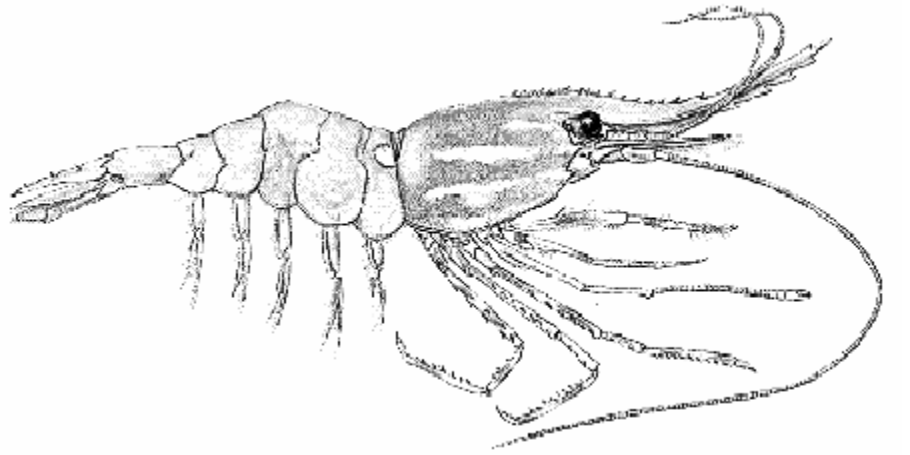
PACIFIC REGION

INTEGRATED FISHERIES MANAGEMENT PLAN

PRAWN AND SHRIMP BY TRAP

MAY 1, 2018 TO APRIL 30, 2019



Pandalus platyceros

Fisheries and Oceans Canada | Pêches et Océans Canada

Canada

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

FOREWORD

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

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

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

TABLE OF CONTENTS

LIST OF ATTACHMENTS:

1. OVERVIEW

1.1. Introduction

This Integrated Fisheries Management Plan (IFMP) for Prawn and Shrimp by Trap covers the period May 1, 2018 to April 30, 2019.

This IFMP provides a broad context to the management and interrelationships of all fishing sectors of the prawn (*Pandalus platyceros*) and shrimp (Humpback, Coonstripe, and pink shrimp) trap fishery in the Pacific Region (British Columbia [BC], Canada). Section 1 provides an overview of the commercial, recreational and First Nations fisheries. Section 2 presents a biological synopsis and stock assessment. Section 3 provides a socio-economic profile. Section 4 describes the emerging management issues that may impact on management measures in the fishery. Section 5 describes objectives for the fishery, reflecting stock status presented in Section 2 and to address the issues identified in Section 4. Section 6 discusses access and allocation. Section 7 directs to the Appendices for the fishery management measures and procedures that will be employed during the year to meet the objectives. Section 8 describes shared stewardship arrangements to achieve objectives. Section 9 describes the enforcement measures to achieve the objectives. Section 10 describes the ways and means by which the achievement of the objectives will be assessed in the following year. Sections 11, 12 and 13 provide references, internet sites and a glossary to define terms. Sections 14 and 15 provide contacts and information on the Prawn Advisory Board, the multi-sector consultation process for the fisheries. Section 16 provides an annual review of the fisheries in the previous year based on the performance indicators provided in Section 10.

The Commercial Harvest Plan for Prawn and Shrimp by Trap is attached to this IFMP as Appendix 1. Appendix 2 is the Recreational Harvest Plan. Appendix 3 is the First Nations Harvest Plan. Appendix 4 has diagrams of commercial prawn size limits and traps. Appendix 5 is an example of a prawn and shrimp trap commercial harvest log. Appendix 6 provides a marine mammal interaction reporting form. Appendix 7 discusses vessel safety. Appendix 8 includes information from the Canadian Food Inspection Agency (CFIA) regarding commercial vessel sanitation procedures. Appendix 9 provides a diagram of prawn life stages. Appendix 10 provides a map of Pacific Fishery Management Areas (PFMA), Appendix 11 provides overview maps of the Strait of Georgia and Howe Sound Glass Sponge Reef Conservation Areas, and Appendix 12 provides an overview map of the Hecate Strait and Queen Charlotte Sound Glass Sponge Reefs Marine Protected Area (MPA). Appendix 13 provides draft risk assessments for fishery monitoring and catch reporting for review, comment and revision in 2018.

