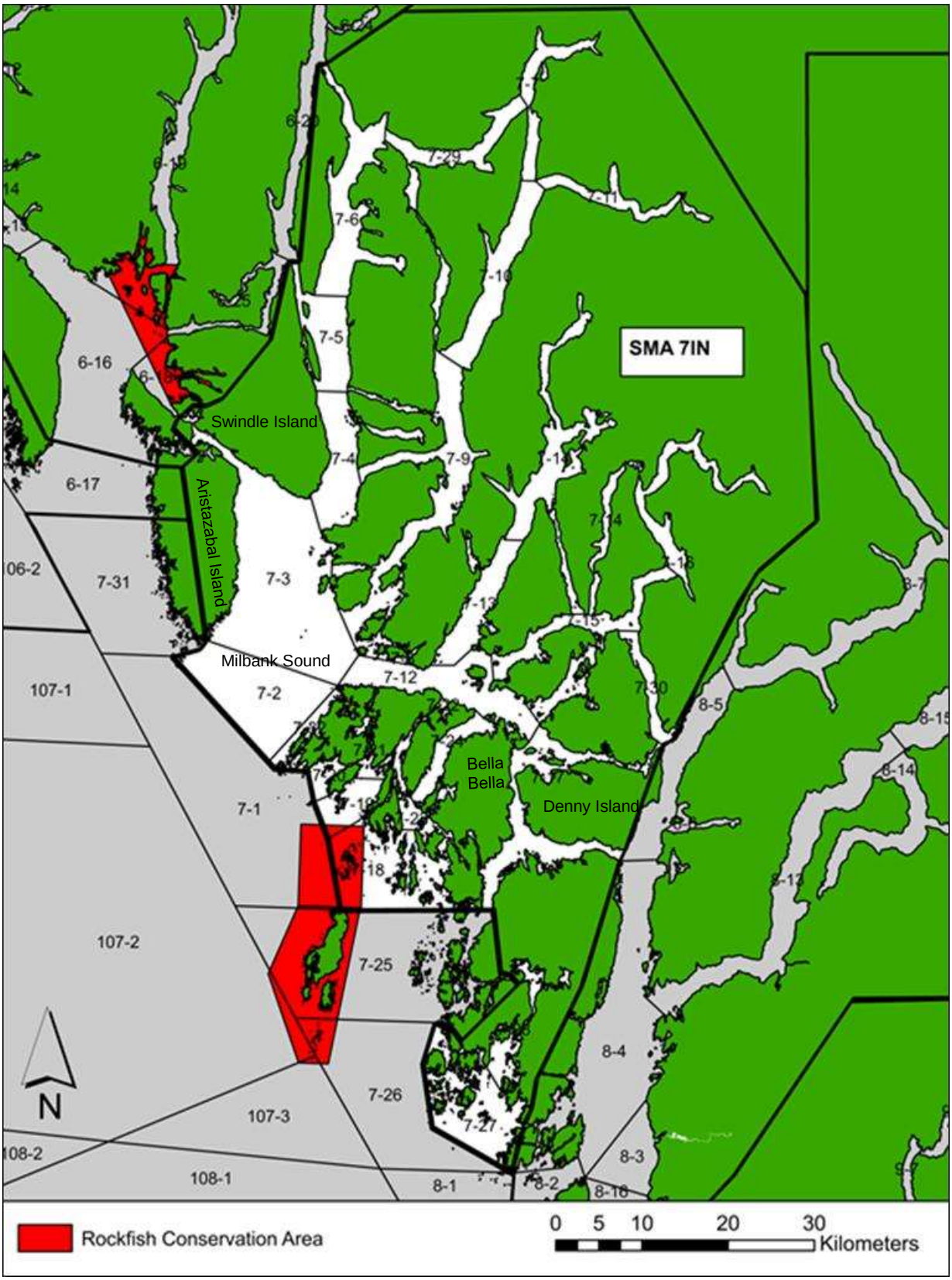


Figure 6. Shrimp Management Area: 7IN (Subareas 7-2 to 7-24, 7-27 to 7-30 and 7-32).

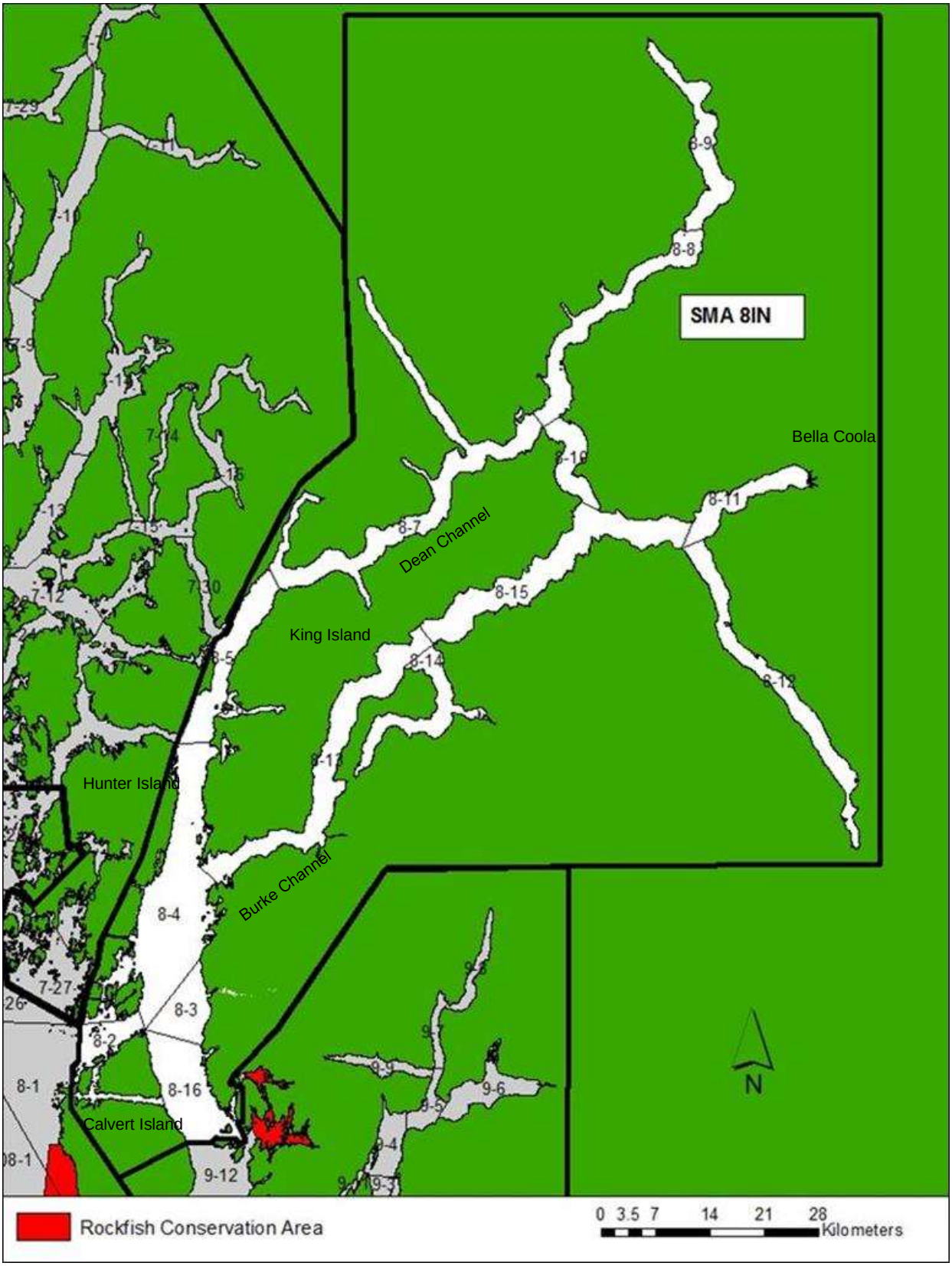


Figure 7. Shrimp Management Area: 8IN (Subareas 8-2 to 8-16).

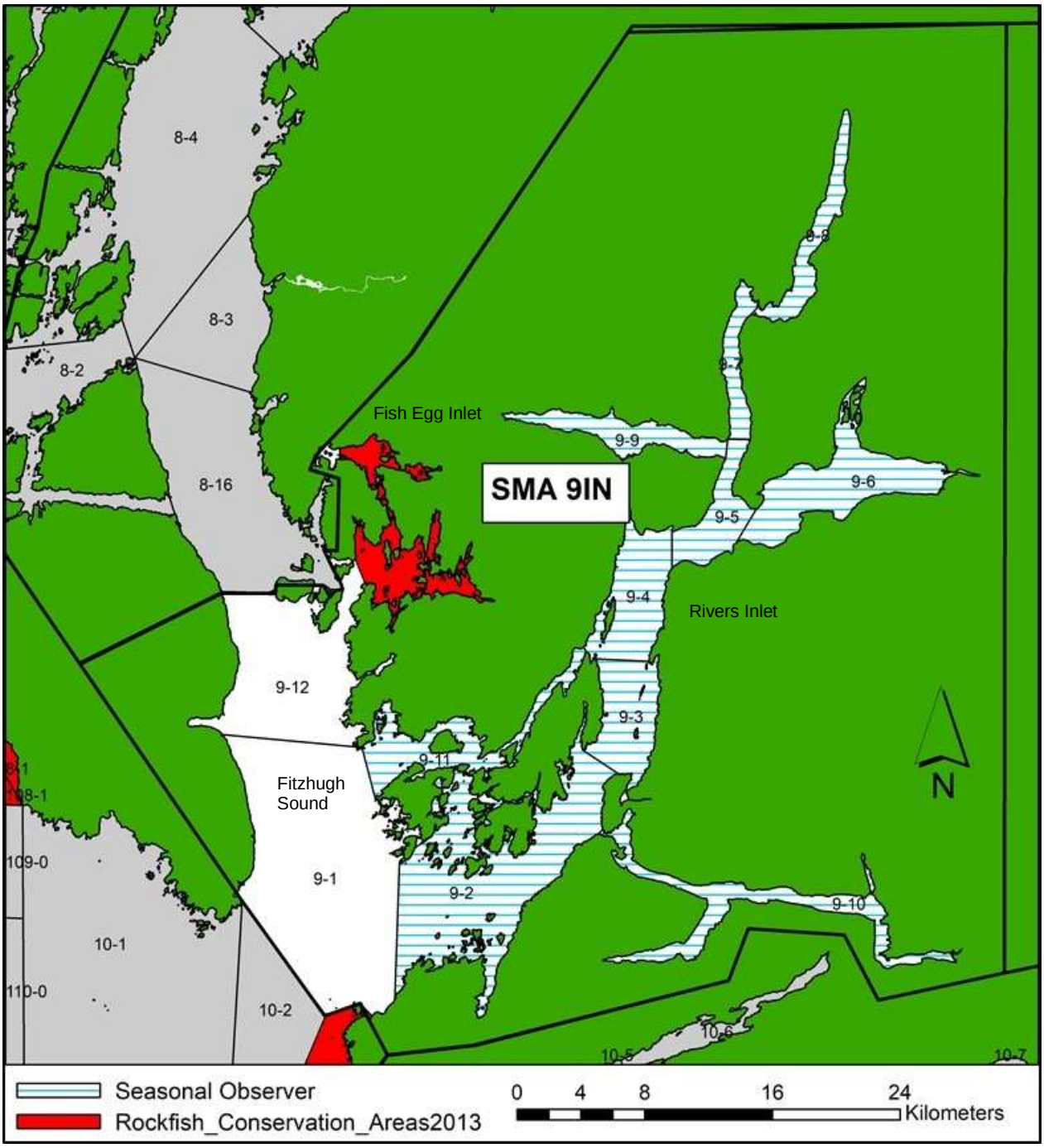


Figure 8. Shrimp Management Area: 9IN (Subareas 9-1 to 9-12).

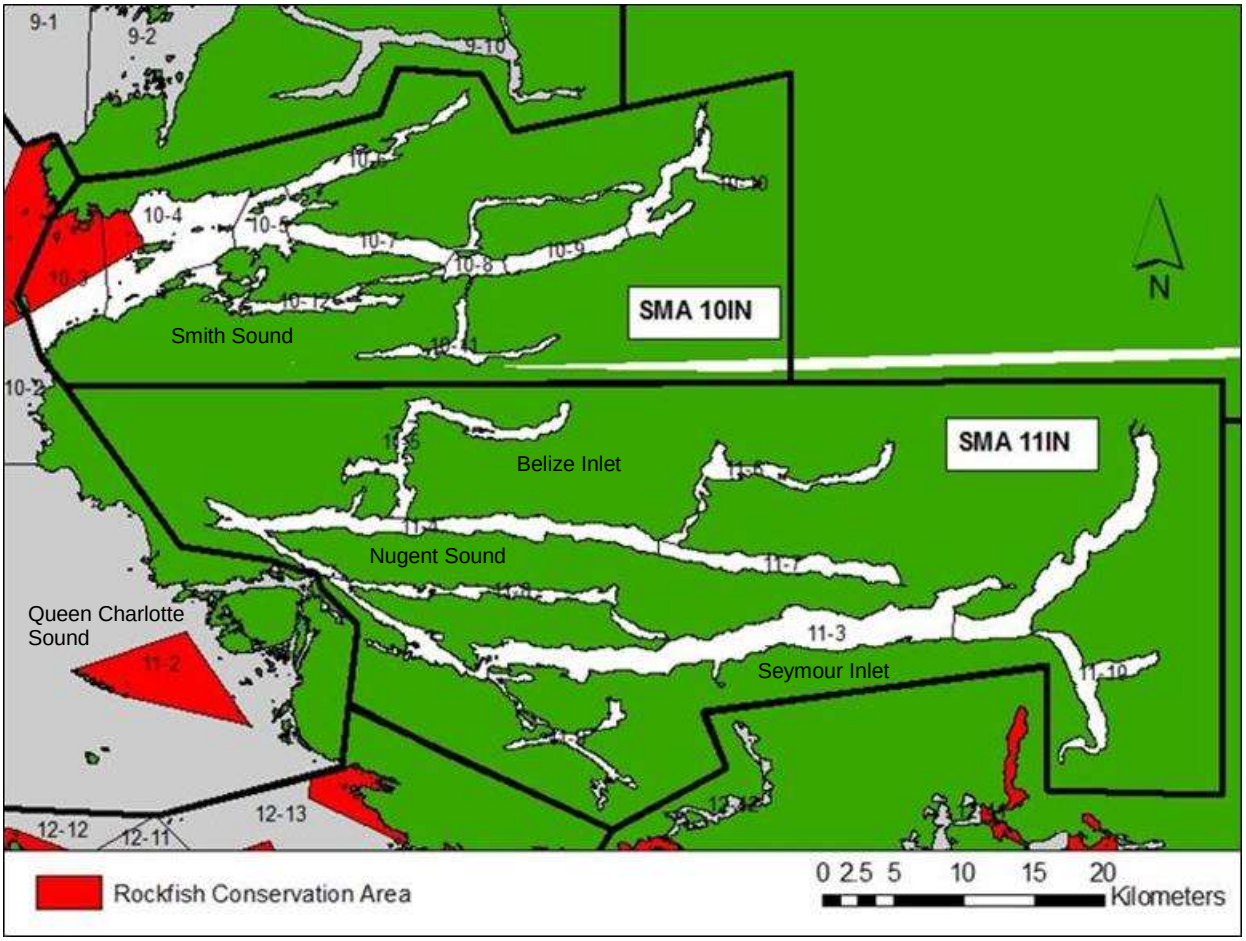


Figure 9. Shrimp Fishery Management Areas: 10IN (Subareas 10-3 to 10-12) and SMA 11IN (Subareas 11-3 to 11-10).

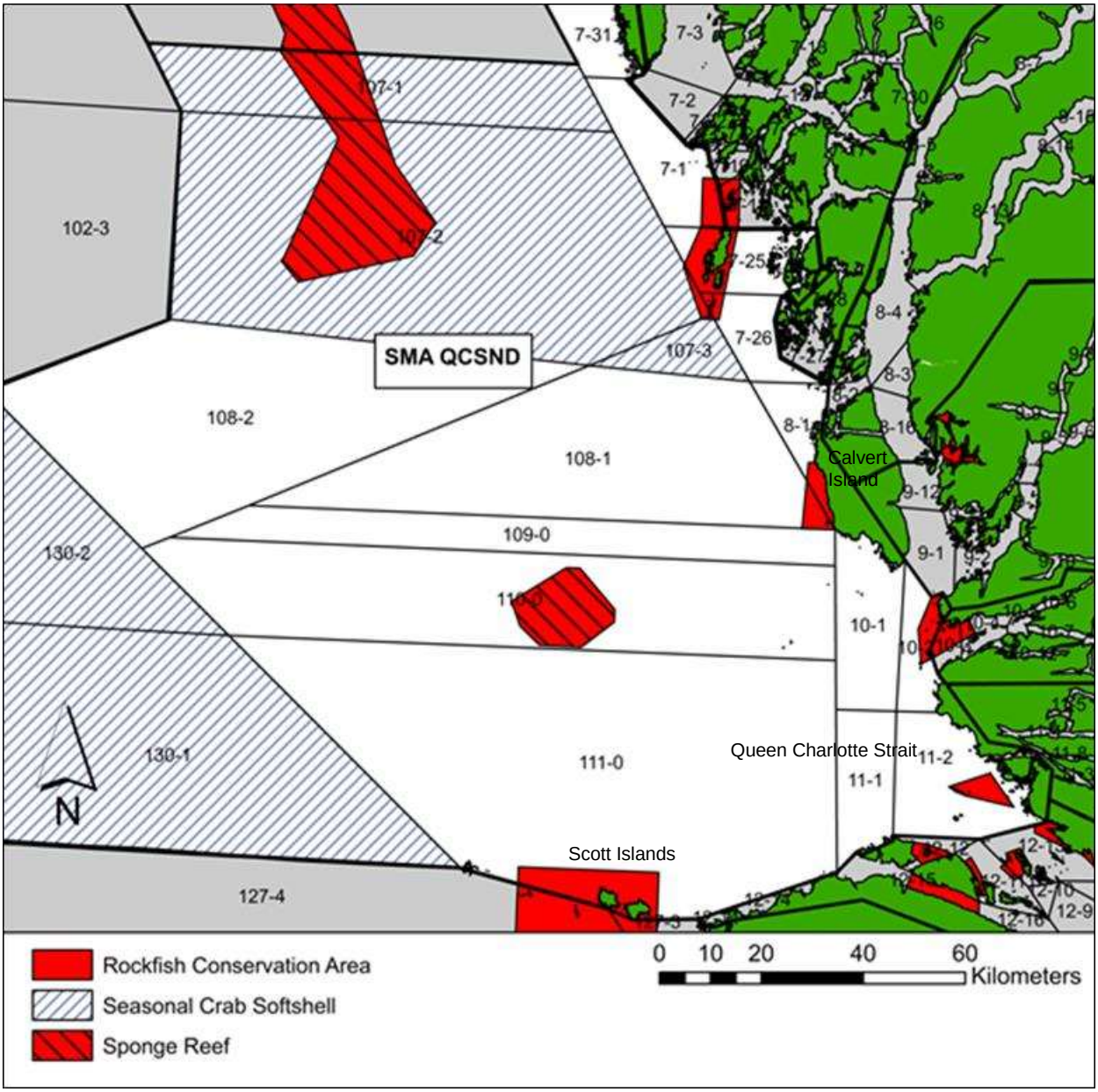
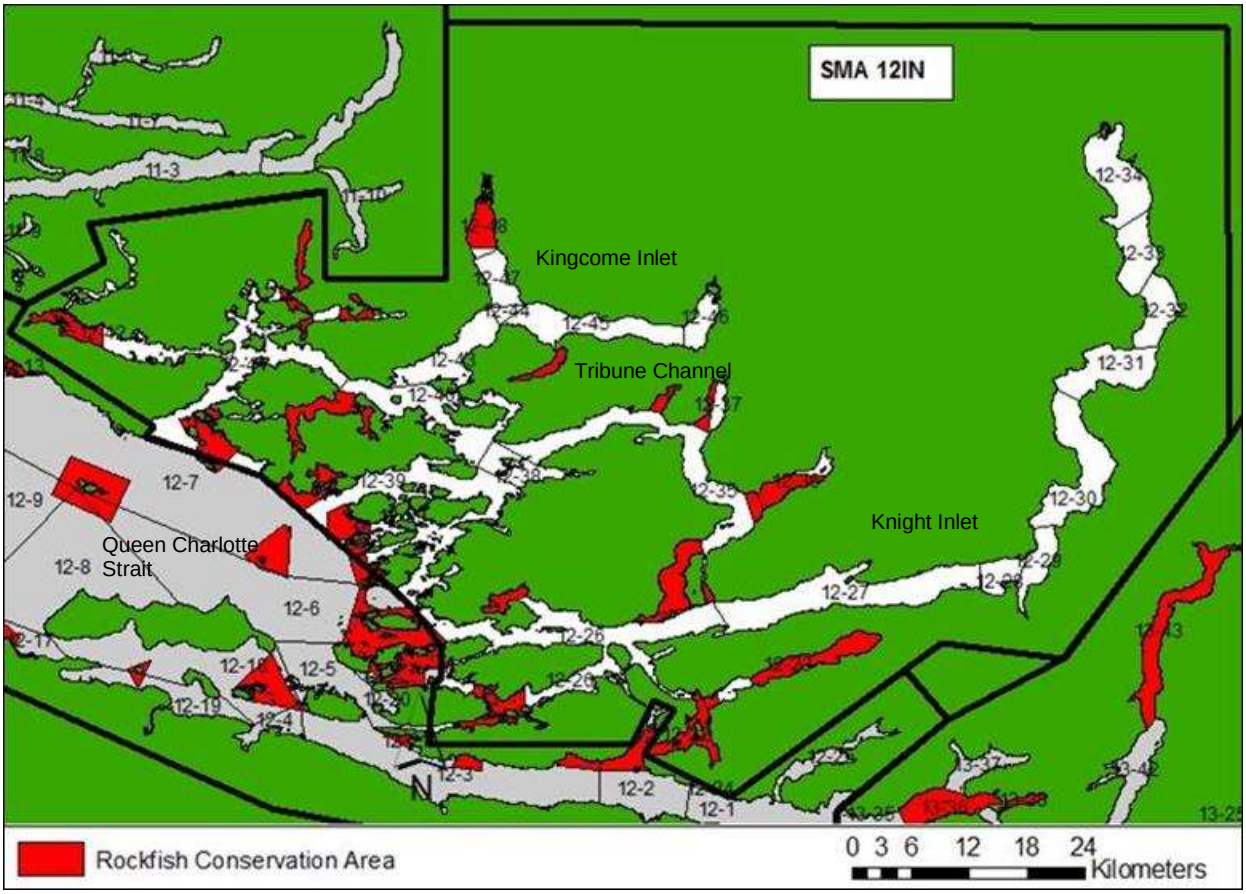


Figure 10. Shrimp Management Area: QCSND (Areas 107, 108, 109, 110, 111, 130, Subareas 7-1, 7-25, 7-26, 7-31, 8-1, 10-1, 10-2, 11-1, 11-2). Sponge Reef Closure coordinates are defined in Appendix 8.



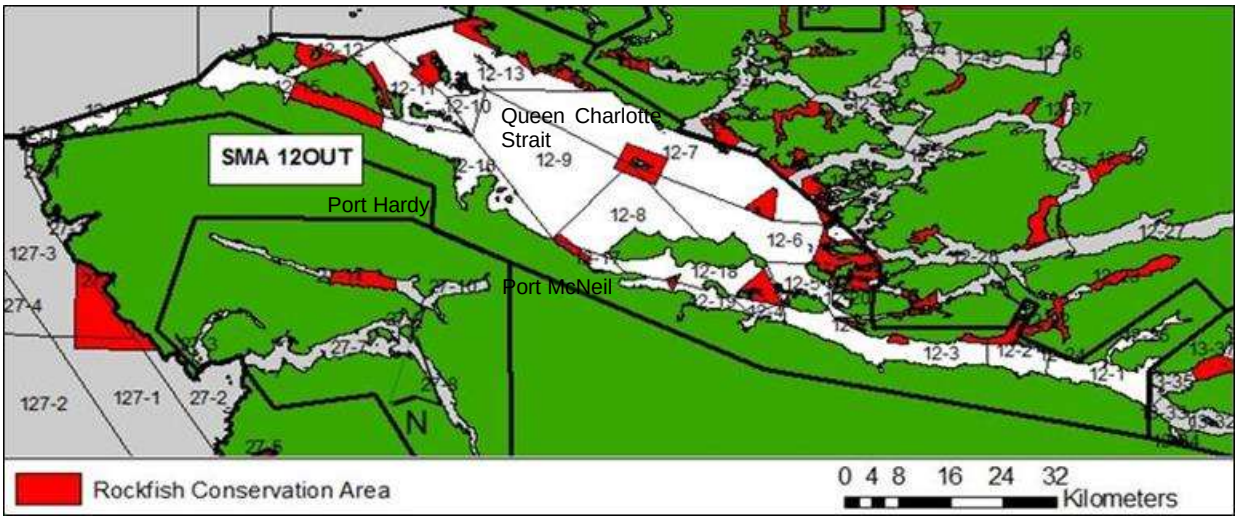


Figure 11. Shrimp Management Areas: 12IN (Areas 12-23, 12-26 to 12-35, 12-37 to 12-47) and SMA 12OUT (Areas 12-1 to 12-21, 12-24, 12-25). Closed in 12-22, 12-36 and 12-48.

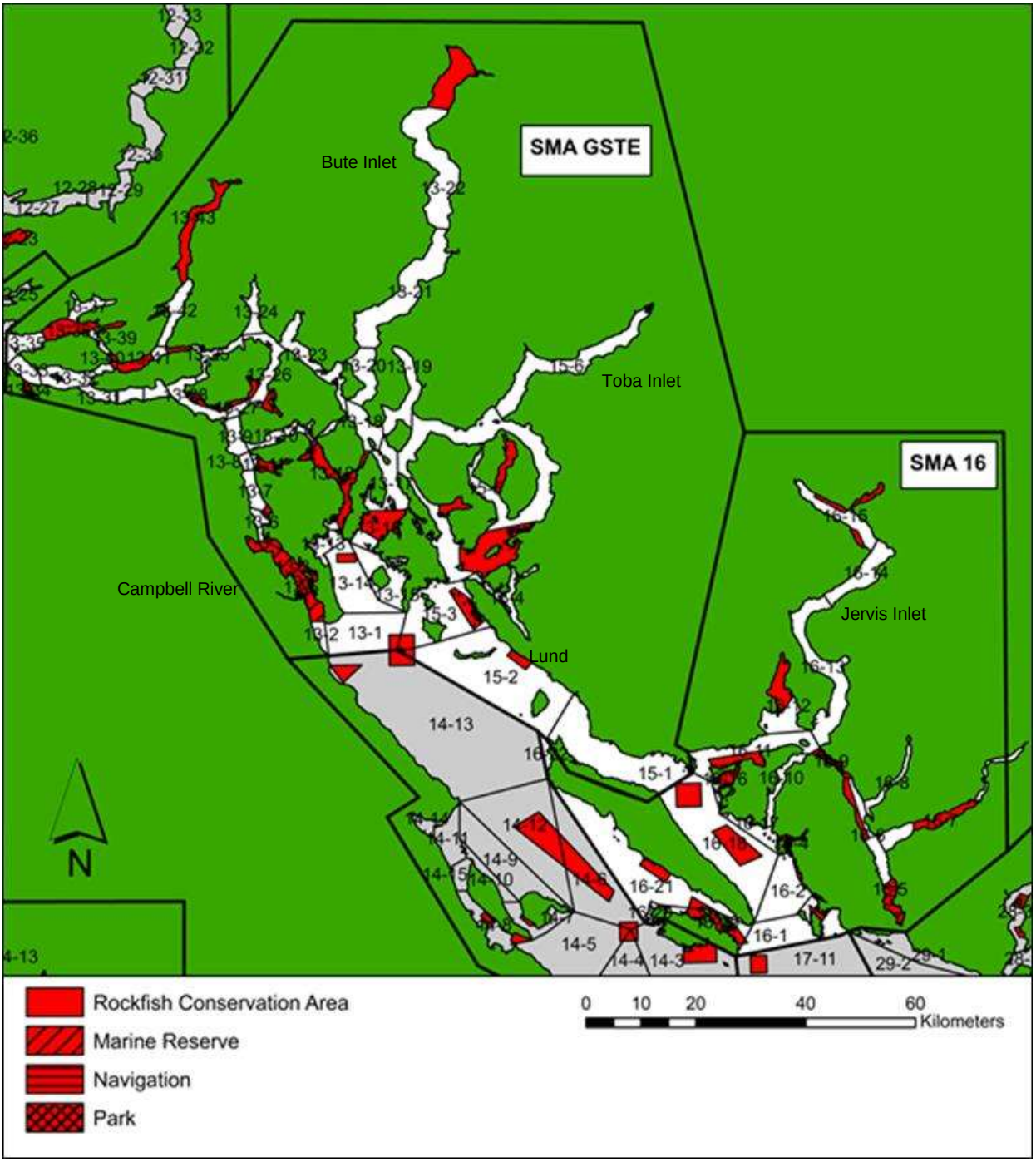


Figure 12. Shrimp Management Areas: GSTE (Areas 13 and 15) - Closed in subareas 13-3, 13-4, 13-5, 13-34, 13-36, 13-38 and 13-43 and SMA 16 (Subareas 16-1, 16-2 and 16-6 to 16-8, 16-10 to 16-22). Closed in 16-3 to 16-5 and 16-9.

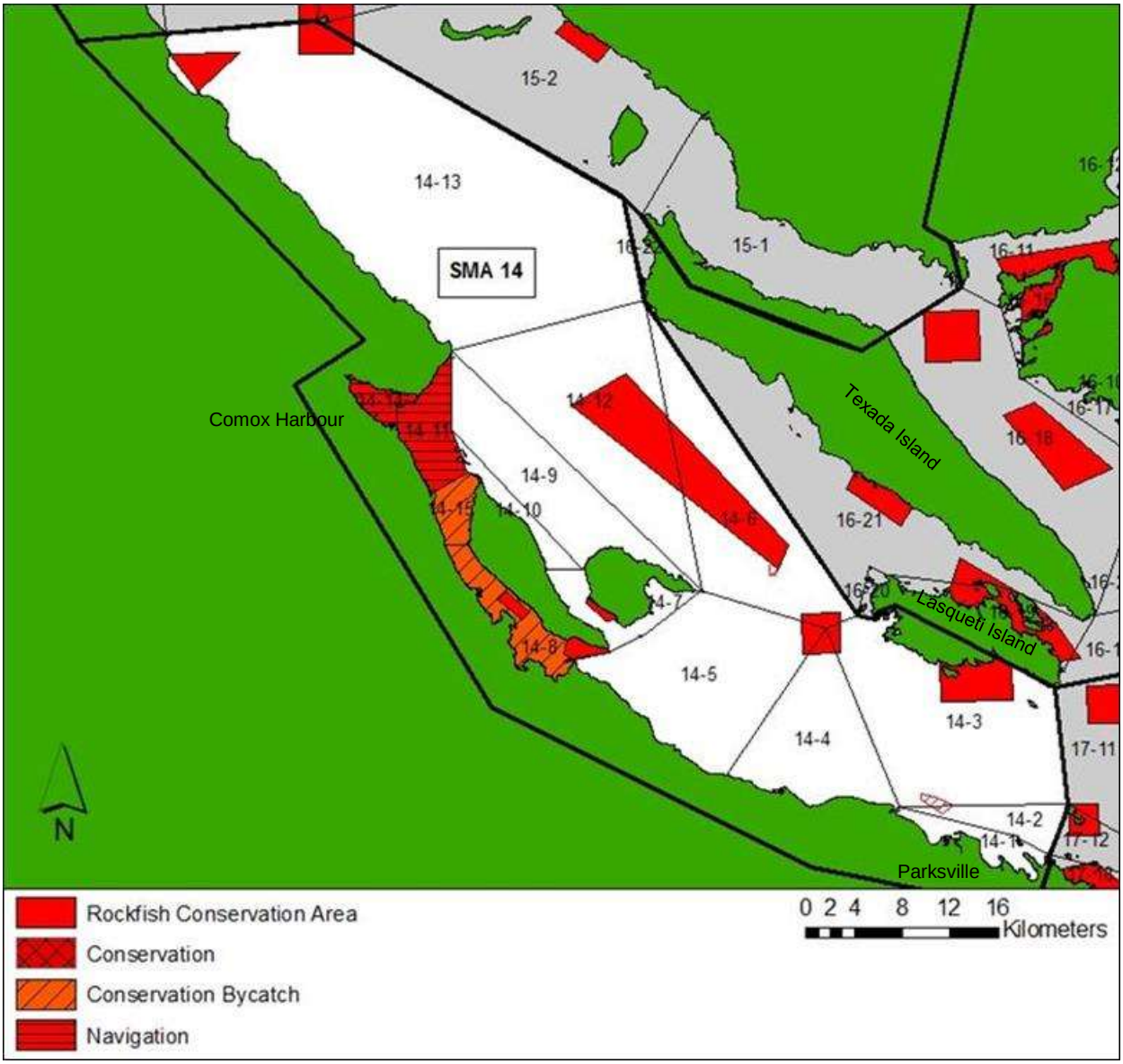


Figure 13. Shrimp Management Area: 14 (Subareas 14-1 to 14-7, 14-9, 14-10, 14-12 and 14-13). Conservation closures in 14-15 and 14-8. Closed in 14-11, 14-14.

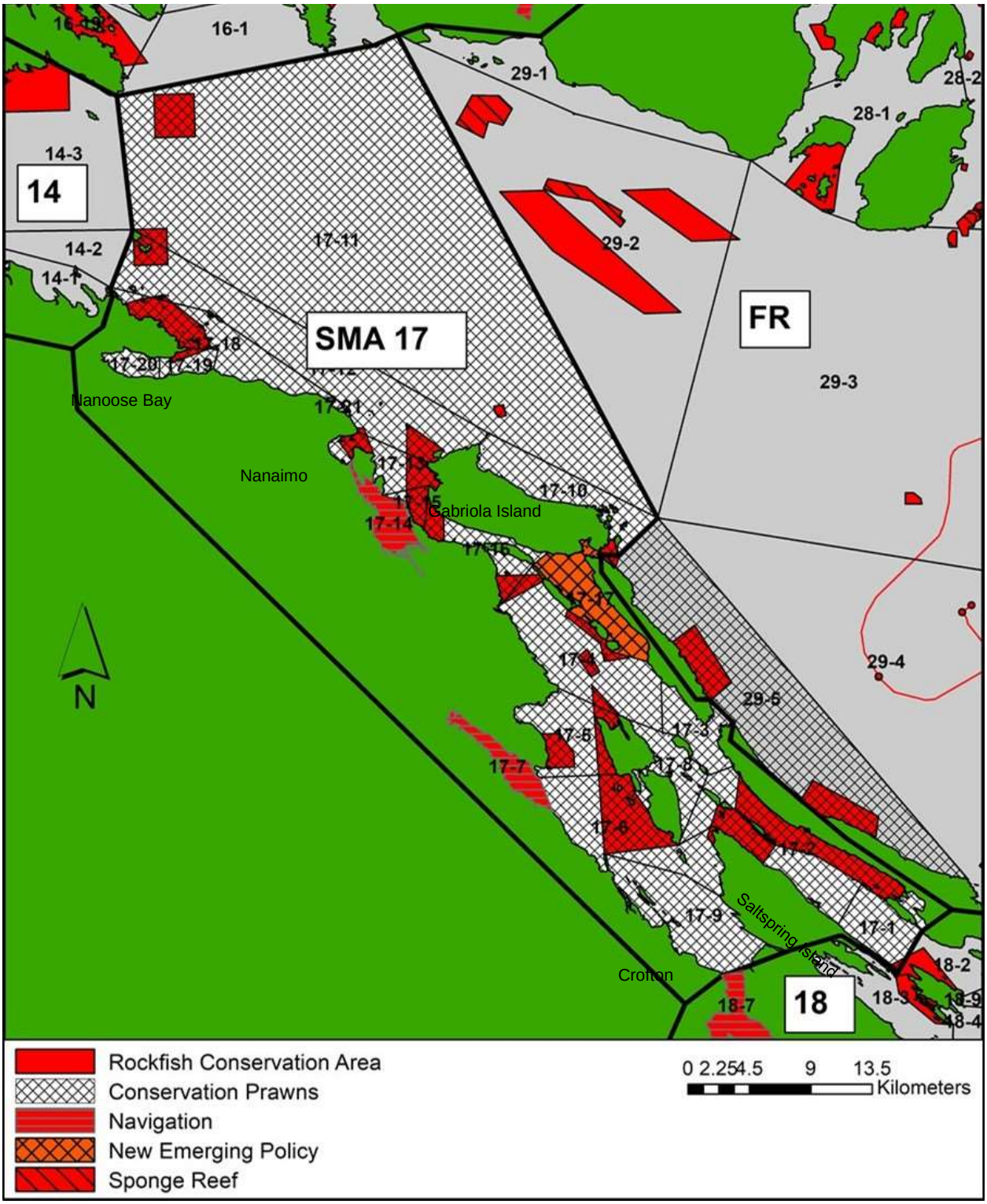


Figure 14. Shrimp Management Area: 17 (Subareas 17-1 to 17-6, 17-8 to 17-13 and 17-15, 17-16, 17-18 to 17-21). Closed in 17-7, 17-14 and 17-17. Closed to prawns year round.

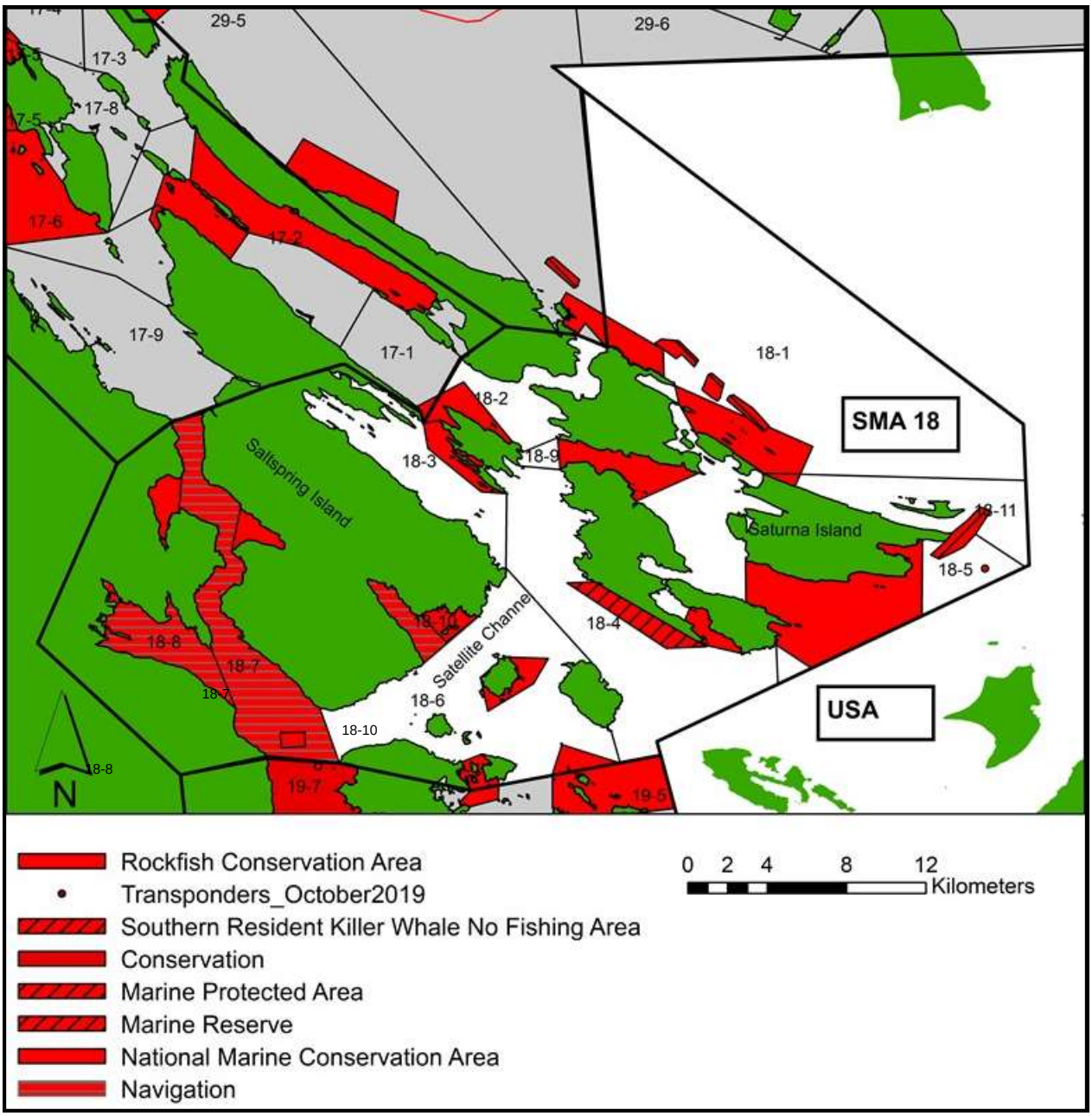


Figure 15. Shrimp Management Area: 18 (Subareas 18-1 to 18-6, 18-9 and 18-11). Closed in 18-7, 18-8 and 18-10.

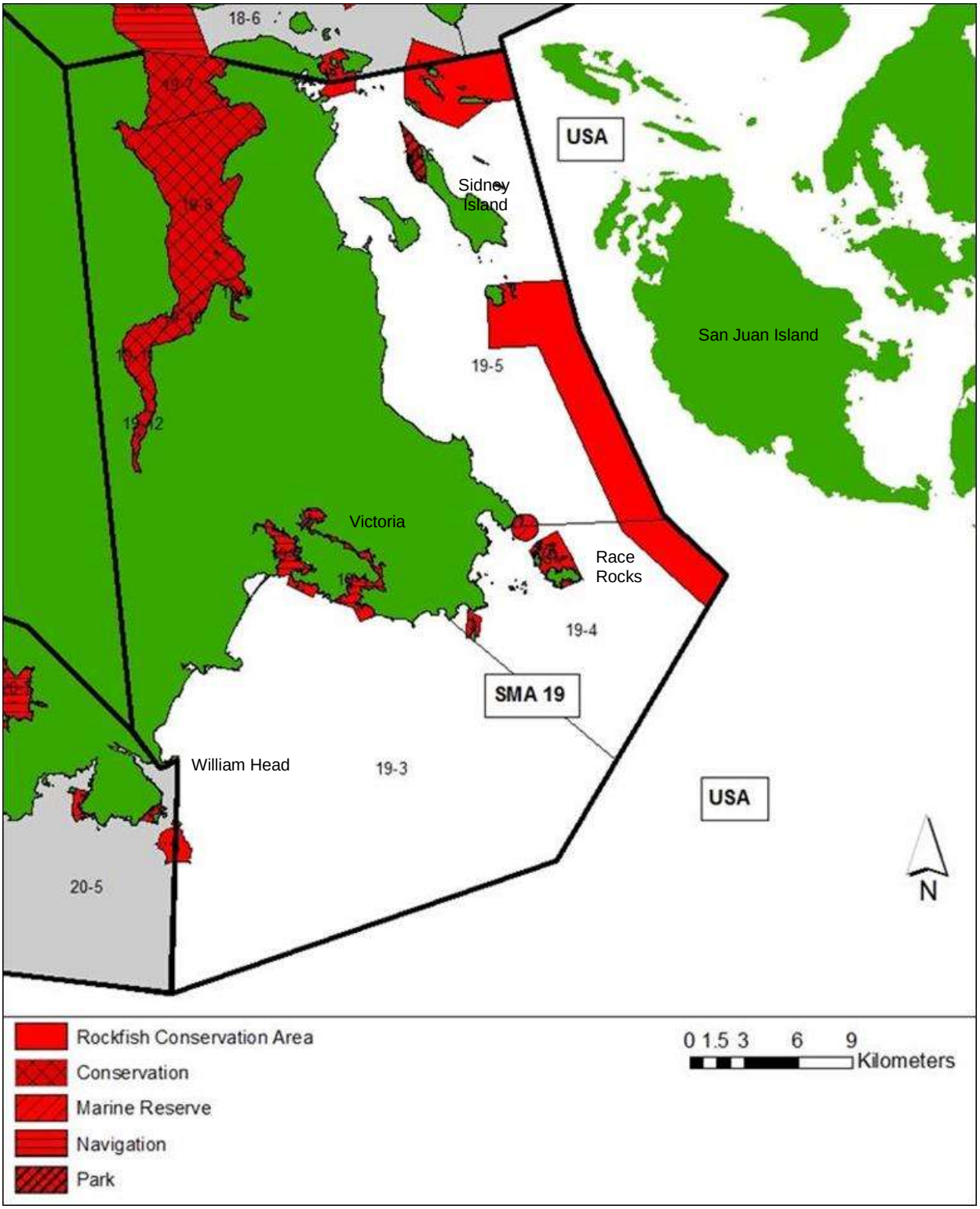


Figure 16. Shrimp Management Area: 19 (Subareas 19-3 to 19-5). Closed in 19-1, 19-2, 19-6, 19-7 to 19-12.

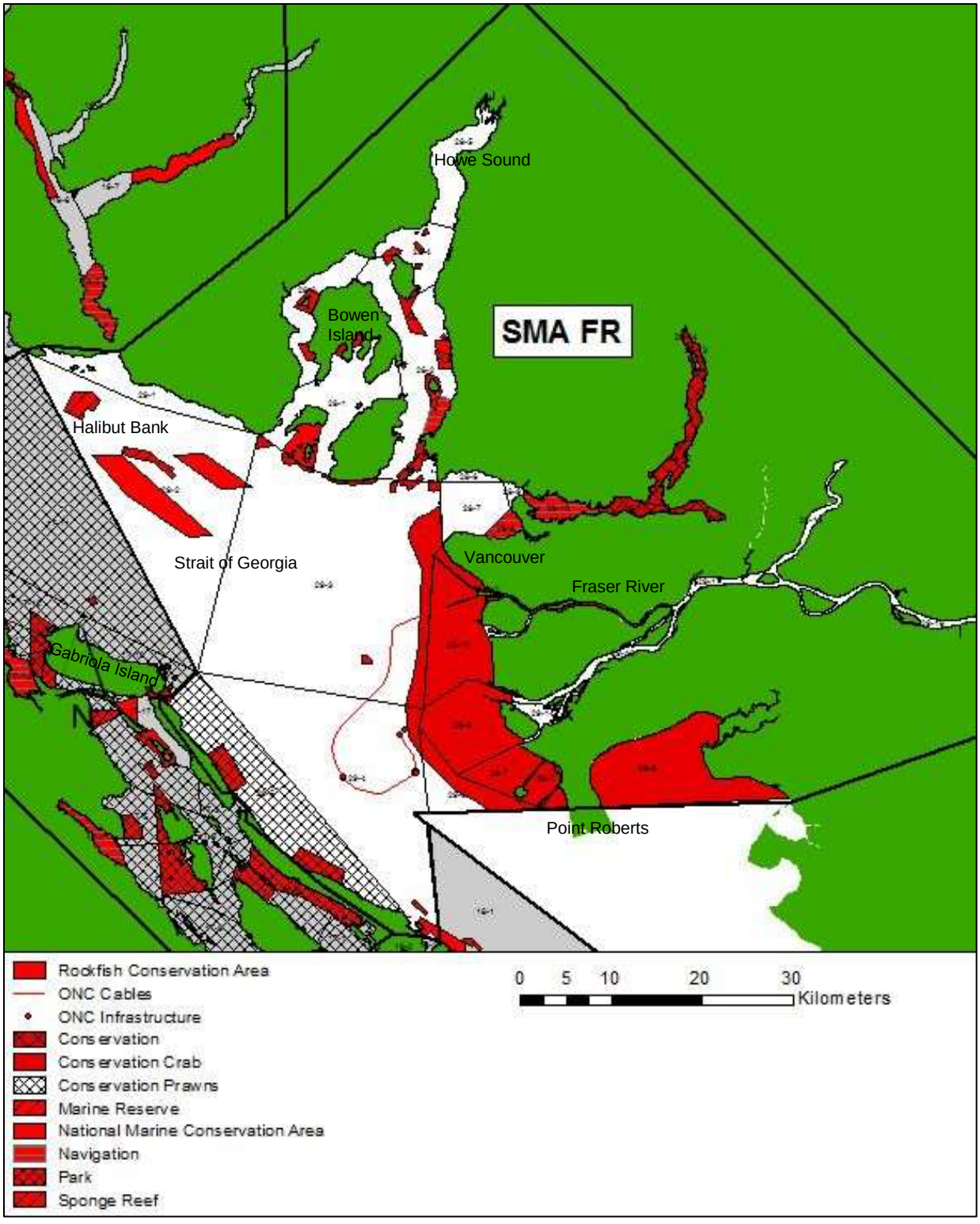


Figure 17. Shrimp Management Area: FR (Subareas 28-1 to 28-7, 28-9 and Subareas 29-1 to 29-6). Closed in 28-8, 28-10 and 28-11 to 28-14, 29-7 to 29-10, 29-12 and portions of 29-3, 29-4 and 29-6.

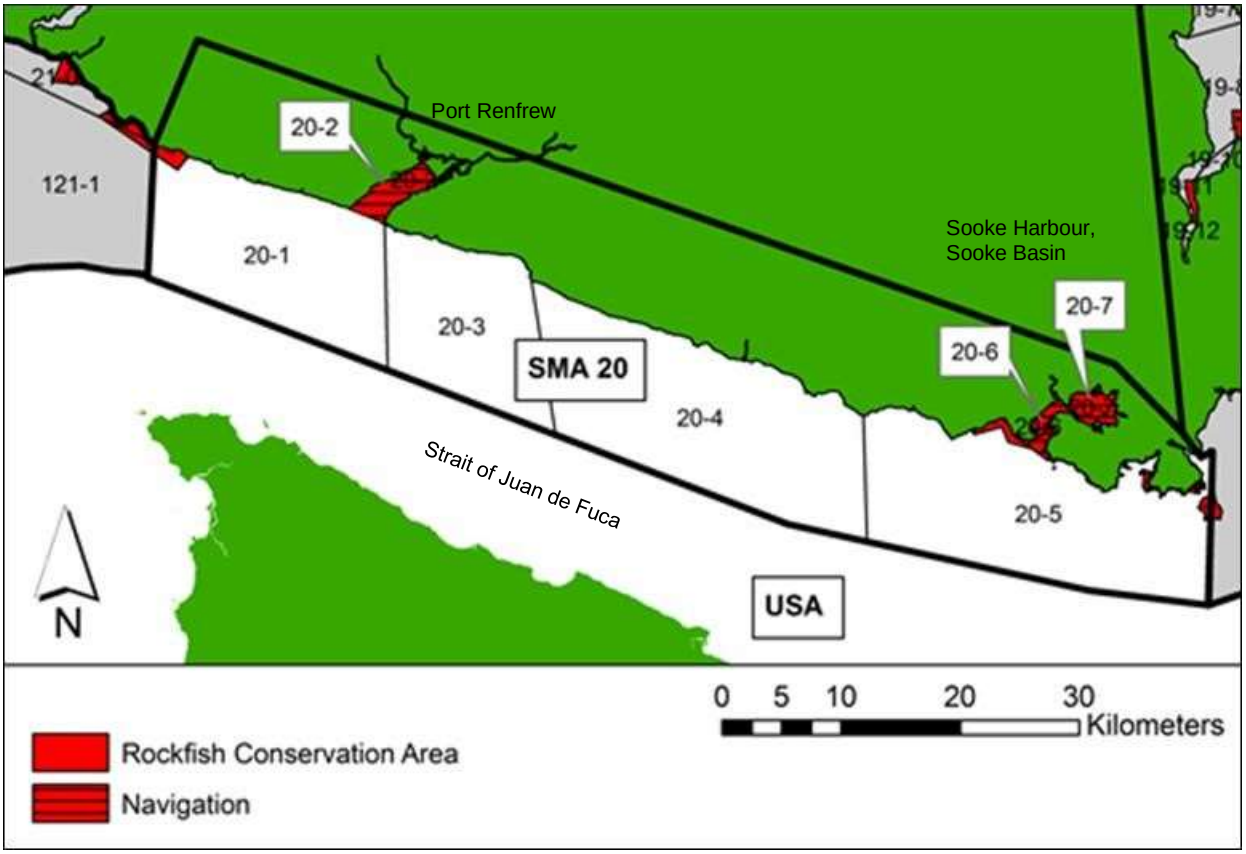


Figure 18. Shrimp Management Area: 20 (Subareas 1, 3, 4 and 5). Closed in 20-2, 20-6, 20-7.

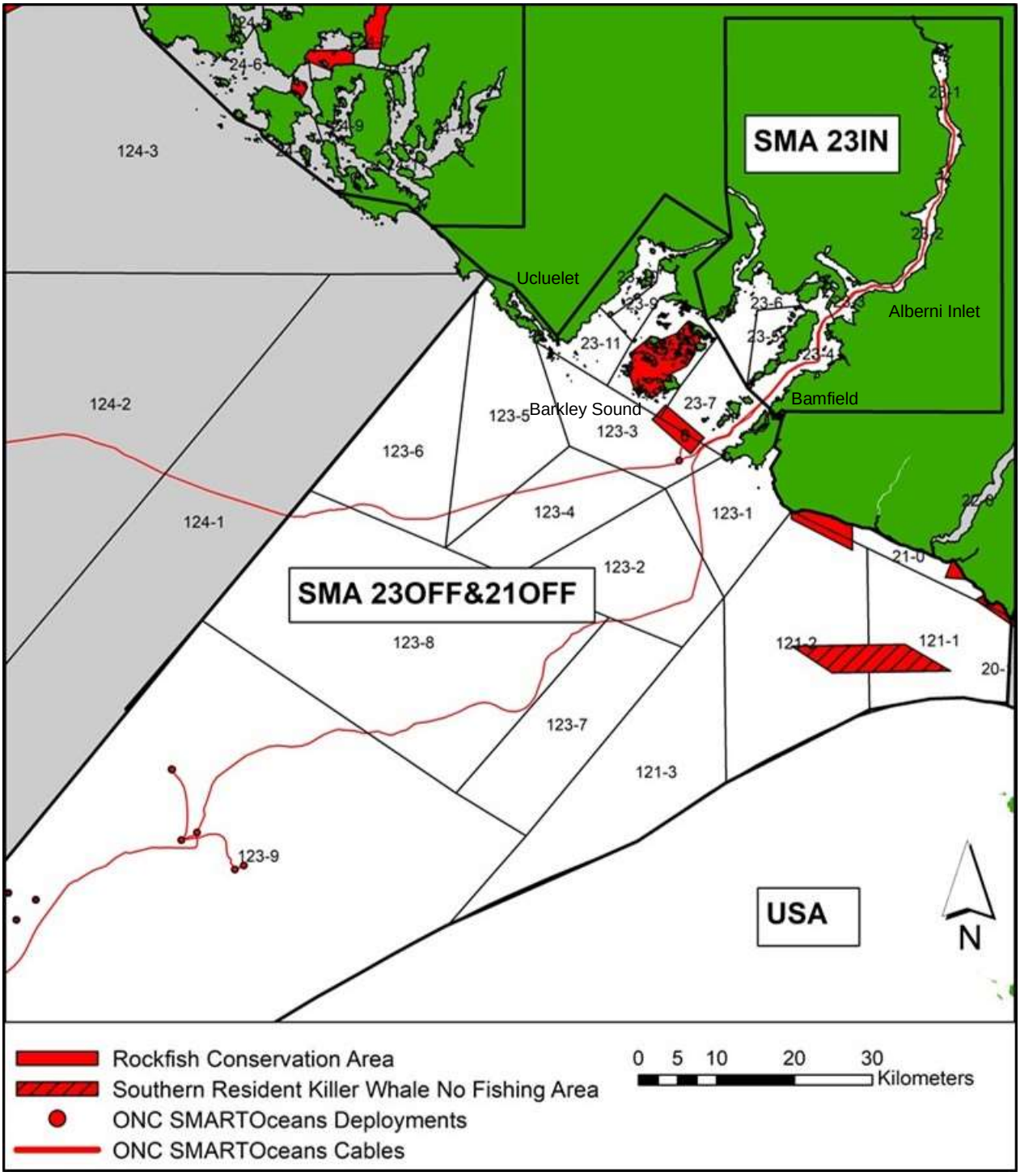


Figure 19. Shrimp Management Areas: 23IN (Subareas 23-1 to 23-6) and SMA 23OFF&21OFF (Subareas 23-7 to 23-11 and Areas 21, 121 and 123).

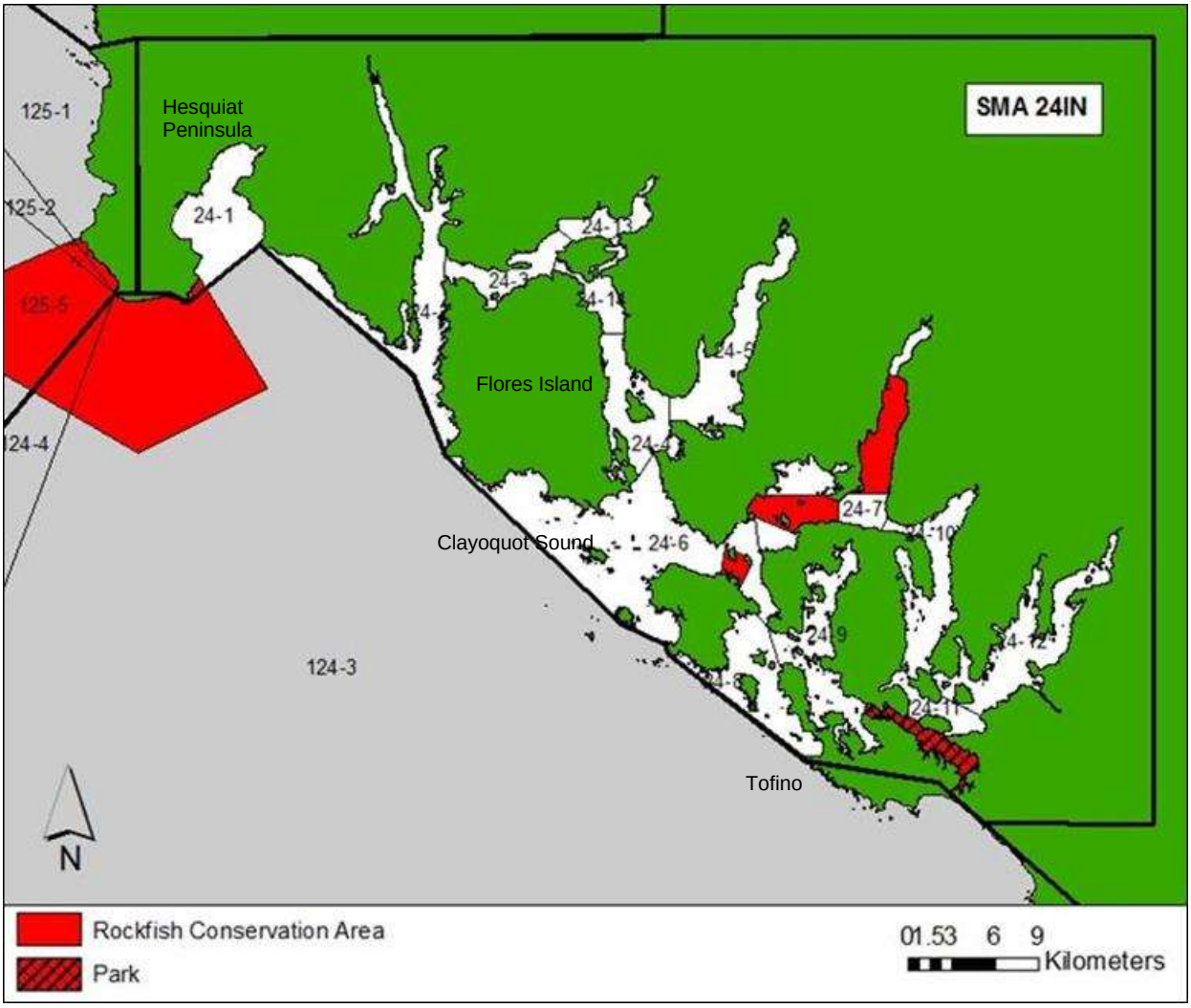


Figure 20. Shrimp Management Area: 24IN (Area 24).

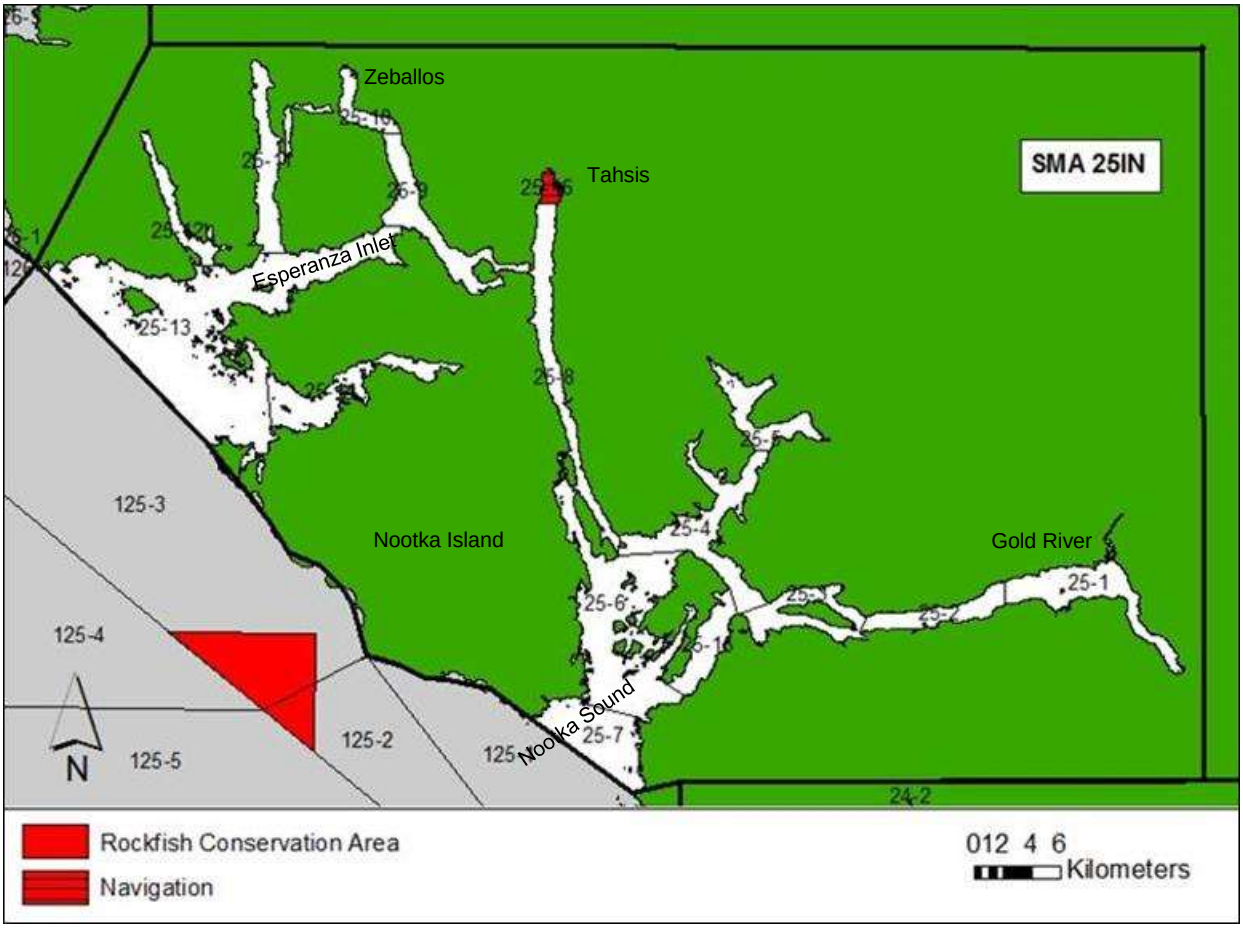


Figure 21. Shrimp Management Area: 25IN (Subareas 25-1 to 25-15). Closed in 25-16.

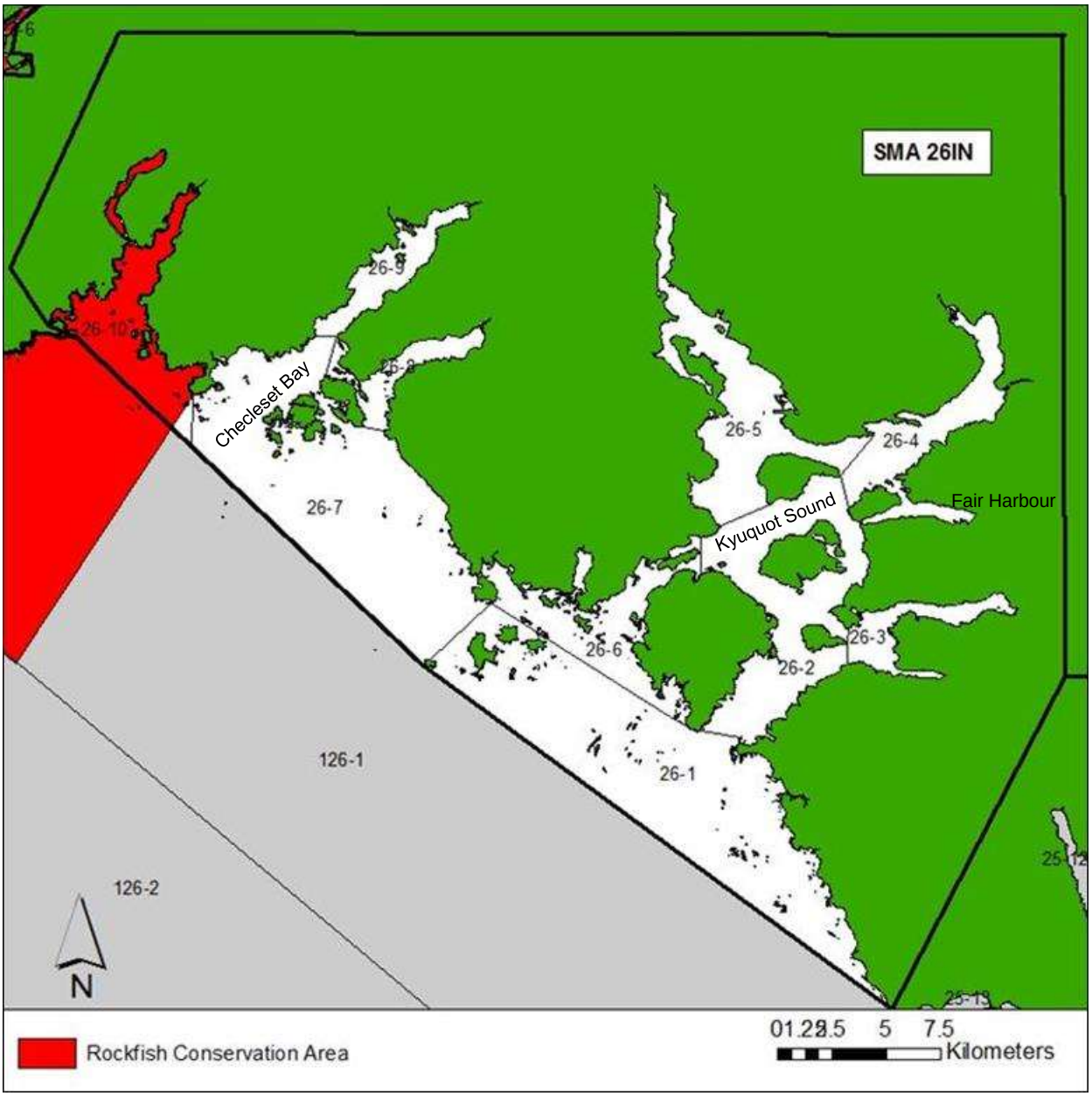


Figure 22. Shrimp Management Area: 26IN (Subareas 26-1 to 26-9). Closed in 26-10.

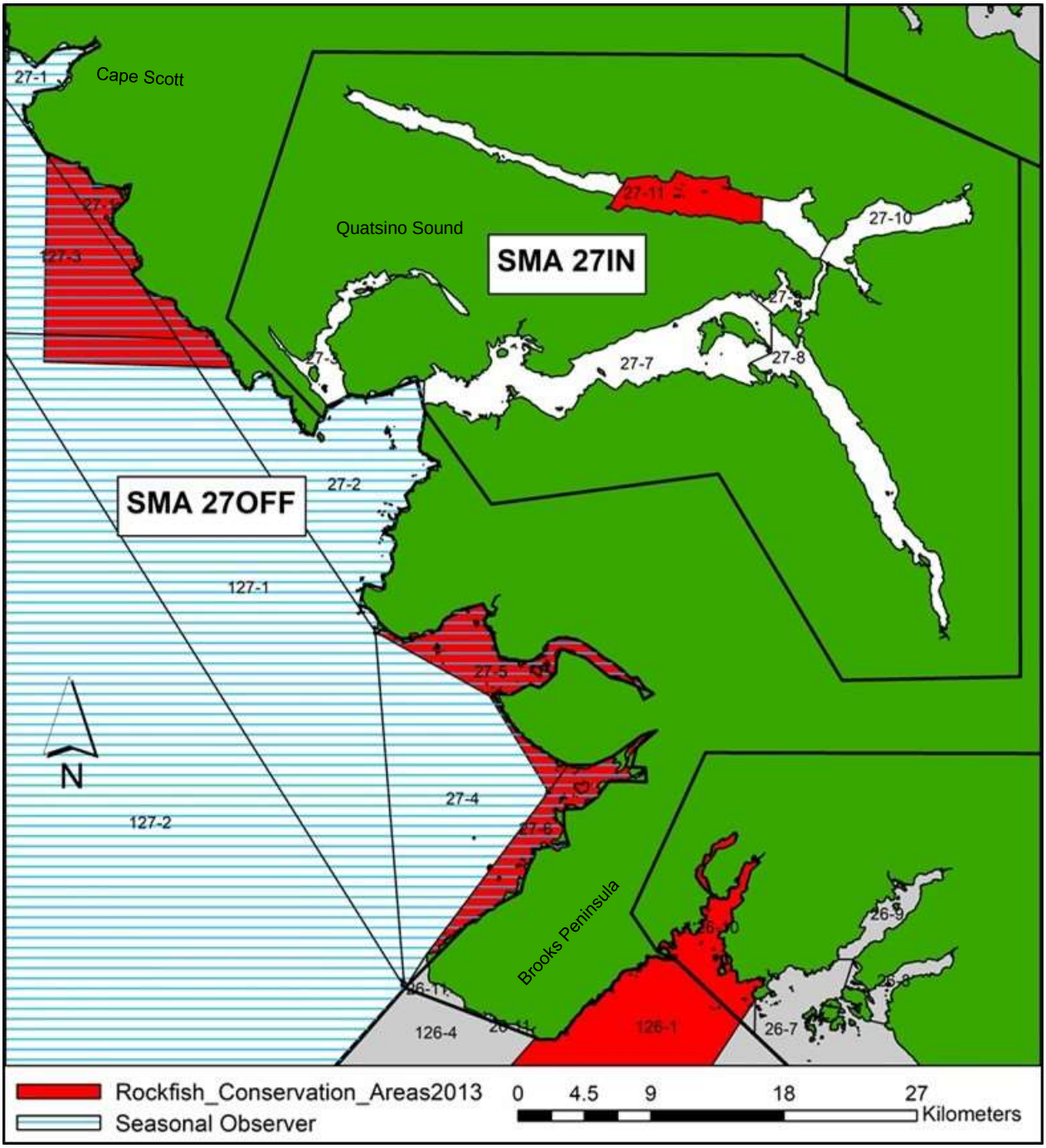


Figure 23. Shrimp Management Areas: 27IN (Areas 27-3, 27-7 to 27-11) and 27OFF (Areas 27-1, 27-2, 27-4, 127). Closed in 27-5 and 27-6.

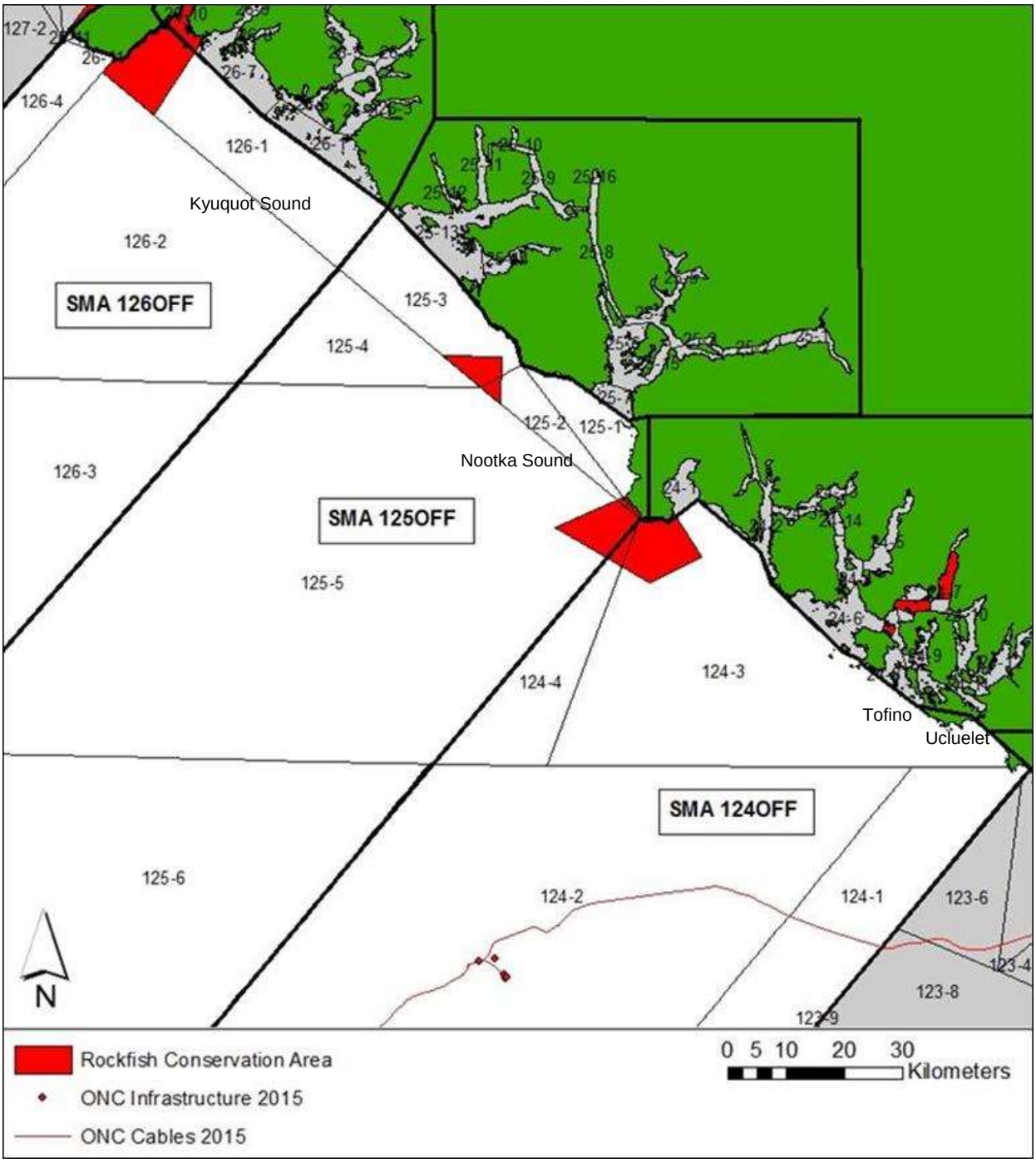


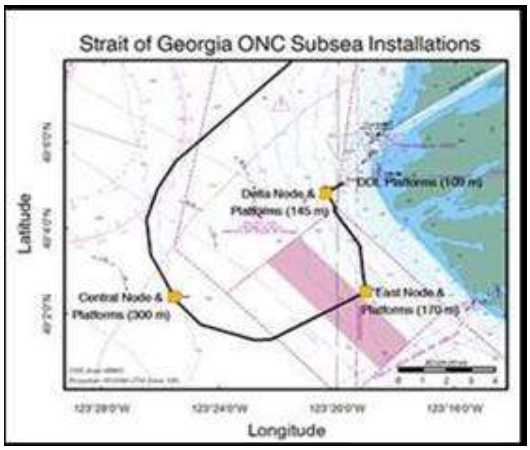
Figure 26. Shrimp Management Areas: 124OFF (Area 124), 125OFF (Area 125) and 126OFF (Area 126 and Subarea 26-11).

APPENDIX 10: FISHING HAZARD ADVISORY - VENUS GEORGIA STRAIT NODE, AREA 29

The Victoria Experimental Network Under the Sea (VENUS) is an oceanographic project managed by Ocean Networks Canada (ONC) of the University of Victoria. It consists of cabled observatories in both Saanich Inlet and the Strait of Georgia. From a shore landing, an armoured marine cable extends along the ocean bottom to large observatory "Nodes", into which oceanographic instrument systems connect. High voltage power is supplied down the cable, and Ethernet communications along fibre optics bring data and images back to the University in real time. Project status, system information, and data are available from the Ocean Networks Canada web site: www.oceannetworks.ca

What: High voltage marine fibre optic cables and observatory systems.
When: Latest system and instrument deployments: 24 June 2017.
Where: Strait of Georgia – Subareas 29-3 and 29-4.

The following gear is considered permanent, and will be serviced for many years. Each "Node" is surrounded by a study area of approximately 250m radius, with instruments and cables. A cable connects these nodes providing power and communications. Cables and Obstruction Areas are noted on the most recent CHS charts #3492 and #3463.



Platforms:

Name	Latitude	Longitude	Depth	Notes	Description
Central Node	49° 2.4262'N	123° 25.5477' W	300 m	Chart 3463	Large (4 m) orange and black frame
Central VIP	49° 2.4410'N	123° 25.5486' W	298 m		Large (3 m) grey steel frame
Central Tripod	49° 2.4399'N	123° 25.5527' W	297 m		Small (1 m) aluminum tripod
Central Hydrophone	49° 2.4755'N	123° 25.5432' W	298 m		Small (1 m) grey aluminum tripod
East Node	49° 2.5701'N	123° 19.0359' W	170 m	Chart 3463	Large (4 m) orange and black frame
East VIP	49° 2.5548'N	123° 18.9987' W	168 m		Large (3 m) grey steel frame
East VIP Tripod	49° 2.5535'N	123° 19.9950' W	167 m		Small (1 m) Aluminum tripod
East ULS Platform	49° 2.5946'N	123° 19.0648' W	166 m		Large (3 m) grey and black steel tripod
Delta Node	49° 4.8400'N	123° 20.3970' W	145 m	Chart 3492	Large (3 m) white steel frame
Delta - BBL Platform	49° 4.8384'N	123° 20.3560' W	145 m		Small (2 m) white steel frame
Delta Hydrophone Array	49° 4.8493'N	123° 20.3538' W	147 m		1.5 m white and orange steel tripod with 20 m extension cable to a 1.5 m steel square platform
Delta Fish Acoustics Experiment	49° 4.8512' N	123° 20.3501' W	143 m		Small (1.5 m) grey steel trapezoidal frame
DDL Platform	49° 5.1057'N	123° 19.8093' W	109 m	Chart 3492	Large (4 m) white steel triangular frame with arms

Cable between East Node and DDL Node:

Cable Waypoint	Latitude	Longitude
A1	49° 2.5701' N	123° 19.0359' W
A2	49° 3.6423' N	123° 19.2406' W
A3	49° 4.3997' N	123° 20.0901' W
A4	49° 4.5607' N	123° 20.1173' W
A5	49° 4.7974' N	123° 20.2993' W
A6	49° 4.8238' N	123° 20.4189' W
A7	49° 4.8400' N	123° 20.3970' W

Cable between DDL Node and DDL Platform Site:

Cable Waypoint	Latitude	Longitude
B1	49° 4.8400' N	123° 20.3970' W
B2	49° 5.1043' N	123° 19.8128' W

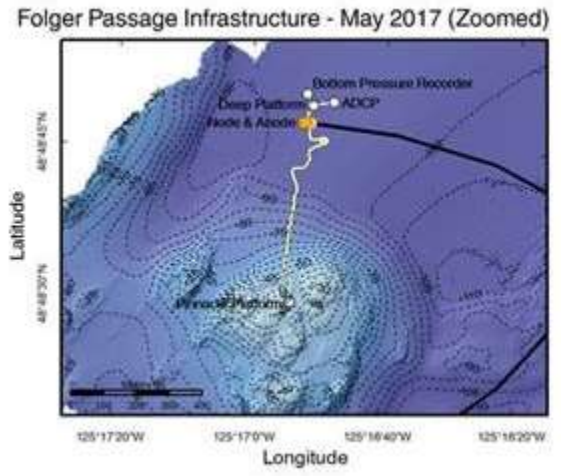
Contacts: If you have any concerns, or would like further information, please contact either: Adrian Round, Ocean Networks Canada's Director of Observatory Operations at around@uvic.ca or 250-472-5364 or Karen Douglas, GIS Specialist at kdouglas@uvic.ca or 250-472-5359.

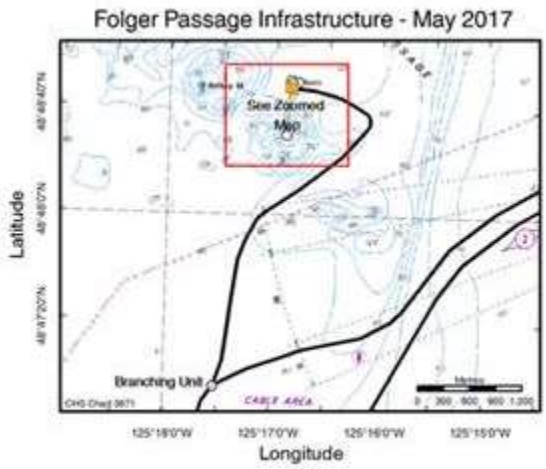
APPENDIX 11: FISHING HAZARD ADVISORY - NEPTUNE NODE, WEST COAST VANCOUVER ISLAND

NEPTUNE Observatory: Folger Passage May 2017

Project: The North-East Pacific Undersea Networked Experiments (NEPTUNE) is an oceanographic project managed by Ocean Networks Canada (ONC), an initiative of the University of Victoria. It consists of a cabled observatory off the west coast of Vancouver Island, beginning in Port Alberni and extending 300 km offshore along an 813 km loop. From a shore landing, an armoured marine cable extends along the ocean bottom to large observatory "Nodes", into which oceanographic instrument systems connect. High voltage power is supplied down the cable, and Ethernet communications along fibre optics bring data and images back to the University in real time. Project status, system information, and data are available from the ONC website: www.oceannetworks.ca

What: High voltage marine fibre optic cables and observatory systems
When: Latest system and instrument deployments in Folger Passage: 2 May 2017
Where: Folger Passage, West Coast Vancouver Island. See chart # 3671 for obstructions and cables.





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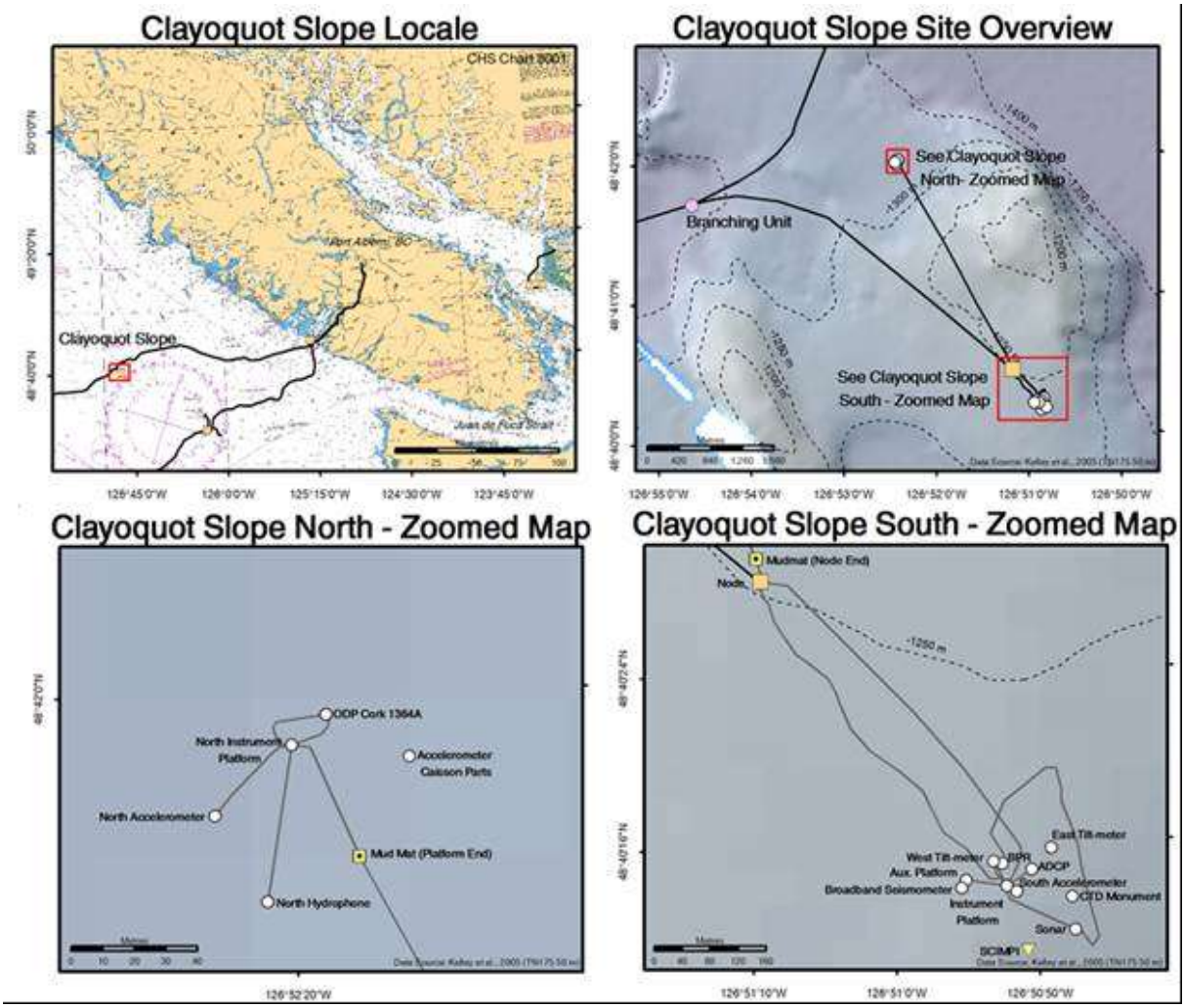
NEPTUNE Observatory: Clayoquot Slope (Formerly ODP 889) June 2017

Project: The North-East Pacific Undersea Networked Experiments (NEPTUNE) is an oceanographic project managed by Ocean Networks Canada (ONC), an initiative of the University of Victoria. It consists of a cabled observatory off the west coast of Vancouver Island, beginning in Port Alberni and extending 300 km offshore along an 813 km loop. From a shore landing, an armoured marine cable extends along the ocean bottom to large observatory "Nodes", into which oceanographic instrument systems connect. High voltage power is supplied down the cable, and Ethernet communications along fibre optics bring data and images back to the University in real time. Project status, system information, and data are available from the ONC web site: www.oceannetworks.ca

What: High voltage marine fibre optic cables and observatory
When: Latest system and instrument deployments at Clayoquot Slope: June 8, 2017
Where: Clayoquot Slope, West Coast Vancouver Island. See chart # 3001 (ENC CA270389) for main cable route.



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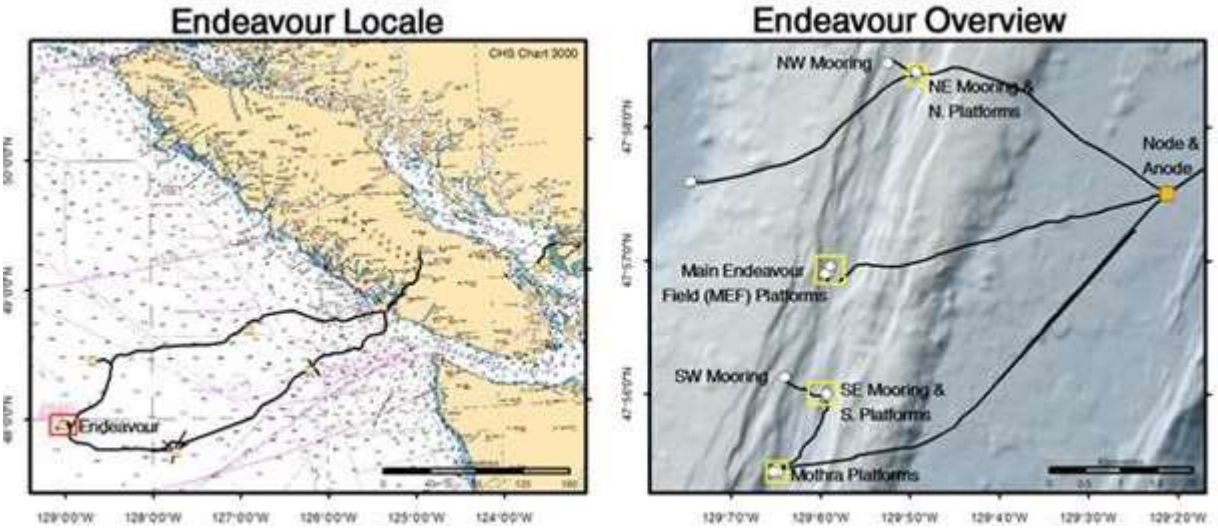
NEPTUNE Observatory: Endeavour – June 2017

Project: The North-East Pacific Undersea Networked Experiments (NEPTUNE) is an oceanographic project managed by Ocean Networks Canada (ONC), an initiative of the University of Victoria. It consists of a cabled observatory off the west coast of Vancouver Island, beginning in Port Alberni and extending 300 km offshore along an 813 km loop. From a shore landing, an armoured marine cable extends along the ocean bottom to large observatory "Nodes", into which oceanographic instrument systems connect. High voltage power is supplied down the cable, and Ethernet communications along fibre optics bring data and images back to the University in real time. Project status, system information, and data are available from the ONC web site: www.oceannetworks.ca

What: High voltage marine fibre-optic cables and observatory systems.
When: Latest system and instrument deployments at the Endeavour site: June 18, 2017
Where: Endeavour, Juan de Fuca Ridge, West Coast Vancouver Island. See chart # 3000.

The infrastructure at Endeavour is located within the Canadian Department of Fisheries and Oceans' Marine Protected Area.

Remotely Operated Vehicle Operators should be made aware that there are 4 moorings at this site that extend 250 m into the water column. Please contact us for more information (contact information provided below).



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Adrian Round, ONC's Director of Observatory Operations at around@uvic.ca or 250-472-5364
or Karen Douglas, GIS Specialist at kdouglas@uvic.ca or 250-472-5359.

Figure 1: Regional Circulation Mooring Diagram

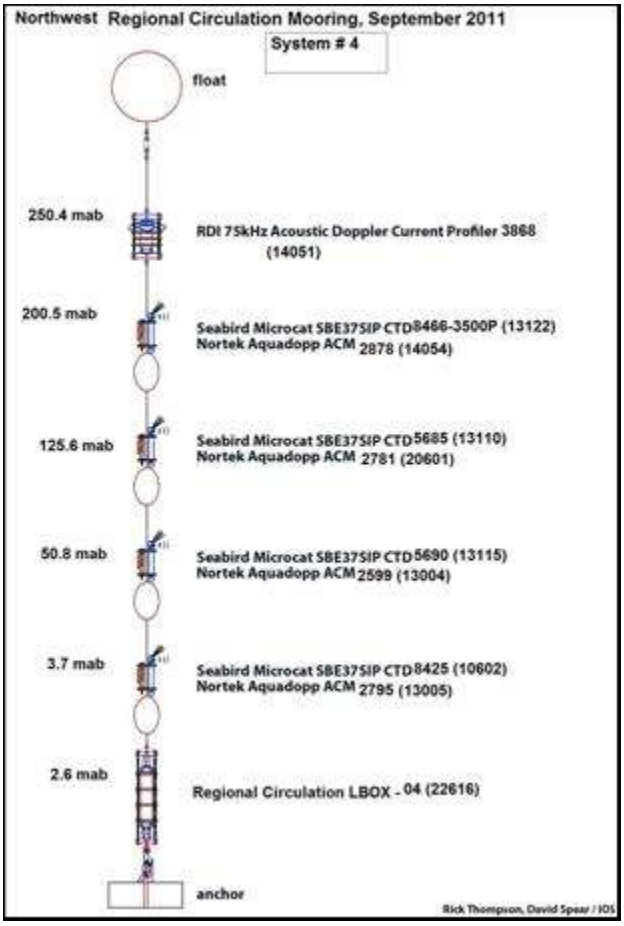
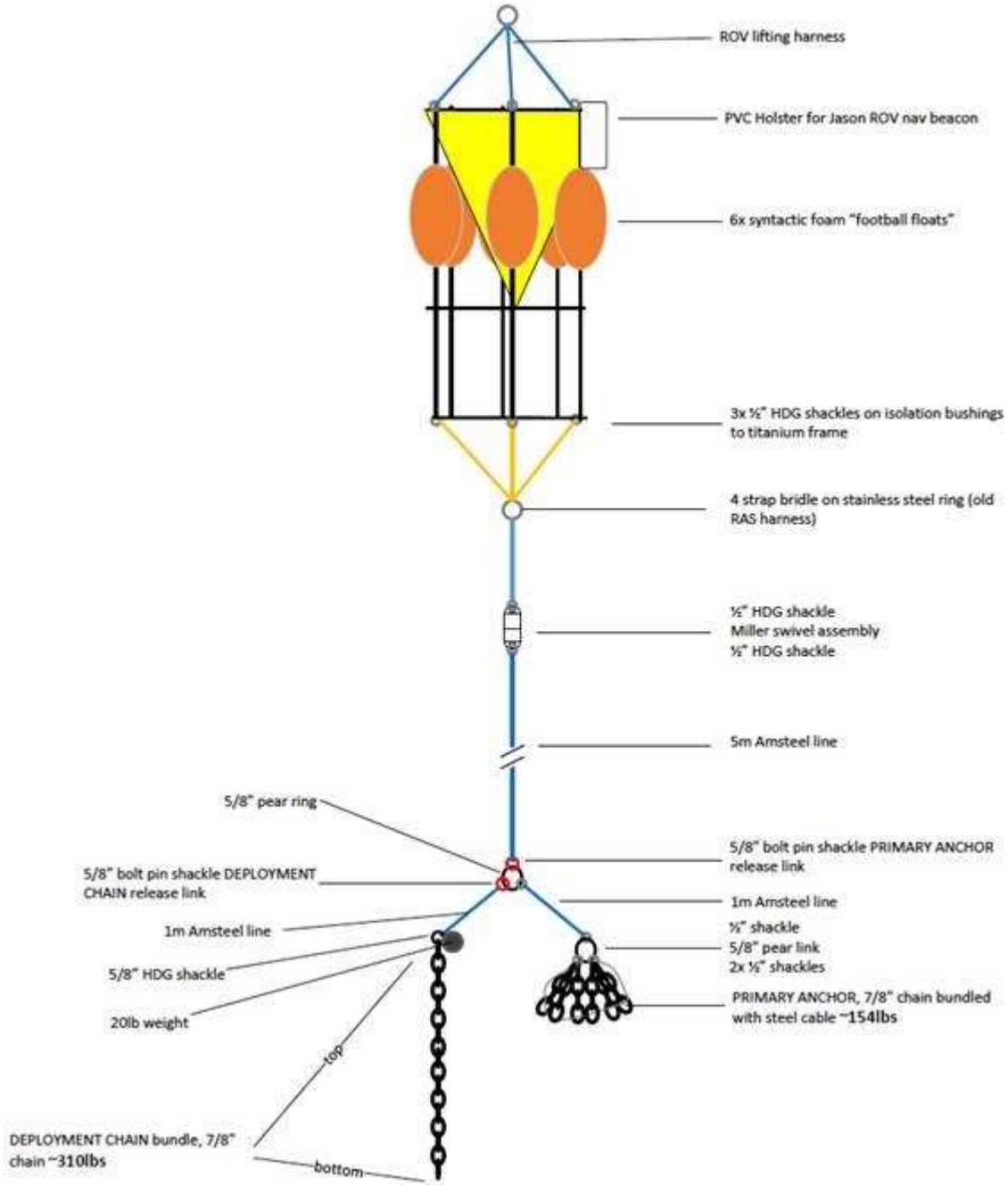


Figure 2: Sediment Trap Diagram



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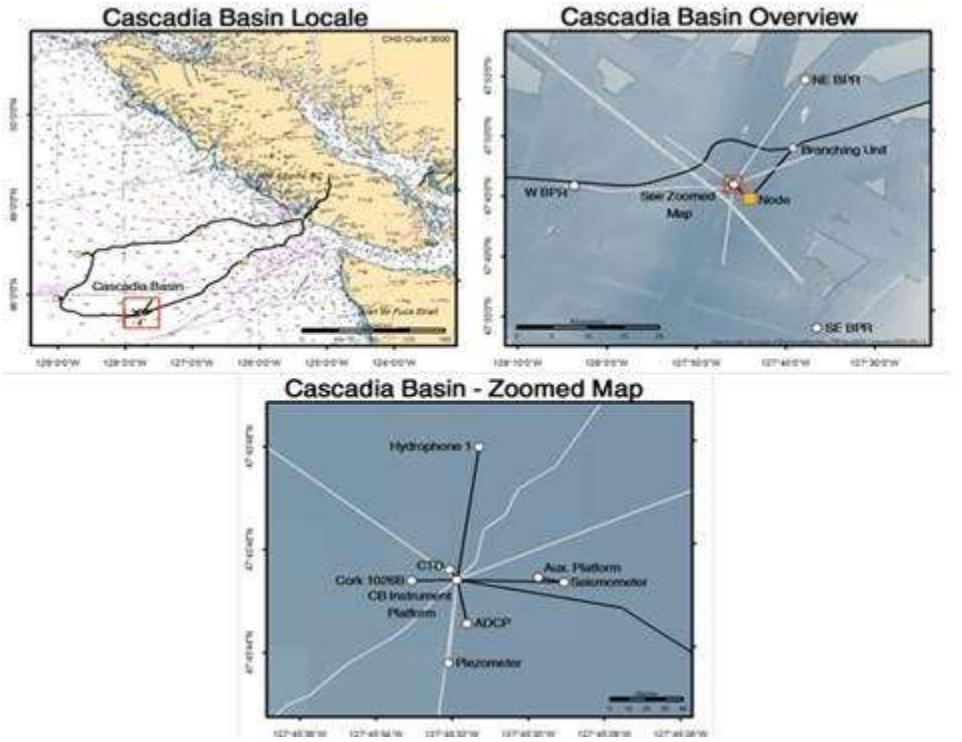
NEPTUNE Observatory: Cascadia Basin (Formerly ODP 1027) – June 2017

Project: The North-East Pacific Undersea Networked Experiments (NEPTUNE) is an oceanographic project managed by Ocean Networks Canada (ONC), an initiative of the University of Victoria. It consists of a cabled observatory off the west coast of Vancouver Island, beginning in Port Alberni and extending 300 km offshore along an 813 km loop. From a shore landing, an armoured marine cable extends along the ocean bottom to large observatory "Nodes", into which oceanographic instrument systems connect. High voltage power is supplied down the cable, and Ethernet communications along fibre optics bring data and images back to the University in real time. Project status, system information, waypoint downloads and data are available from the ONC web site: www.oceannetworks.ca

What: High voltage marine fibre optic cables and observatory systems
When: Latest system and instrument deployments at the Cascadia Basin site: June 19, 2017
Where: Cascadia Basin, West Coast Vancouver Island. See chart # 3001 (ENC CA270389) for main cable route.



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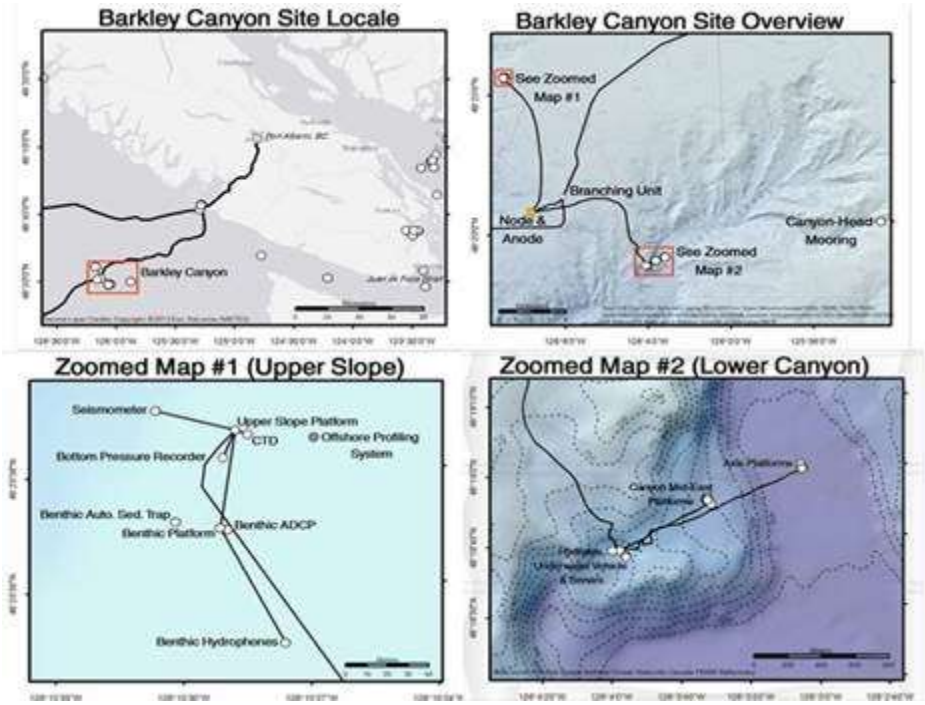
Contacts: If you have any concerns, or would like further information, please contact either: Adrian Round, ONC's Director of Observatory Operations at around@uvic.ca or 250-472-5364 or Karen Douglas, GIS Specialist at kdouglas@uvic.ca or 250-472-5359.

NEPTUNE Observatory: Barkley Canyon– June 2017

Project: The North-East Pacific Undersea Networked Experiments (NEPTUNE) is an oceanographic project managed by Ocean Networks Canada (ONC), an initiative of the University of Victoria. It consists of a cabled observatory off the west coast of Vancouver Island, beginning in Port Alberni and extending 300 km offshore along an 813 km loop. From a shore landing, an armoured marine cable extends along the ocean bottom to large observatory "Nodes", into which oceanographic instrument systems connect. High voltage power is supplied down the cable, and Ethernet communications along fibre optics bring data and images back to the University in real time. Project status, system information, and data are available from the ONC website: www.oceannetworks.ca

What: High voltage marine fibre optic cables and observatory systems
When: Latest system and instrument deployments in Barkley Canyon: June 20, 2017
Where: Barkley Canyon and Upper Slope, West Coast Vancouver Island. See chart # 3001 (ENC CA270389) for main cable route. The Vertical Profiling System (a winched profiling buoy extending from the seafloor to the sea surface) is listed on the Automatic Identification System (AIS) as MMSI 993166003.



These figures have been produced by the University of Victoria based on Canadian Hydrographic Service (CHS) charts, pursuant to CHS Direct User License No. 2015-0223-1260-V. The incorporation of data sourced from CHS in these products shall not be construed as constituting an endorsement by CHS of these products. These products do not meet the requirements of the Charts and Nautical Publications Regulations, 1995 under the Canada Shipping Act, 2001. Official charts and publications; corrected and up-to-date, must be used to meet the requirements of those regulations.

Note: Cables are exposed at the surface. Please use caution when operating in this area.

Contacts: If you have any concerns, or would like further information, please contact either: Adrian Round, Ocean Networks Canada's Director of Observatory Operations at around@uvic.ca or 250-472-5364 or Karen Douglas, GIS Specialist at kdouglas@uvic.ca or 250-472-5359.

APPENDIX 12: TERMS OF REFERENCE OF THE SHRIMP TRAWL SECTORAL COMMITTEE

1. MANDATE

The Shrimp Trawl Sectoral Committee provides a forum for the exchange of information and views between the people involved with the industry and the Department of Fisheries and Oceans (DFO) on issues important to the management of the fishery. It should be noted that DFO's primary mandate remains the conservation and protection of stocks to ensure long-term, sustainable harvest. The Sectoral Committee is not a voting body; the intent is for DFO to receive a broad range of advice from stakeholders and other concerned parties. DFO, however, remains the decision making authority. The purpose of the sectoral committee is to act as a vehicle for positive change. It is essential that members assume the responsibility of keeping themselves informed to achieve effective and productive meetings.

1.1. The Sectoral Committee has the following goals.

1.1.1. Allow the exchange of information between First Nations, commercial, and recreational fishing interests, and DFO.

1.1.2. Advise on the development of annual Management Plans for the fishery.

1.1.3. Develop cooperative programs, joint projects, and partnerships to develop long-term management strategies for the fishery, including:

- Provide information and advice regarding stock assessment and biological research for the fishery.
- Develop means to reduce bycatch in the shrimp trawl industry.

1.1.4. Advise the Minister of Fisheries and Oceans on the use of discretionary penalties against harvesters caught violating the rules and regulations of the fishery.

1.1.5. Recommend representatives to other advisory bodies, as required.

2. ORGANIZATION

Advisors will be selected to represent the following stakeholders and will be responsible for keeping their constituents informed:

Licence holders	Up to 6 advisors, selected by S licenced vessel owners to represent current licence holders
Processors	Up to 4 advisors, selected to represent active buyers and processors
Executive Directors of licence holder associations	TBD - new for 2018
First Nations	1+ advisors, selected to represent First Nations interests
Other representatives	1+ advisors, if necessary, selected to represent other significant interests in the fishery (e.g., recreational harvesters, aquaculture, crew)

- Licence holder representatives will be selected either by a vote conducted by DFO of the licence holders of record or by organisations representing the licence holders. DFO may appoint additional advisors to ensure representation from all geographic areas and gear groups.
- Processors will be selected by DFO to represent all active buyers and processors in the fishery.
- First Nations representatives will be identified following consultation with Aboriginal groups.
- Advisors will be elected or appointed for a three year term. Licence holders may select another current advisor to represent them during the three years. Advisors will not be added unless the Committee provides unanimous consent.
- Each advisor will identify an alternate, who may attend all meetings but only participate if the advisor is absent.
- The Ministry of Agriculture, Food and Fisheries, and, if necessary, other Ministries, will represent the Province of B.C. on the Committee.
- DFO will chair the Committee meetings. Other DFO staff will attend as appropriate.
- The Committee can invite other people to participate when appropriate.

3. PROCEDURES

Minutes of all meetings will be taken. They will be distributed to all advisors for approval, then made available to the public. The information will be available on the internet following links from the Shellfish Consultations webpage at:

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

Committee recommendations will only be made with the agreement of all advisors. When complete agreement cannot be reached, all consenting and dissenting opinions will be recorded in the minutes.

All Sectoral Committee meetings can be attended by observers, subject to prior approval by the chairperson. These observers cannot participate in the meeting unless approved by the chairperson.

The chairperson can appoint subcommittees to report on specific tasks. The subcommittee will require clear objectives, members identified (including the chairperson), and set deadlines.

There must be at least one meeting a year to consider the annual management plan. The chairperson can call other meetings as required. The chairperson will prepare an agenda and circulate it to all advisors before the meeting.

The Sectoral Committee will consider developing a code of conduct that, if violated, provides the basis for dismissal from the Committee. Repeated absence from meetings and blatant violations against the *Fisheries Act* or Regulations would be considered adequate grounds for dismissal.

4. UPCOMING CHANGES TO THE SECTORAL COMMITTEE

With the recent changes in organization for the commercial licence holders, and increasing interest from other parties in participating on the formal sectoral committee, DFO will be putting forward

recommendations for changes in the sectoral committee membership and mandate. DFO will consult with the current sectoral committee and others in developing the recommendations.

APPENDIX 13: EXAMPLE CONDITIONS OF LICENCE

CONDITIONS OF SHRIMP BY TRAWL LICENCE – **NOT OFFICIAL VERSION**
Licence Period: April 1, 20xx to March 31, 20xx

These conditions are provided as an example only. Harvesters must refer to their official licence conditions issued with their official legal licence for final wording.

Authority

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

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

Also, it is the responsibility of individual fish harvesters 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 shrimp-by-trawl fishery obtain a copy of the current Integrated Fisheries Management Plan for Shrimp by Trawl. The Management Plan is intended for general information purposes only. Where there is a discrepancy between the Plan and the *Fisheries Act* and regulations or these conditions, the *Fisheries Act* and regulations and these conditions prevail.

PART 1

Application

This Part applies to fishing for shrimp, by means of trawl gear.

Definitions

"Area" and "Subarea" have the same meanings as in section 2 of the *Pacific Fishery Management Area Regulations, 2007*.

"beam trawl" means a bag shaped net that is dragged through the water by a vessel for the purpose of catching shrimp, in which the mouth of the net is held open by a single rigid beam of wood or metal.

"Department (DFO)" means the Department of Fisheries and Oceans.

"fishing trip" means a voyage that commences at the time a fishing vessel leaves a port, dock or other permanent anchorage to engage in fishing and terminates at the time any fish caught during that period are offloaded.

"landed" or "landing" means the transfer of any quantity of shrimp from a vessel to land including docks and wharves at the end of a fishing trip.

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

"offloading" means the landing or removal of catch from the vessel.

"otter trawl" means a bag shaped net dragged through the water by a vessel for the purpose of catching shrimp, in which the mouth of the net is held open by "otter" boards (or commonly known as "doors") of wood and/or metal.

"Shrimp Management Areas" are described in the current "Integrated Fisheries Management Plan for Shrimp by Trawl".

"vessel registration number (VRN)" means the number assigned to a vessel by the Department at the time the vessel is registered as a fishing vessel.

1. Species, quantity, and size of fish permitted to be taken:

(1) The following shrimp species may be caught and retained:
(a) Northern Pink Shrimp (*Pandalus borealis*);
(b) Pink Shrimp (*Pandalus jordani*);
(c) Sidestripe Shrimp (*Pandalopsis dispar*);
(d) Flexed Shrimp (*Pandalus goniurus*);
(e) Coonstripe Shrimp (*Pandalus danae*); and
(f) Humpback Shrimp (*Pandalus hypsinotus*).

(2) Prawn Shrimp (*Pandalus platyceros*) caught incidentally while fishing for those species of shrimp set out in subsection 1(1) may be retained in a quantity that does not exceed 100 individual whole, in the shell, Prawn Shrimp, provided that the area is open for fishing for Prawn Shrimp by means of trawl gear.

(3) The minimum size limit for prawns is 33 mm carapace length, measured from the posterior-most part of the eye orbit to the posterior mid-dorsal margin of the carapace.

(4) Opal Squid (*Doryteuthis opalescens*) caught incidentally while fishing for those species of shrimp set out in subsection 1(1) may be retained in a quantity that does not exceed 2% of the total weight of shrimp on board the vessel.

(5) Octopus (*Enteroctopus dofleini*) caught incidentally while fishing for those species of shrimp set out in subsection 1(1) may be retained.

2. Waters where fishing is permitted:

Subject to variation of the close times set out in the *Pacific Fishery Regulations, 1993*, fishing under the authority of this licence is permitted within all Areas and Subareas, except Areas 2, 107 to 111, 130, and Subareas 7-1, 7-25, 7-26, 7-31, 8-1, 10-1, 10-2, 11-1 and 11-2.

Note: See section 16 of these conditions for special requirements specific to fishing in Areas 124 and 125.

3. Fishing gear permitted to be used:

(1) An otter trawl net or beam trawl net modified to reduce by-catch of species other than shrimp in the manner described in subsections 3(2) and

3(3). Refer to the current Integrated Fisheries Management Plan for Shrimp by Trawl for further information.

(2)(a) Each trawl net used under this licence shall have a rigid grid (e.g. aluminum, PVC), sometimes called a Nordmore grate, inserted into the forward end of the cod end of the trawl net at an angle so that it entirely blocks access to the cod end, except for the spaces between the bars.
(b) Within Pacific Fisheries Management Areas 21, 121, 23-7 to 23-11, 123, 124, 125, and 127 the bars of the grid shall be not more than 19 mm apart. Within all other Pacific Fisheries Management Areas the bars shall not be more than 31.75 mm (1.25 inches) apart.
(c) The netting directly above the grid shall have a triangular opening ("escape hole") the full width of the grate. The sides of the opening shall be reinforced so that the opening remains unobstructed and maintains its shape while the net is being towed through the water.

(3) In addition, the top (hood or upper belly) of each otter trawl net used under this licence shall contain a minimum 4.4 m^2 panel of large mesh with minimum 4cm square openings, such as found in plastic lattice snow-fencing or large mesh netting hung on the square.

(4) Mechanized devices that automatically separate by-catch from shrimp (e.g. "smelt belts") shall not be used.

(5) On-board shrimp sorting devices to separate shrimp by size are allowed.

(6) The vessel master shall ensure that:
(1) vessels fishing for shrimp by trawl use footrope lighting devices (LEDs) on their trawl nets in all shrimp trawl management areas of the coast;
(2) at all times when the trawl nets are in the water;
(a) the lighting devices are operational;
(b) lighting devices are emitting a green colour;
(c) lighting devices are securely attached within 6 inches (15.24cm) of the forward leading edge of the bottom panel of trawl netting; and
(d) each trawl net has a minimum of five (5) lighting devices spaced 4 feet (1.22 m) apart in the central 16 feet (4.88 m) of each net.

4. The segregation of species on board the vessel:

(1) All prawn shall be segregated on board the vessel from all other species of shrimp.

(2) Subject to subsections (3) and (4), discarding of shrimp is not allowed. All shrimp (other than prawns and other species when areas are closed) that are caught shall be retained and reported in logbooks and hailed as landed catch.

(3) Undersize prawn, shrimp that the vessel is not permitted to retain and other by-catch for which the vessel does not have a licence shall be returned to the water immediately and in the manner that causes the least harm.

(4) Any prawns with an egg mass (berried females) shall be returned to the water immediately and in the manner that causes the least harm. Eggs shall not be removed from prawns carrying eggs.

5. If vessel is licensed for fishing for shrimp by means of trap gear:

Where this licensed vessel holds a shrimp-by-trap commercial fishing licence, any shrimp caught under authority of that licence shall be offloaded prior to the vessel fishing under authority of this licence.

6. Catch prohibited on board the licensed vessel while fishing:

(1) No prawns or shrimp that are not permitted to be retained under the authority of this licence shall be on board the licensed vessel.

7. Fishing Activity Reports:

(1) Prior to commencing fishing:
(a) Prior to commencing fishing and at least 24 hours prior to leaving port, the vessel master shall:
(i) obtain a Fishing Hail Number; and
(ii) record the Fishing Hail Number in the Shrimp Trawl Fishing Log.
The person identified as the vessel master in subsection 7(1)(b)(i) shall be considered to be the vessel master responsible for all fishing, vessel handling and reporting activities for the duration of the fishing trip.

(b) To obtain a Fishing Hail Number, the vessel master shall contact the DFO approved service provider contracted by the licence holder during the hours of 08:30 h to 16:30 h, (Monday to Friday only) and the following information shall be provided:
(i) vessel name, vessel registration number, vessel master's name and contact telephone number, autotel or cellular phone number of vessel, and gear type (beam or otter trawl); or a shrimp fish harvester identification number assigned by the service provider;
(ii) Subarea or Shrimp Management Area to be fished;
(iii) anticipated date and time fishing will begin;
(iv) anticipated number of fishing days for the fishing trip;
(v) target shrimp species, i.e. which species the vessel master will direct the fishing effort towards;
(vi) type of product to be produced, (i.e. fresh, live, frozen at sea);
(vii) anticipated date and time of offloading at the end of the fishing trip; and
(viii) anticipated port and location of offloading at the end of the fishing trip.

(2) Prior to changing area:
(a) In the event of a change in the Subarea or Shrimp Management Area to be fished as reported under subsection 6(1), the vessel master shall notify the DFO approved service provider contracted by the licence holder during the hours of 08:30 h to 16:30 h, (Monday to Friday only) and shall provide the following information:
(i) Fishing Hail Number which applies to the current fishing trip;
(ii) new Subarea or Shrimp Management Area to be fished;
(iii) the total weight of each species of shrimp as set out in subsection 1(1), on board the vessel from each Shrimp Management Area fished;
(iv) anticipated number of fishing days in the new Subarea or Shrimp Management Area;
(v) target shrimp species, i.e. which species the vessel master will direct the fishing effort towards;

(vi) type of product to be produced, i.e. fresh, live, frozen at sea etc.; and
(vii) anticipated port of landing at the end of the fishing trip.

(3) Fishing trips longer than seven days:
(a) Every seven days, the vessel master shall contact the DFO approved service provider and provide the following information:
(i) Fishing Hail Number which applies to the current fishing trip;
(ii) the Shrimp Management Area or Subarea in which fishing occurred; and
(iii) the total weight of each species of shrimp as set out in subsection 1(1), on board the vessel from each Shrimp Management Area fished.

(For example, if the Fishing Hail Report is made on Monday, then an update of catch information is required every Monday for the duration of the fishing trip.)

(4) Prior to landing catch:
(a) Prior to landing catch at the end of a fishing trip, the vessel master shall:
(i) obtain a Landing Hail Number; and
(ii) record the Landing Hail Number in the Shrimp Trawl Fishing Log.

(b) To obtain a Landing Hail Number, the vessel master shall contact the DFO approved service provider contracted by the licence holder and the following information shall be provided:
(i)Fishing Hail Number which applies to the current fishing trip;
(ii) vessel name, vessel registration number, vessel master's name, or shrimp fish harvester identification number;
(iii) date fishing began;
(iv) date of offloading;
(v) time of offloading;
(vi) port and location of offloading;
(vii) buyer;
(viii) the Shrimp Management Area(s) or Subarea(s) in which fishing occurred;
(ix) the total hours towed for each Shrimp Management Area fished; and
(x) the total weight of each species of shrimp*, as set out in subsection 1(1), on board the vessel from each Shrimp Management Area fished.

*Northern Pink Shrimp (*Pandalus borealis*) and Pink Shrimp (*Pandalus jordani*), may be reported as "Pink Shrimp".

(5) Should the vessel master decide not to fish after obtaining a Fishing Hail Number, the vessel master shall obtain a Landing Hail Number by contacting the DFO approved service provider and indicating that no fishing occurred.

8. Transporting shrimp:

(1) A copy of the fish slip (see section 12) shall be given to any person transporting shrimp or incidental catch caught under the authority of this licence and shall accompany the shrimp or incidental catch in transit, including shrimp or incidental catch for personal use.

9. Records – Harvest Logs and fishing location information:
(see explanatory note after section 16)

(1) The vessel master shall maintain a log of all harvest operations and provide this information in both hard (paper) copy and electronic copy to the Department. The content and format of this log (paper and electronic) shall meet the requirements as set by the Fisheries and Oceans Canada Shellfish Data Unit, Marine Ecosystem and Aquaculture Division for this licence period.

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

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

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

(5) The log shall be produced for examination on demand of a fishery officer.

(6) The vessel master shall enter latitude and longitude co-ordinates in the appropriate location in the log for each catch location.

(7) The completed log pages (original copy) and an electronic copy of the log including latitude and longitude co-ordinates shall be forwarded not later than 28 days, and sooner if possible, following the end of each month in which fishing occurred to:

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

10. Requirement to take an Observer:

(1) All vessels are required to take on board an observer designated pursuant to subsection 39(1) of the *Fishery (General) Regulations* when requested to do so by the Regional Director-General for the Pacific Region.

(2) The vessel master shall ensure that At-Sea Observer Bycatch Worksheet summaries from all at-sea observer trips are delivered to the Department not later than five (5) days after the completion of the fishing trip.

11. Requirement for Dockside Observers:

(1) The vessel master shall arrange for a minimum of 2 days of dockside observer monitoring coverage. Dockside observer monitoring shall be arranged through the approved DFO service provider for the fishery.

(2) When the observer is present at the offload:
(a) The weight of all fish shall be verified by the observer.
(b) When any fish taken under the authority of this licence are landed, all fish on board the vessel shall be landed at the same time.
(c) The vessel master shall provide to the observer, or fishery officer attending the landing, access to the vessel's fish holds, freezers and other

fish storage locations at any time during the landing or at the conclusion of the landing.

12. Reporting catch on fish slips:

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

(2) The record shall contain the following information:
(a) buyer's name, address and telephone number;
(b) harvester's name and address;
(c) processing plant name;
(d) landing date;
(e) vessel name and VRN;
(f) gear used to harvest the fish;
(g) Area(s) where fishing occurred and days spent fishing in each Area;
(h) the individual species of each fish sold or offloaded;
(i) the description of the product or landed form of each species sold or offloaded;
(j) the weight of each species sold or offloaded;
(k) the price paid for each species sold; and
(l) the total value of each species sold or offloaded.

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

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

Fisheries and Aquaculture Management Branch
FM Data Unit
Suite 200 – 401 Burrard Street
Vancouver, BC
V6C 3S4

Fish slips may be downloaded and printed at
http://www.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.

13. Species at Risk:

(1) Pursuant to subsection 73(2)(c) and section 74 of the *Species at Risk Act (SARA)*, this licence authorizes the vessel master, subject to the following conditions, to engage in fishing activities that:

(a) are conducted under licences issued under the *Fisheries Act*, and
(b) incidentally kill, harm, harass, capture or take Basking Shark (*Cetorhinus maximus*).

(2) Pursuant to subsections 73(2)(c) through 73(6) of *SARA*, the vessel master shall ensure:

(a) that while the fishing activities are conducted, every measure will be taken to avoid the incidental capture of Basking Shark.
(b) that while the fishing activities are conducted, fishing gear is not set or hauled when Basking Sharks are within 10 m of the fishing vessel, and/or are visible at the water's surface.
(c) that while the fishing activities are conducted, any Basking Shark incidentally caught and live, is released in a manner that causes them the least harm.

14. Marine Mammal Reporting Requirements

(1) The vessel master shall provide information regarding all interactions with marine mammals during fishing trips;
(2) For the purpose of subsection 14(1), interactions refer to cases of incidental mortality and serious injury to marine mammals. This includes accidental drowning, bycatch, entanglements, collisions, and fatalities.
(3) The vessel master shall immediately phone the Marine Mammal Incident Hotline at 1-800-465-4336 to report cases of mortality and serious harm.
(4) The vessel master shall complete the DFO reporting form "MARINE MAMMAL INTERACTION FORM."
(5) The Marine Mammal Interaction Form shall be submitted as per the instructions provided on the form.

Note: The Marine Mammal Interaction Form is available from: http://www.dfo-mpo.gc.ca/species-especes/mammals-mammiferes/report-rapport/fish-harvester-pecheur-eng.asp

15. Lost Gear Reporting:

(1) The licence holder shall report any lost fishing gear to Fisheries and Oceans Canada within 24 hours of landing by completing and submitting the Lost Fishing Gear form available online at: http://www.dfo-mpo.gc.ca/fisheries-peches/reports-rapports/mobile-pac/index-eng.html

(2) The licence holder/vessel master shall report the retrieval of any of their own previously reported lost gear to Fisheries and Oceans Canada within 24 hours of landing by completing and submitting the Retrieval of Previously Reported Fishing Gear form available online at: http://www.dfo-mpo.gc.ca/fisheries-peches/reports-rapports/retrieval-pac-recuperation/index-eng.html

16. Special conditions for fishing in Areas 124 and 125:

(1) To fish in Areas 124 and 125, the vessel master shall hail into those Areas only pursuant to subsection 7(1); fishing in other Areas may not occur while hailed out for Areas 124 and 125.

(2) All fish caught and retained in Areas 124 and 125 shall be landed and validated before hailing out and fishing in any other Areas.

(3) Requirement to take an Observer:

APPENDIX 13: EXAMPLE CONDITIONS OF LICENCE

(a) The licensed vessel fishing in Areas 124 and 125 shall carry an at-sea observer designated by the Regional Director-General pursuant to subsection 39(1) of the *Fishery (General) Regulations* for the duration of the fishing trip.

(b) The licensed vessel fishing within Areas 124 and 125 shall not bring any fish aboard their vessel if the designated at-sea observer is not monitoring the catch brought aboard. Fishing shall cease for the duration of any period the designated at-sea observer is not present to monitor the catch.

(4) Maximum Total Individual Vessel Bycatch Allowance for Eulachon (*Thaleichthys pacificus*) within Areas 124 and 125:

(a) The maximum total individual vessel eulachon bycatch allowance authorized for this vessel during this licence year within Areas 124 and 125 combined is 250 lb (113 kg). Eulachon caught as bycatch may not be retained. All eulachon are to be discarded.

(b) The vessel master shall not continue fishing within Area 124 or 125 for the remainder of the licence year if the total estimated eulachon bycatch caught by the vessel during the season has reached or exceeded 250 lb.

(5) Permitted landing ports for shrimp harvested within Areas 124 and 125:

All shrimp harvested within Areas 124 and 125 shall be landed and validated at one of the following approved landing ports: Ucluelet, Tofino, Zeballos, Gold River, Winter Harbour, and Coal Harbour.

(6) Dockside Validation of Landings from Areas 124 and 125:

(a) In addition to the dockside observer requirement set out in section 11, all fish harvested within Areas 124 and 125 under the authority of this licence shall be validated at the point and time of landing by a dockside observer designated by the Regional Director-General pursuant to subsection 39(1) of the *Fishery (General) Regulations*.

(b) Prior to validation of fish no person shall dump, throw overboard, or otherwise discard fish which have been harvested and retained in accordance with the *Fisheries Act* and the regulations made thereunder.

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

(d) If the requirement to weigh shrimp at the point of landing cannot be met because weigh scales are not available, the licence holder/or vessel master of the licensed vessel shall have the dockside observer enter the total number of totes in the validation log.

(e) The vessel master of the licensed vessel shall provide the dockside observer with a hard copy of the log prior to each validation.

(f) The vessel master of the licensed vessel shall provide to the dockside 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.

(g) The vessel master shall ensure that all dockside validation data is delivered to the Department within 28 days following the end of the month in which the landing occurred, and that it is delivered in a format approved by the Department.

APPENDIX 13: EXAMPLE CONDITIONS OF LICENCE

Explanatory Note – Fish harvesters who do not use the Harvest Log, coding and keypunch services provided by a service company shall contact the Shellfish Data Unit at (250) 756-7306 or (250) 756-7022 in order to obtain the information necessary to fulfill these requirements.

APPENDIX 14: SHRIMP TRAWL DATA AND REPORTING STANDARDS

This document describes the official Fisheries and Oceans Canada standards for fishery monitoring and catch reporting in the commercial Pacific Shrimp by Trawl fishery. The requirements have been defined for the proper management and control of the fishery.

This document is intended to provide information to the industry association(s) and licence holders regarding their obligations for reporting during the season, and may be used by commercial licence holders in discussions with third-party Service Providers who may be interested in bidding on the opportunity to provide these programs and requirements on behalf of licence holders. Licence holders are ultimately responsible for ensuring that all data is delivered to DFO within the set deadlines, and following the proper format and delivery method.

Licence holders shall arrange for a Service Provider to coordinate the provision of the fishery monitoring and catch reporting programs to make arrangements for the hail service, at-sea observer coverage, individual vessel Eulachon bycatch tracking, and for dockside validation and monitoring programs prior to fishing.

Licence holders applying for a vessel-based shrimp trawl S licence or commercial communal FS licence will be required to ensure that they have made arrangements, either individually or through an association, for each element of these programs to be completed on their behalf.

Prior to the Department opening the fishery for the season all commercial licence holders, or associations acting on their behalf, are required to demonstrate to the Department how each of the fishery monitoring and catch reporting program requirements will be met. It is essential that programs function to meet at least the minimum program standards of the Department described in this document. Confirmation that arrangements are in place must be presented to the Department a minimum of ten (10) weeks prior to the Department opening the fishery. The Department will review proposals to ensure they meet all program standards, and may request discussion with proponents for clarification. Departmental approval of programs will be provided in writing. The Department recommends that licence holders refrain from committing to any contract arrangements with Service Providers prior to the Department confirming approval in writing for the proposal(s) submitted on their behalf.

All program components, as outlined in the proposal and approved by the Department, must be in place for the start of the fishery. If for any reason these programs fail to meet the stated requirements in-season, or are not in place, then the Department may take steps to restrict fishing opportunities or close the fishery in-season until the necessary programs are in place.

1 MONITORING OBJECTIVES

Objectives for the fishery monitoring and catch reporting program for the shrimp trawl fishery include:

- Provide a key compliance control function by issuing fishing hails and landing hails for fishing activity monitoring;
- Collect reported effort data and information on active vessels;
- Collect skippers' catch estimates by species and shrimp management area (SMA);
- Document fishing effort and catch in logbook format electronically;
- Monitor catch of non-target species on-board vessels in specific areas;
- Provide a sample of fishery independent landings estimates by species to monitor skippers catch estimate variability and species reporting;
- Record, accurately track, and report on eulachon bycatch from each individual vessel within PFMA 124 and 125; and
- Record validated dockside catch weights of all shrimp landed within PFMA 124 and 125.

2 PROGRAM OVERVIEWS

The fishery monitoring and catch reporting for the shrimp trawl fishery includes:

- Fishing hails;
- Harvest logbook reporting;
- Weekly and annual summaries of fishing and landing information;
- Weekly summaries of eulachon bycatch by vessel in SMA 124OFF and 125OFF;
- At-Sea Observer coverage;
- Random dockside observations;
- Mandatory dockside landing validation of all shrimp catch within SMAs 124OFF and 125OFF;
- Eulachon individual vessel bycatch tracking within SMAs 124OFF and 125OFF;
- Fish slip reporting (provided to DFO directly – data and reporting standards not included in this summary).

2.1 Fishing Hails

Monitoring of fishing activity in the shrimp trawl fishery is by means of a fishing hail number to fish in an open area and a landing hail number prior to landing and selling the catch so that skippers' estimates of total catch by species for each SMA can be monitored. Licence holders shall arrange for a Service Provider to operate a phone-in toll free number to provide a fishing hail number that is available Monday to Friday, 08:30 to 16:30 hours. Only vessel owners with a valid S or FS licence who have arranged for the fishery monitoring, catch reporting, and at-sea observer program are eligible to obtain a fishing hail number. Vessel masters must obtain a hail number prior to beginning harvesting.

The Service Provider shall define a fishing hail number for a vessel with a valid S or FS licence to permit the vessel to fish in a SMA with remaining catch ceiling that is open to the commercial fishery.

Fishing hail number will not be provided if the area is closed, if a vessel has not met required conditions of licence such as agreement to carry an at-sea observer, or some other requirement defined by Resource Managers for the proper control and monitoring of the fishery.

See Section 3.1. for more information on detailed data delivery requirements.

2.2 Landing Hails

Licence holders must arrange for a Service Provider to provide vessels with a landing hail after each completed fishing trip, or every seven days for longer trips. The Service Provider shall receive the harvester's catch to date and provide a landing hail number or an updated fishing hail number in order to complete the fishing trip, or to continue fishing. Licence holders shall arrange for the Service Provider to provide a phone-in toll free number to receive landings, and this phone-in number shall be available 24 hours a day, 7 days a week. The Service Provider shall maintain a database of fishing and landing hails and deliver the data electronically to DFO on a regular basis through the DFO Fisheries File Transfer Protocol System. Individual vessel landings estimates are confidential and shall not be released without written permission of the vessel owner. Summaries of landings by species and SMA will be made available to the Department and interested parties through a weekly landing hail report.

See Section 3.1. for more information on details for data delivery requirements.

2.2.1 Weekly Landing Hail Reporting

Each week licence holders shall arrange for the service provider to prepare a summary of the cumulative hailed landings by SMA and species total allowable catch (TAC) or quota categories and make the landings summary available to DFO Managers, fishery participants and interested parties in a public Landings Quota Status (LQS) report. For SMAs with dockside validated shrimp landings, the dockside validated weights for shrimp shall be used for the weekly landed shrimp reports. The landings report should be a regular distribution made each Wednesday. The report shall include all fishing activity by all licenced vessels.

The summary will include landings by SMA and Species, showing for each SMA: cumulative landings, remaining catch ceiling and number of vessels still fishing. The report shall include the following headings:

SMA	Shrimp Management Area
Species	the specific species defined in the IFMP
Catch Ceiling	Total Allowable Catch as defined in the IFMP and updated during the season
Total Landed	Cumulative total landed in pounds
Lbs Remaining	Remaining TAC
% Remaining	Percent of TAC remaining
AreaStatus	Open or Closed
Active Vessels	Number of active vessels (if less than 3 it will be shown as an *)

2.3 Logbook Data Reporting

Licence holders are responsible for ensuring that accurate Shellfish Harvest Logs for the shrimp trawl fishery are maintained.

As a condition of licence, both a hardcopy (paper) and an electronic version of harvest log records must be submitted to the Shellfish Data Unit at the Pacific Biological Station in Nanaimo. The electronic version of the data may be submitted as a database table of specific design (described

in Section 3.2) created by one of the following database management tools: ACCESS 2016 (or earlier Access version).

The electronic version must be a true and accurate transcription of the hardcopy data. Each record will represent one tow. Incomplete, inaccurate or incorrect data will not be accepted, and it will be the responsibility of the Service Provider to obtain the required information from the individual fish harvester.

In order to fulfil stock assessment objectives, fish harvesters are required to supply on their logs a Lat/Long position.

Harvest data is to be submitted monthly to the Shellfish Data Unit FTP site with the filename following the convention of YY-MM-S, where YY is the Year, MM is the Month, and 'S' is the licence Tab Type for shrimp. The file type extension may be whatever is appropriate for the database tool used (e.g. .MDB for ACCESS 2016). Data submitted will remain the property of Fisheries and Oceans Canada.

2.4 At-sea Observations

Licence holders are responsible for ensuring that At-Sea Observer coverage is obtained for the fishery. Licence holders shall arrange for observers through an approved Service Provider who will deploy at-sea observers who will collect the information outlined in Section 3.3. In-season bycatch worksheet summaries will be provided to the Department within five (5) days following each observed fishing trip. Observer data will also be supplied to the Department in both hardcopy and electronic format, on a quarterly basis. The hardcopy and electronic data submitted quarterly must be reviewed, proofed, and corrected for any errors prior to submission to DFO. "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*.

Observers shall collect the following information for each vessel checked: vessel name, VRN, gear type, fishing hail number, observer, weather and set data, number of extruders (Nordmore grates), Area, Subarea, SMA, start and finish time of set, duration of tow, maximum and minimum depth, tow speed, total catch weight, shrimp weight and Eulachon weight and other species weight observed for each set. Summaries of total catch weight, total shrimp weight and total Eulachon weight for the trip will be summarized in a bycatch summary. Additional information on each species caught shall be collected and coded such as number per pound, condition and utilization.

In addition to collection of harvest data, observers shall collect biological samples (100 shrimp per tow) as directed by the Department and forward the samples to the Pacific Biological station following a protocol provided by the Department. For the 2021/22 fishing season, shrimp samples will be collected from 1 out of every 3 fishing tows where an observer is on-board. No Eulachon samples will be required during the 2021/22 season.

2.4.1 At-Sea Observer Coverage Requirements

Shrimp Management Areas 124OFF and 125OFF require 100% mandatory at-sea observer coverage. All fishing tows conducted within Pacific Fishery Management Areas 124 and 125 must be monitored by an at-sea observer, with required data recorded. If the at-sea observer cannot perform their duties, then fishing by that vessel cannot occur.

Shrimp Management Areas 23IN and 23OFF&21OFF require 25% at-sea observer coverage for all fishing days occurring within Pacific Fishery Management Areas 23, 121, and 123. At the time of obtaining a fishing hail, the Service Provider will determine which days shall require an at-sea observer and will obtain observer records for each vessel active in these areas.

In addition to the at-sea observer coverage listed above, licence holders must arrange for an additional 20 at-sea observer days to be funded and available for deployment in other SMAs along the coast.

2.4.2 Trip Report Information

The trip report for each trip observed provides background on the vessel, the fishing trip and the catch during the observed trip. Comments in the trip report shall include any issues that may contribute to an understanding of the operation of the vessel and to how the landings reported on logbooks might be interpreted. Specific issues such as dumping of shrimp or prawn bycatch may be defined as specific tasks for the at-sea observations, depending on issues identified by Fishery Managers, Conservation and Protection Officers to address specific information needs on a species or area basis.

The Trip Report should include information on:

- Vessel and trip summary (departure times, hail numbers, etc)
- Catch Estimation Procedures (how total catch was determined, species compositions, tow duration, missed tows);
- Biological Sampling Procedures (how a species catch/composition was obtained, what measurement equipment was used, if weights were determined using a scale, how randomness of a sample was defined, unusual biological samples, etc);
- Observer Working Conditions (conditions which might influence catch or bycatch estimation calculations);
- Vessel Safety Information;
- Fishing Summary (objectives, trawl type and modifications, deck working area; net characteristics and specific gear modifications); and
- Vessel Personnel Comments.
- Gear Questionnaire including the use/presence of LED lights.

2.4.3 Weekly Summary Reports of All At-Sea Observer Coverage

A weekly summary report shall be emailed to the Department which provides a summary table showing the total Eulachon bycatch observed within PFMAs 124 and 125 for the year, and a summary table showing total cumulative Eulachon bycatch observed on each licenced shrimp vessel that has fished in these SMAs during the licence year. The tables shall include; VRN, vessel name, SMA, cumulative Eulachon bycatch for the licence year.

2.5 Dockside Monitoring Program for SMA 124OFF and 125OFF

Licence holders must make arrangements for all shrimp harvested within SMAs 124OFF and 125OFF to be validated by an independent third-party observer at the time of offloading.

Licence holders shall hail prior to landing, and make arrangements for all shrimp landed to be weighed with approved scales to obtain the accurate offload weight. These weights shall be used to track and monitor the shrimp harvest quotas for these SMAs in-season.

2.6 Eulachon Individual Vessel Bycatch Tracking Program

Licence holders shall arrange for the at-sea observer on-board their vessel to maintain a record of estimated Eulachon caught during the fishing trip and to enter the total trip estimated Eulachon catch into the dockside shrimp validation log at the time of offloading. At-Sea Observers shall inform vessel masters and DFO when the individual vessel Eulachon bycatch limit has been reached.

The vessel shall arrange for the Service Provider to maintain a record of the vessel's remaining Eulachon bycatch allowance for the season.

2.7 Random Dockside Observations (for SMAs other than 124OFF and 125OFF)

The objectives of the dockside observation program are to:

- Obtain accurate estimates of total catch and species composition of all product on board using sampling estimation methods, independent of the skipper's estimates.
- Collect biological samples of shrimp from the catch for analysis by DFO upon request.

Other issues may define in-season goals of the dockside program (such as gear in use, species targets, etc). Licence holders shall arrange for 20 days of random dockside observations by a third party Service Provider. These days shall be implemented throughout the year and throughout the coast, on the direction of the Department. Hardcopy and electronic data resulting from the dockside observation program shall be supplied to Resource Management on a quarterly basis or immediately following dockside observations in special circumstances if in-season management decisions require feedback from dockside information.

2.8 Annual Landings Reporting

Licence holders shall arrange for the service provider to write an annual report for the fishing season (April 1 to March 31). The report shall be submitted within five (5) months after the end of the fishing season. Landing information may be requested more often than specified, as required by Fisheries and Oceans Canada Shellfish Managers, particularly as areas approach the catch ceiling. The designated Shellfish Managers shall be notified immediately if it is anticipated that catch ceilings are nearing completion in any SMA. The format of the reports shall be specified and approved by Fisheries and Oceans Canada.

The final annual report shall include:

- Review of the season's Shrimp Trawl Fishery;
- Summary of fishery landings and fishing activity;
- Summary of catch monitoring program (at-sea and dockside observers);

- Observations regarding compliance concerns with the fishery management system;
- Current issues;
- Fish harvesters', processors' and Fisheries and Oceans Canada's Comments;
- Recommendations.

Specific reports may be defined as required, such as an incident report detailing any suspected illegal landing activity, and submitted to the designated Shellfish Manager within one business day of any suspected catch reporting violation. Any callers reporting any in-progress violations shall be directed to the ORR line (1-800-465-4336).

The Service Provider may be required to communicate between industry and Fisheries and Oceans Canada when necessary and attend meetings as required to discuss items or issues that impact the collection of information or performance of the requirements of the fishery monitoring and catch reporting program.

3 DATA STANDARDS AND REQUIREMENTS

The data collection standards and data requirements for each component of the shrimp trawl fishery monitoring and catch reporting program are detailed in the following sections. Some requirements are specific to interface with Departmental data management programs.

The following sections provide data standards and requirements

3.1 - Fishing Hail and Landing Hail
3.2 - Fishing Activity (Harvest) Logbook
3.3 - At-Sea Observations
3.4 - Bycatch Summary
3.5 - Random Dockside Observations.
3.6 - Dockside Validation Program

3.1 Fishing Hail and Landing Hail

Project Name:	**PacFish Information Management Framework**
Document Title:	**Shrimp Trawl Fishery Activity Hail Programs (Paper) Data Specifications**
File Number:	
Author:	DFO
Organization:	Fisheries and Oceans Canada
Version:	1.0
Date:	December 9, 2016

This section provides information on the data requirements and specifications for programs collecting data for transfer to Fisheries and Oceans Canada, Pacific Region. The intended audience is both DFO staff and external groups involved in collecting, transferring or managing fisheries data. All data submitted becomes the exclusive property of Fisheries and Oceans Canada

3.1.1 Tombstone

- **Fishery(s):** Shrimp Trawl Fishery
- **Fishery Season:** 2021-22
- **Data Collection Program Name:** Fishery Activity Hail (paper-based)
- **Associated Fishery Data Service:** Resource Management – Invertebrates, Pacific Region

3.1.2 Document Change History

Author	*Date*	*Description of Change*
Dan Clark	Nov 27, 2015	Specifics for hail program

Rationale

This hail program is integral to the following activities:

- Monitoring and tracking fishing activity
- Tracking and monitoring harvest against species and area catch ceilings

Data Transfer Requirements

Format: Microsoft Excel (2016 or earlier versions)

Medium: DFO ftp site or Email to Local Area Shrimp Manager

Timeliness: The vessel master shall arrange to obtain a fishing hail number a minimum of 24 hours prior to fishing

All data shall be made available to DFO no more than 7 days after the data has been received by the service provider.

The file must be a running update of all data for the season (i.e. the file must include all previous records as well as the new information being provided to DFO).

File Naming Conventions: TempExpFileYYYYMMDD.mdb (latest date YYYYMMDD)

The following information shall be recorded for each fishing activity report:

3.1.3 Electronic Data Format For Fishing and Landing Hails

3.1.3.1 Fishing Hail

Database Field Name	Field Type	Size
HailID	Number (Long)	4
ShrVesselNo	Number (Integer)	2
CFV	Text	6
VesselName	Text	32
SkipCode	Text	7
FIN	Text	7
Anecdotal	Yes/No	1
Active	Yes/No	1
FakeHailOut	Yes/No	1
HailOutNbr	Text	8
HailOutCallDate	Date/Time	8
HailOutCallTime	Date/Time	8
DepartDate	Date/Time	8
PlanLandDate	Date/Time	8
PlanOffldPort	Text	3
PlanOffldLoc	Text	15
FakeHailIn	Yes/No	1

HailInNbr	Text	8
HailInCallDate	Date/Time	8
HailInCallTime	Date/Time	8
ActualLandDate	Date/Time	8
ActualOffldTime	Date/Time	8
ActualOffldPort	Text	3
ActualOffldLoc	Text	15
TotalHrsTowed	Number (Byte)	1
NbrOfDaysFished	Number (Byte)	1
Landed	Text	1
Species1	Text	2
ProductType1	Text	2
Species2	Text	2
ProductType2	Text	2
Species3	Text	2
ProductType3	Text	2
TotalWtOnBoard	Number (Long)	4
Comments	Text	255
ContactPhone	Text	20
AutoTel	Text	20
GearType	Text	1
Notes	Text	255
ObsRequired	Text	1
CreateDt	Date/Time	8
DtTime	Date/Time	8
User	Text	3

3.1.4 Landing Hail

Database Field Name	Field Type	Size
HailID	Number (Long)	4
HailOutNbr	Text	8
HailUpdType	Text	20
HailUpdNbr	Text	8
EffDate	Date/Time	8
CallDate	Date/Time	8
LoggedBy	Text	10

spec_AMR	Text	2
ActualFisheryArea	Text	6
ActualArea	Number (Integer)	2
ActualSubArea	Number (Integer)	2
EstimateWt	Number (Long)	4

3.2 Fishing Activity (Harvest) Logbook

Project Name:	**PacFish Information Management Framework**
Document Title:	**Shrimp Trawl Harvest Log Program (Paper) Data Specifications**
File Number:	
Author:	Leslie Barton
Organization:	Fisheries and Oceans Canada
Version:	1.0
Date:	November 16, 2015

This document provides information on the data requirements and specifications for programs collecting data for transfer to Fisheries and Oceans Canada, Pacific Region. The intended audience is both DFO staff and external groups involved in collecting, transferring or managing fisheries data, including Service Providers hired by harvesters or harvester associations to support compliance with Conditions of Licence.

3.2.1 Tombstone

- **Fishery(s):** Commercial Shrimp Trawl
- **Fishery Season:** 2021-22
- **Data Collection Program Name:** Shellfish Shrimp Trawl Harvest Log Program (paper-based)
- **Associated Fishery Data Service:** Shellfish Data Unit

3.2.2 Document Change History

Author	*Date*	*Description of Change*
Lorne Collicutt	Sept 7, 2011	First draft of template
Leslie Barton	Nov 16, 2015	Addition of specifics for shrimp trawl harvest log program
Leslie Barton	Jun 15, 2017	Minor edits

3.2.3 Data Transfer Requirements

- **Format:** MS Access 2016 (or earlier version) database file following the prescribed data transfer format (below) + hardcopy (paper) from which electronic data were transcribed.
  - A separate file must be created for each calendar year.
  - Hardcopy (paper) must be sorted by Vessel Registration Number (VRN) (ascending), with multiple pages for a single vessel paper clipped together. For any given vessel with multiple pages for the batch, the pages should be sorted in chronological order.
  - Hardcopy (paper) must be separated by calendar year.
  - Hardcopy (paper) must be accompanied by a batch summary report, consisting of the batch number/id, a listing of the VRN's contained in the batch, sorted in

ascending order, with a count of records associated with each VRN. The total number of records associated with the batch must also be provided.

- **Conduit:** Data transfer to DFO to be effected via the DFO Contractor Data Exchange FTP site or other FTP service approved by the Shellfish Data Unit. Service Provider is to notify Shellfish Data Unit via email each time a file is posted to an FTP site.
- **Hardcopy delivery**: All deliveries of hardcopy and physical media must be via courier service, in-person or by a Shellfish Data Unit approved alternative. The mailing address is:

  Fisheries and Oceans Canada
  Shellfish Data Unit
  Pacific Biological Station
  3190 Hammond Bay Road,
  Nanaimo, BC, V9T 6N7

- **Timeliness:** Within three weeks of the date of receipt of hardcopy by the Service Provider.
- **Data Ownership:** All data submitted becomes the exclusive property of Fisheries and Oceans Canada.
- **File Naming Conventions:** Files should be named such that the Service Provider, Fishery, Origin (paper-based [P]) Unique Batch number and year (YYYY) are all present in the file name (e.g. ABCCo_ShrimpTrawl_P_B389_2021). Table name shall be "new_logs".
- **Special Requirements:**
  - The electronic version must be a true and accurate transcription of the hardcopy data. Each record will represent one tow.
  - The database file submitted must consist of only one table named **'new_logs'**, with the fields and field characteristics as shown in the 'DATA TRANSFER FORMAT' section in this document. Regardless of the table design and relationships defined by the external group or Service Provider system for proprietary purposes, data transferred to DFO must be extracted in a manner which conforms to the design described in the 'DATA TRANSFER FORMAT' section.
  - To support consistency in interpretation of harvest log content, Shellfish Data Unit will review harvest logs received from harvesters in advance of the harvest logs being sent to the Service Provider for electronic data capture. Any modifications to the content of harvest log undertaken by the Shellfish Data Unit will be indicated using red pen.

3.2.4 Data Transfer Format Requirements

Note: Use Upper Case characters only for Text field data. A more extensive description of the Data Items marked with an asterisk follows on the next page.

Data Items from Logbook	Database Field Name	Database Field Type	Value if N/A or Unknown
VRN of vessel	CFV	Long Integer	
*Skipper Code	SKIPPER_CODE	Integer	0
Skipper FIN	Vessel_Master_FIN	Text – 50 characters	
Year of fishing event	YEAR	Integer of Byte	
*Page Number	PAGE_NUM	Long Integer	0
*Depth Unit	DEPTH_UNIT	Text – 1 character	U
*Weight Unit	WEIGHT_UNIT	Text – 2 characters	UN
*Trawl Type	TRAWL_CODE	Text – 2 characters	UN
Footrope Length	LEN_FTROPE	Integer of Byte	0
Headrope Length	LEN_HDROPE	Integer of Byte	0
Net Rise	NET_RISE	Integer of Byte	0
*Selectivity Gear Used	SELECTGEAR	Text – 8 characters	U
*Average Tow Speed	TOW_SPEED	Single (floating point)	0
Line number	LINE_NUM	Integer or Byte	
Hail Number	HAIL_NUM	Long Integer	0
Month of fishing event	MONTH	Integer or Byte	0
Day of fishing event	DAY	Integer or Byte	0
Hour of fishing event	HOUR	Integer or Byte	0
Tow Duration (minutes)	TOW_TIME	Integer or Byte	0
*Tow Distance	TOW_DIST	Single	0
*Degrees of Latitude	LAT_DEG	Integer or Byte	0
*Minutes of Latitude	LAT_MIN	Single (floating point)	0
*Degrees of Longitude	LONG_DEG	Integer or Byte	0
*Minutes of Longitude	LONG_MIN	Single (floating point)	0
*Statistical Area	STAT_AREA	Integer or Byte	0
*Statistical Sub-Area	SUB_AREA	Integer or Byte	0
Minimum Depth	MIN_DEPTH	Integer	0
Maximum Depth	MAX_DEPTH	Integer	0
*Weight of Pinks	PINKS	Integer	0
*Weight of Sidestripes	SIDESTRIPES	Integer	0
*Weight of Prawns	PRAWNS	Integer	0
*Weight of Humpbacks	HUMPBACKS	Integer	0
*Weight of Dock Shrimp	DOCKS	Integer	0
*Remarks Code ??	REMARKS_CODE	Integer of Byte	0
Other Species (Hart Code)	OTHER_SPECIES	Text – 3 characters	Null
Other Weight	OTHER WEIGHT	Integer	0
*Weight of Spiny Pinks	SPINY_PINKS	Integer	0
*Weight of Smooth Pinks	SMOOTH_PINKS	Integer	0
*Weight of Flexed Pinks	FLEXED_PINKS	Integer	0
*Status of Record	REC_STATUS	Integer or Byte	0

Harvest Log Data Requirements for Shrimp Trawl Fishery

Skipper Code

The Shellfish Data Unit will provide a list of Skipper Codes. If a skipper is not on the list, contact the Data Unit for a new code for this skipper.

Page Number

Record the page number in the upper right corner of the log sheet. Note that photocopied or other non-published pages still need to have a unique page number, even if it is entered by hand. The number only needs to be unique for that CFV for that year.

Depth Unit

Enter **'M'** for Meters, or **'F'** for Fathoms, **'U'** if unknown; use upper case characters only.

Weight Unit

Enter **'LB'** for weights reported in Pounds, or **'KG'** for Kilograms, **'UN'** if Unknown.

Trawl Type

Use the following codes to indicate the type of gear the fisher has indicated.
Note that "**Net Type**" for Stock Assessment purposes may differ from industry definitions.
Always use "**Flat Net**" where the Rise of the net is 5 feet or less.
If the Headrope is shorter than the Footrope by 10 feet or more, then use "**Semi-Balloon**".
Otherwise, use "**High Lift**".

DF - Doors (otter) with Flat Net (Rise of net is 5 feet or less)
DH - Doors with High-Lift Net
DS - Doors with Semi-Balloon Net (headrope is shorter than footrope by 10 feet or more)
PF - Post Beam with Flat Net (Rise of net is 5 feet or less)
PH - Post Beam with High-Lift Net
PS - Post Beam with Semi-Balloon Net (headrope shorter than footrope by 10 ft or more)
SB - Sled Beam with Flat Net (Rise of net is 5 feet or less)
SH - Sled Beam with High-Lift Net
SS - Sled Beam with Semi-Balloon Net (headrope shorter than footrope by 10 ft or more)

Selectivity Gear

Enter **"N"** when None are indicated.
Enter **"G"** when Separator Grate (Rigid BRD) used.
Enter **"S"** when Escapement Panel (Soft Mesh) used.
Enter **"F"** when Fish Extruder (Fisheye) used.
Enter **"W"** when Soft Web Excluder used.
Enter **"P"** when Plastic Lattice (Hard Mesh) escapement panel used
Enter **"O"** when some Other device was used.

Where more than one device has been indicated, they should be coded in alphabetical order, (e.g. "OP" rather than "PO").

Harvest Log Data Requirements for Shrimp Trawl Fishery

Average Tow Speed and Tow Distance

Record to one decimal place, e.g. 2.5

Latitude/Longitude Position Fields

Lat/Long fields must be supplied. Seconds of position are to be included as decimal minutes, i.e. a position of 23.833 minutes represents 23 minutes, 50 seconds.

Statistical Area and Sub-Area

This is the Pacific Fisheries Management Area (PFMA) as specified in the Regulations made under the Fisheries Act, it is NOT the SMA.

Weights

The weights of the various species caught are to be the Hailed Catch Weight for each tow.

Remarks Code

*Remarks codes serve to identify records where there is an element of uncertainty/estimation associated with the record **or** where the record is considered non-standard (events occurred outside of normal operating procedures). Remarks codes are to be applied by the individual or agency that is creating the electronic copy of the harvest log on behalf of the harvester.*

Please use the following codes.

Code	Meaning
01	Some uncertainty that the **Area or Sub-Area** are correct, if they're illegible or two are given in one record, etc.
02	**Mechanical or other problems affecting the catch**, such as crossed doors, something broke, snag, bag open, net fouled or flipped, hole in net, something not working properly, caught a log or boulder, etc
03	**Fishy Catch**, dogfish, ratfish, shiners, herring, bullheads, turbot, jellyfish, etc.
04	Mud, Dirty, etc.
05	**Dumped** Bag, reason could be fishy or junky or too small, etc.
06	**Weather** problems or **tide** problems, wind, rough weather
07	Towed too fast, or Flying Net
09	**Junky**, or full of Junk
11	**Estimated Weights**, especially where fisher gave a sum of weights and Coder has to break weights down for individual fishing events, or where value is illegible and a "best guess" is made.
14	**Estimated set time**, used where Hour not given (use Hour = 8)
99	**Keypunch person had difficulty**. Record should be checked by a data officer and edited if necessary. The hardcopy should have a sticky note to indicate what the difficulty is.

Harvest Log Data Requirements for Shrimp Trawl Fishery

Other Species

As identified in the **Remarks** column of the harvest log
If harvester has reported Octopus, use code **97A** (indicates Order Octopoda)
If harvester has reported Squid, use code **92A** (indicates Order Teuthida)
If harvester has reported Eulachon, use code **148** (indicates *Thaleichthys pacificus*)
For other species please contact the Shellfish Data Unit for correct codes

Other Weight

As identified in the **Remarks** column of the harvest log, along with "Other Species" Above, enter the weight indicated, if available.

Status of Record

Use the following codes for the status of each record.

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

3.3 At-Sea Observations

Project Name:	**PacFish Information Management Framework**
Document Title:	**Shrimp Trawl Fishery At-sea Observations (Paper) Data Specifications**
File Number:	
Author:	DFO
Organization:	Fisheries and Oceans Canada
Version:	1.0
Date:	December 9, 2016

3.3.1 Tombstone

- **Fishery(s):** Shrimp Trawl Fishery
- **Fishery Season:** 2021-22
- **Data Collection Program Name:** At-sea Observations (paper-based)
- **Associated Fishery Data Service:** Resource Management – Invertebrates, Pacific Region
- **Timliness:** Hardcopy trip bycatch worksheet summaries from each fishing trip delivered to DFO within 5 days of the end of the fishing trip. Hardcopy and Electronic versions must be submitted quarterly to DFO after being reviewed, proofed, and corrected for any errors.

3.3.2 Document Change History

Author	*Date*	*Description of Change*
Dan Clark	Nov 27, 2015	Specifics for At-sea Observations program
Georg S. Jorgensen	14-JUN-2017	Specifics for At-Sea Observations actually sent.
Dan Clark	15 Jan 2020	Added field for LED lights Y/N

Data Format Note: Use Upper Case characters only for Text field data.

A more extensive description of the Data Items marked with an asterisk follows on the next page.

Data Items from Observer Database - Shrimp Header	Database Field Name	Field Type	Size	Value if N/A or Unknown
AMR Skipper Code	SKIP_AMR	Text	5	
DFO Skipper Code	SKIP_CODE	Text	3	
Depth Code	DEPTH_CODE	Text	2	
Weight Code	WT_CODE	Text	2	
AMR Fishery Code	FISHERY	Text	2	
Vessel VRN	CFV	Text	50	7

HAIL Number	HAIL_NUM	Long Integer	4	
AMR Sampler Code	SAM_CODE	Text	3	
Year of Tow	YEAR	Integer	2	
Month of Tow	MONTH	Integer	2	
Day of Tow	DAY	Integer	2	
Tow (SET) Number	SET_NUM	Integer	2	
AMR Gear Code	GEAR_AMR	Integer	2	
DFO Gear Code	GEAR	Text	50	
Extruder Code	EXTRUDER	Integer	2	
LED number of lights used	LED_USED	Integer	2	null
Beaufort Weather Code *	BEAUFORT	Integer	2	
Light Conditions Code *	LIGHT	Integer	2	
Atmospheric Pressure	PRESSURE	Long Integer	4	
PFMA Statistical Area	STAT_AREA	Integer	2	0
PFMA Sub Area	SUB_AREA	Integer	2	0
Shrimp Quota Area	QUOTA_AREA	Text	6	
Start Degrees Latitude	ST_LAT_DEG	Integer	2	0
Start Minutes Latitude	ST_LAT_MIN	Single	4	0
Start Degrees Longitude	ST_LON_DEG	Integer	2	0
Start Minutes Longitude	ST_LON_MIN	Single	4	0
Time when Tow Starts	ST_TIME	Text	50	
Finish Degrees Latitude	FIN_LAT_DEG	Integer	2	0
Finish Minutes Latitude	FIN_LAT_MIN	Single	4	0
Finish Degrees Longitude	FIN_LON_DEG	Integer	2	0
Finish Minutes Longitude	FIN_LON_MIN	Single	4	0
Time when Tow Finishes	FIN_TIME	Text	50	
Tow Duration in Minutes	MINUTES	Integer	2	
Maximum Depth in Meters	MAX_DEPTH	Integer	2	
Minimum Depth in Meters	MIN_DEPTH	Integer	2	
Tow Speed (kts)	SPEED	Single	4	
Total Weight for the Tow	TOTAL_WT	Long Integer	4	
AMR Species Code	SPECIES_AMR	Integer	2	
DFO Species Code (HART)	SPECIES	Text	3	
Number of animals caught	NUM_CAUGHT	Integer	2	
Weight for this species (KG)	SPECIES_WT	Integer	2	
Count per Pound this species	NUM_PER_LB	Single	4	
Utilization Code *	UTIL	Integer	2	
Estimation Code (SCM) *	ESTIMATION	Integer	2	
ByCatch Condition Code	BYCAT_COND	Integer	2	
DFO Record Status Code	REC_STATUS	Integer	2	

Beaufort Code (Bcode)

BCode	Description	Knots	MpS
0	Calm	0 - 1	0 - 0.5
1	Light Air	1 - 3	0.5 - 1.5
2	Light Breeze	4 - 6	2.1 - 3.1
3	Gentle Breeze	7 - 10	3.5 - 5.2
4	Moderate Breeze	11 - 16	5.7 - 8.2
5	Fresh Breeze	17 - 21	8.7 - 10.8
6	Strong Breeze	22 - 27	11.3 - 13.9
7	Moderate Gale	28 - 33	14.4 - 17.0
8	Fresh Gale	34 - 40	17.5 - 20.6
9	Strong Gale	41 - 47	21.1 - 24.2
10	White Gale	48 - 55	24.7 - 28.3
11	Storm	56 - 66	28.8 - 34.0
12	Hurricane	above 66	above 34

Light Codes

LCode	Meaning
0	UNKNOWN
1	Sunny
2	Fog/Overcast
3	Rain
4	Dark

Utilization Codes

Code	Description
1	Retained
2	Discarded, marketable - DEAD
3	Discarded, Marketable - ALIVE
4	Discarded, unmarketable
5	Consumed on board, (eaten by crew)
14	Rolled Up 2 records, retained & discarded.

Species composition method (SCM) Codes

SCM Code	Description
1	Whole Haul, weights are Weighed
2	Partial Haul, weights are estimated
3	Basket Sample, weights are estimated
4	Piece Count * (Average Weight / Piece), weights are estimated
5	Oberver Visual Estimate, weights are estimated
6	Logbook (or Skipper or Crew), weights are estimated
7	Other, weights are estimated
8	Trace Amount (less than 0.5 lb) Observer visual estimate. (Wgts converted to 0.1 in our database)
9	Volume Measurement was taken, See "At Sea Observer Program Ops Manual", section "Catch & Effort"

3.4 Bycatch Summary

For each observer boarding, a trip report shall be completed and forwarded to the Shrimp Trawl Manager. The trip report will include a summary of the catch observed during the trip.

Within five (5) days of the completion of the fishing trip an additional preliminary summary bycatch worksheet shall be provided to the Shrimp Trawl Manager outlining the observed shrimp and Eulachon caught during the trip.

The preliminary Bycatch Worksheet shall include the following information, in a format set by the Service Provider:

Fishery
VRN (aka CFV)
Hail Number
Sample Code
PFMA
PFM Subarea
Shrimp Management Area
Set Number
Date (Y/M/D)
Species Caught
Number of Species Caught
Weight of Species Caught
Number per Pound
Weight Code
Estimation
LED lights used (Y/N)

Notes:

Total Catch (lb)	Including all bycatch discarded and shrimp retained.
Shrimp Weight (lb)	Total weight of retained shrimp as reported in fisherman's log and hailed as shrimp catch
Eulachon Weight (lb)	Total Weight of Eulachon per set to the nearest 0.1 lb.

3.5 Random Dockside Observations

Project Name:	**PacFish Information Management Framework**
Document Title:	**Shrimp Trawl Fishery Random Dockside Observations (Paper) Data Specifications**
File Number:	
Author:	DFO
Organization:	Fisheries and Oceans Canada
Version:	1.0
Date:	December 9, 2016

3.5.1 Tombstone

- **Fishery(s):** Shrimp Trawl Fishery
- **Fishery Season:** 2021-22
- **Data Collection Program Name:** Random Dockside Observations (paper-based)
- **Associated Fishery Data Service:** Resource Management – Invertebrates, Pacific Region

3.5.2 Document Change History

Author	*Date*	*Description of Change*
Dan Clark	Nov 27, 2015	Specifics for Random Dockside Observations program

The dockside observations are a random opportunity to meet the vessel at the dock and compare the skipper's estimate of landings by species with actual retained weight by species. The hailed catch as recorded in logbooks is compared to the offload weight and a sample is obtained for species distribution.

For short duration trips of one or two days, the shrimp catch has been sorted and will be sold at the dock or offloaded for processing at a processing plant. There may be ice included in totes that requires back calculating from offload weight at the processing facility scales.

For long trips where the catch is frozen in 50 lb blocks and not offloaded at the end of each trip, there is a logistical problem to determine species composition and total weight to compare to logbooks.

This is also an opportunity for discovery of species that are not allowed to be retained. The observer has the opportunity for Observe, Record, Report witnessing of non-permitted species.

Random dockside observations shall include the following:

Data Items	Database Field Name	Field Type	Size
CFV Number of Vessel	CFV	Long Integer	
Skipper Code	SKIPPER_CODE	Integer	0
Vessel Master FIN	FIN	Long Integer	
Year of fishing event	YEAR	Integer or Byte	
Weight Unit	WEIGHT_UNIT	Text - 2 characters	UN
Line Number	LINE_NUM	Integer or Byte	0
Hail Number	HAIL_NUM	Long Integer	0
Statistical Area	stat_area	Integer or Byte	0
Statistical Sub-Area	sub_area	Integer or Byte	0
Days Fished:			
Weight of Pinks	PINKS	Integer	0
Weight of Sidestripes	SIDESTRIPES	Integer	0
Weight of Prawns	PRAWNS	Integer	0
Weight of Humpbacks	HUMPBACKS	Integer	0
Weight of coonstripes	DOCKS	Integer	0
Remarks Code	REMARKS_CODE	Integer or Byte	0
Other Species (Hart Code)	OTHER_SPECIES	Text – 3 characters	Null
Other Weight	OTHER_WEIGHT	Integer	0
Species Composition Method	SCM	Integer	0
Product Type Code	PT_PRODUCT_TYPE_CDE	Integer	0
Product Type Name	PRODUCT_TYPE_NME	Integer	0

Codes for Product Type

PT_PRODUCT_TYPE_CDE	PRODUCT_TYPE_NME
1	Round, Fresh
21	Round, Frozen
4	Tail, Fresh
31	Tail, Frozen

Project Name:	**Shrimp Trawl Information Management Framework**
Document Title:	**Dockside Validation Program for PFMA 124 and 125 Data Specifications**
File Number:	
Author:	Guy Parker
Organization:	Fisheries and Oceans Canada
Version:	1.3
Date:	December 9, 2016

This document provides information on the data requirements and specifications for programs collecting data for transfer to Fisheries and Oceans Canada, Pacific Region. The intended audience is both DFO staff and external groups involved in collecting, transferring or managing fisheries data, including Service Providers hired by harvesters or harvester associations to support compliance with Conditions of Licence.

3.6 Tombstone

Fishery(s): Commercial Shrimp Trawl
Data Collection Program Name: Shellfish Shrimp Trawl Dockside Validation Program
Associated Fishery Data Service: Shellfish

3.6.1 Document Change History

Author	*Date*	*Description of Change*
Guy Parker	9 Dec 2016	Updated for WCVI

3.6.2 Data Transfer Requirements

Format: MS Access 2016 (or earlier version) database file following the prescribed data transfer format (below) + hardcopy (paper) from which electronic data were transcribed.

- Hardcopy (paper) must be sorted by Licence Number (TAB, ascending)
- Hardcopy (paper) must be separated by calendar year.
- Hardcopy (paper) must be accompanied by a batch summary report, consisting of a listing of the TAB's contained in the batch, sorted in ascending order, with a count of records associated with each TAB. The total number of records associated with the batch must also be provided.

Conduit: Electronic data transfer to DFO to be effected via the DFO Contractor Data Exchange FTP site or other FTP service approved by the Department. Service Provider is to notify via email each time a file is posted to an FTP site.

Hardcopy delivery: All deliveries of hardcopy and physical media must be via courier service, in-person or by a DFO-approved alternative. The mailing address is:

Guy Parker
Fisheries and Oceans Canada
3225 Stephenson Point Road,
Nanaimo, BC, V9T 1K3

Timeliness: Electronic and hardcopy data to be received by the Department within 28 days following the end of the month in which the fishing season ends.

Data Ownership: All data submitted becomes the exclusive property of Fisheries and Oceans Canada.

File Naming Conventions: Files should be named following the convention YYYY(year), MM(month), Fishery(S), Data Program. Data programs will be VL (Validation program). Example of an acceptable file name is 202110SVL.mdb

Special Requirements:

- The database file submitted must consist of a cumulative running record of all data for the fishing season. Regardless of the table design and relationships defined by the external group or Service Provider system for proprietary purposes, data transferred to DFO must be extracted in a manner which conforms to the design described in the 'DATA TRANSFER FORMAT' section.

3.6.3 Data Transfer Format

A. ELECTRONIC DATA FORMAT FOR DOCKSIDE VALIDATION PROGRAM INFORMATION

Data Items from DMP form	Database Field Name	Field Type & Size	Value if N/A or Unknown
Fishery	Fishery	Text – 2	0
Hail Out Number	HailOutNumber	Number - 8	0

Data Items from DMP form	Database Field Name	Field Type & Size	Value if N/A or Unknown
Hail In Number	HailInNumber	Number - 8	0
Opening	Opening	Text – 50	0
	CommitDate	Date/Time	0
Form Number	Form_num	Number - 8	0
Vessel Registration Number	CFV	Text – 6	Null
Vessel Name	Vessel	Text – 100	
Landing Port Code	Port	Text - 3	Null
Landing Port Name	PortName	Text - 50	0
Fisher Identification Number	FIN	Text - 50	Null
Skipper's Name	SkipperName	Text – 50	Null
Date of Landing	d_landing	Date/Time	Null
Observer code	Observer	Text – 3	Null
Off loading company	Offloader	Text – 50	Null
Buyer Name	Buyer	Text – 50	Null
Second Buyer Name	Buyer2	Text – 50	Null
Hours to off load	Offld_Hrs	Text – 50	0
	d_export	Date/Time	Null
	Upd_Date	Date/Time	Null
Species Code	SppNumCD	Text – 3	U
Common Species Name	SppCommonName	Text – 50	0
Species Code 2	SppNumCD2	Text – 3	U
Common Species Name 2	SppCommonName2	Text – 50	0
Method	Method	Text - 1	Null
Number of Pieces	Pieces	Text - 38	Null
Total Weight	TotWeight	Text - 38	0
Remaining Eulachon Bycatch Limit	Verified_Remaining_EBL	Text - 11	Null
Preliminary Trip Bycatch Limit	Preliminary_Trip_EB	Text - 10	Null
Eulachon Caught	Landed_Trip_EB	Text – 10	Null
Preliminary Remaining Eulachon Quota	Preliminary_Remaining_EB	Text - 10	
Updated Date	Upd_Date	Date/Time	Null

Data Items from DMP form	Database Field Name	Field Type & Size	Value if N/A or Unknown

Notes: Use pounds for all weight measurements Use upper case characters only for 'text field' data. Every field should have an entry. **If the value is unknown or not applicable, enter the default value indicated in the far right column of the table. Note that for all Data Items marked with an asterisk, there are more extensive field descriptions of the data required below.

A.1. Field Descriptions and Coding

Pacific Fishery Mgmt. Area and Pacific Fishery Mgmt. Subarea

These are the Pacific Fisheries Management Areas and Subareas as specified in the Regulations made under the *Fisheries Act, R.S.C.*

Shrimp Management Area
This is the area described in the Shrimp Trawl Integrated Fishery Management Plan.

VRN of Vessel
Use the Vessel Registration Number in this space.

Validated Landings
This is the total net weight of all landed shrimp from the vessel for fishing trip being landed. The 'WEIGHT" field must contain the 'Net Offload Weight (dock weight) for the landing. In the case of split loads, this value will be the Total Net Weight for all Parts.

Species Code
The species code for shrimp species landed.

Weight Code
Always enter 'P' to indicate the landings (weights) are reported in pounds (except if this is unknown, enter 'U').

CONTACT INFORMATION FOR MORE INFORMATION

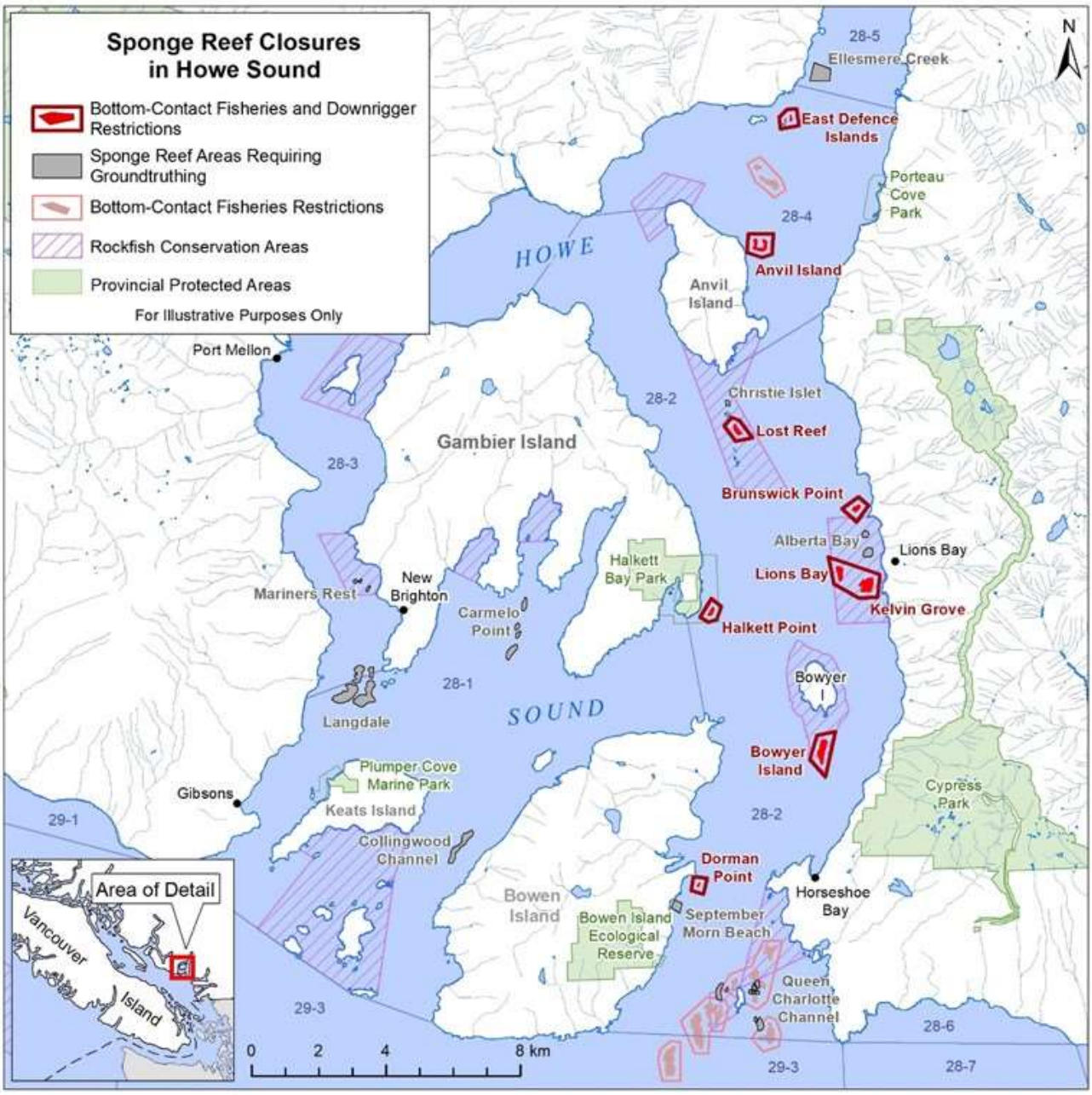
Resource Management	Guy Parker	(250) 756-7163
Stock Assessment	Andres Araujo	(250) 756-3367
Shellfish Data Unit	Rob Flemming	(250) 756-7306

APPENDIX 15: STRAIT OF GEORGIA AND HOWE SOUND GLASS SPONGE REEF CONSERVATION AREAS

Map of sponge reef areas in Strait of Georgia and Howe Sound closed to shrimp by trawl.



Map of eight Bottom-Contact Fisheries and Downrigger Restrictions areas closed to shrimp by trawl as of April 1, 2019.



For specific coordinates for these closures see Section 4, Area 28 of Appendix 1.

FOR MORE INFORMATION PLEASE VISIT:

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

APPENDIX 16: RISK ASSESSMENT

Under the Pacific Region Strategic Framework, a risk assessment tool has been used to assess monitoring levels required for the commercial Shrimp Trawl fishery in B.C. The Department drafted the risk assessment and consulted with commercial harvesters in 2018. Comments on the draft results were incorporated where possible and the draft risk assessment results were published for broader consultation as part of the 2019-20 IFMP. The risk assessments have now been finalized, a summary and key findings from the final risk assessment for the commercial Shrimp Trawl fishery is highlighted here.

1 Shrimp Trawl (Beam and Otter Trawl)

1.1 Fishery Overview

The commercial Food and Bait fishery is fished by beam and otter trawl gear and has the potential to occur over much of the BC Coast. The fishery can occur year round, subject to quota availability, and operates on area based quotas fished on a competitive basis.

There is high variability in stock abundance due to natural environmental factors and landings in the fishery have ranged from less than 2 M lb to approximately 14 M lb over the last 10 years.

1.2 Ecosystem Risks

Due to variability in stock status across and within stock assessment areas, the stock status of pink and sidestripe shrimp is considered to be of low concern with a moderate likelihood commercial shrimp trawl fisheries are driving the status of the stocks. In terms of bycatch, the fishery targets only shrimp, however observed bycatch of other species does occur; therefore this fishery has a low risk to retained bycatch, but a high risk to released bycatch. One of the primary species of concern identified in the bycatch of the fishery is Eulachon. Finally, the fishery has a low impact on shrimp as a key prey species. Even though shrimp are a forage fish species for many marine mammals, sea birds and other fish, the fishery is managed using a conservative approach and therefore was identified as having a low impact on ecosystem processes. There is a high risk for direct or indirect habitat impacts in this fishery.

From this assessment, the preliminary fishery risk (comprised of risk to main species, bycatch, and community and habitat) was identified as high.

1.3 Monitoring Level

An overall risk score of high requires an “enhanced” monitoring level. The Risk Assessment identifies that the fishery currently has generic monitoring.

Current monitoring in this fishery includes; 100% dockside monitoring program and 100% at-sea observer coverage in a portion of the offshore fishery; partial at-sea observer coverage in other portions of the coast; requirements to hail-in, hail at-sea, and hail-out of the fishery, maintenance

of paper harvest logbooks, and submission of fish slips. Information and monitoring gaps includes a lack of sufficient at-sea observer coverage in some portions of the coast.

1.4 Next Steps

The fishery currently meets many of the program requirements for the monitoring and reporting targets, with identified gaps in observer coverage. At-sea observer coverage is expensive and costs associated with increasing coverage would be relatively high compared to the value of the shrimp landed and earnings for the fishery. The Department and industry will continue to work collaboratively to make improvements in the monitoring where possible.

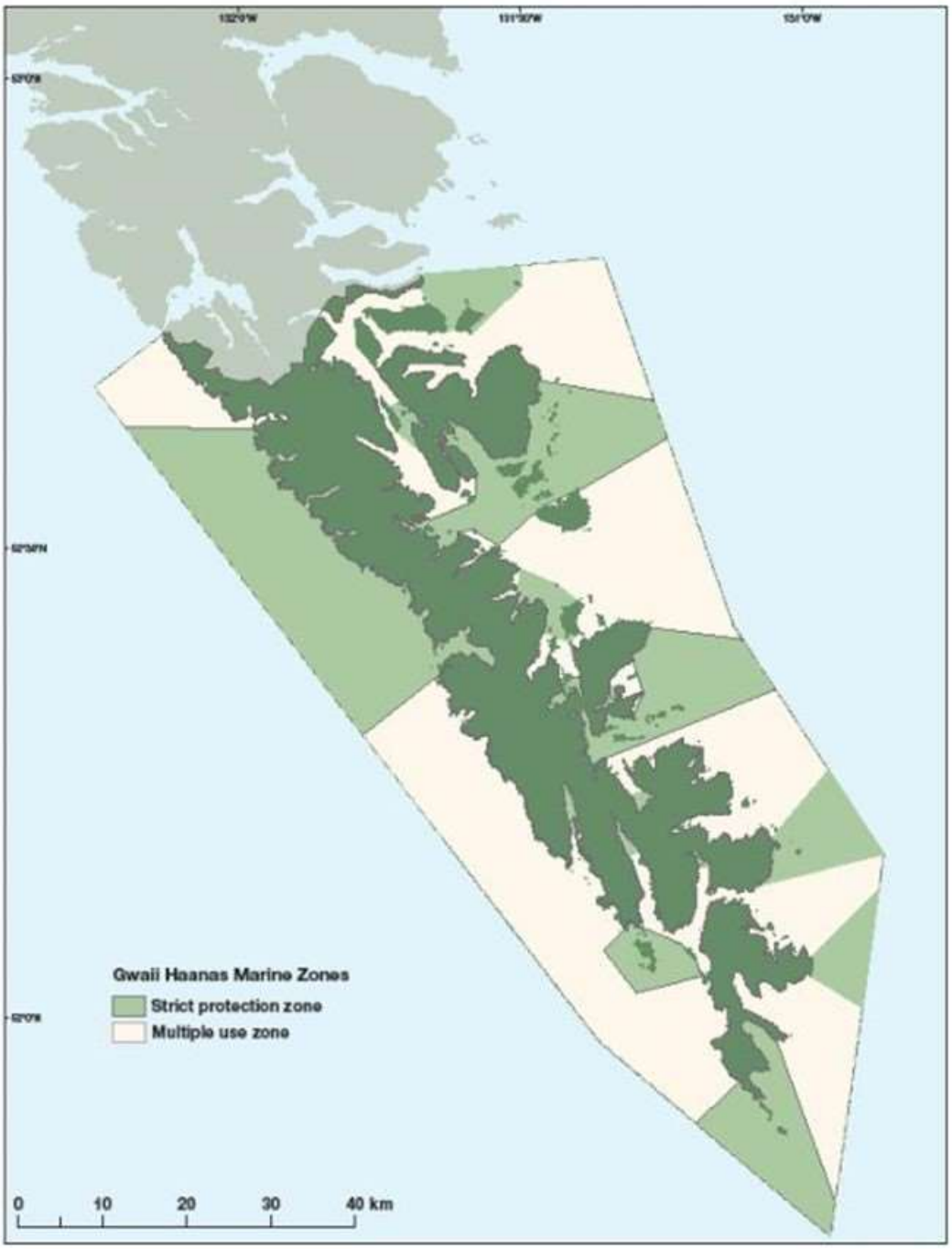
APPENDIX 17: FISHERY CLOSURES FOR GWAII HAANAS NATIONAL MARINE CONSERVATION AREA

GWAII HAANAS NATIONAL MARINE CONSERVATION AREA

As noted in the Shrimp Trawl IFMP, a new management plan for the Gwaii Haanas National Park Reserve, National Marine Conservation Area Reserve, and Haida Heritage Site was approved by Canada and the Haida Nation in November 2018, following an extensive consultation process. The final zoning plan includes several areas of strict protection, where commercial and recreational fishing are prohibited (See Strict Protection Zones in figure 8 below). The implementation of these closures may take some time. However, steps are being taken to undertake this work and each closure will be communicated via Fishery Notice as it is implemented.

Users of the Gwaii Haanas marine area should be aware that adjacent land is managed under the authority of the Canada National Parks Act and its regulations and, as specified in the Gwaii Haanas Agreement (1993), there is "no extraction or harvesting by anyone of the resources of the lands and non-tidal waters of the Archipelago for or in support of commercial enterprise" (s3.3). There are specific requirements for visiting the terrestrial portion of Gwaii Haanas, and advanced planning is necessary. Please contact the Gwaii Haanas administration office at 1-877-559-8818 for further information. For background information, see IFMP section 8.2.

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



Gwaii Haanas National Marine Conservation areas