1.2. History

The commercial prawn and shrimp by trap fishery began around 1914 in Howe Sound and reached prominence in the mid 1970s. Trapping began in Knight and Kingcome Inlets in the early 1950s and these inlets led BC's prawn production until about 1970. The fishery experienced a period of growth between 1979 and 1989 following a series of exploratory prawn surveys (1976-1979) to assist development of the fishery in the north and central coasts of BC, with the number of vessels reporting landings increasing from approximately 50 to 305 vessels out of an eligible 900 licences issued in 1989. In 1990, licence limitation was implemented and

there are currently 246 commercial licence eligibilities. The recent history of the management of the commercial fishery is one of incremental steps to improve conservation of prawns and sustainability of the associated fisheries. Collectively these changes represent a significant and sustained effort to improve management and stock assessment in the last two decades. The Pacific Region's commercial trap caught prawns are recognized by the Vancouver Aquarium's OceanWise program as a "Recommended" choice.

The recreational and First Nations fisheries are more recently developed. Recreational effort was low until the mid 1990s. Recreational interest grew with increased prawn abundances in the south coast and with declines in salmon and rockfish stocks. First Nations' interest in prawns for food, social and ceremonial (FSC) purposes is also increasing as gear has become more readily available and with declines in other species, such as salmon.

The target species is prawns (Spot Prawn, *Pandalus platyceros*), with a small incidental catch of other shrimp species and small commercial fisheries directed at Coonstripe Shrimp (*P. danae*) and Humpback Shrimp (*P. hypsinotus*). A fixed escapement model, the prawn 'spawner index', was first introduced in 1979 as the assessment and management framework to provide for sustainability of the fisheries and conservation of prawn stocks.

Information in addition to that presented here is available in the Canadian Manuscript Report of Fisheries and Aquatic Sciences series (Harbo and Wylie 2006).

1.3. Type of Fishery and Participants

The Pacific Region prawn and shrimp by trap fisheries include commercial, recreational and First Nations fisheries.

The commercial fishery is a limited entry fishery with 246 licence eligibilities. Of these, four are "grandfathered" (i.e. non-transferable and the eligibility expires when the licence eligibility holder leaves the fishery) and 60 are designated communal commercial licences for First Nations participation in the commercial fishery. Vessel sizes in the commercial fishery range from 6.1 m to 20.68 m. The number of crew varies with the size of the vessel. A single person may operate smaller vessels while larger vessels may operate with a captain and three or four crewmembers. The number of vessels actively fishing on an annual basis is reduced from 246 by allowing the seasonal transfer of a trap allotment to another licenced vessel.

Five Nuu-chah-nulth First Nations located on the West Coast of Vancouver Island (WCVI) - Ahousaht, Ehattesaht, Hesquiaht, Mowachaht/Muchalaht, and Tla-o-qui-aht (the T'aaq-wiihak First Nations) - have Aboriginal rights to fish for any species of fish within their Fishing Territories[1] and to sell that fish, with the exception of Geoduck. DFO is working with the First Nations to find the manner in which the rights of the five First Nations can be accommodated and exercised without jeopardizing Canada's legislative objectives and societal interests in regulating the fishery. The outcome of these discussions could lead to in-season management changes. DFO will make effort to advise stakeholders of any such changes in advance of changes being implemented.

[1] Their fishing territories are located within portions of Pacific Fishery Management Areas (PFMA) 25/125, 124, 26/126 and all of PFMA 24.

A BC Tidal Waters Sport Fishing Licence is required for the recreational harvest of all species of fish, including shellfish. Almost 331,000 anglers participated in BC's tidal waters recreational fishery in 2016/17. Most (88%) were BC residents, with the remainder divided between Canadians from outside BC and visitors to Canada. Crabs, prawns and shrimp, clams and oysters are the main species of shellfish harvested. Prawn and shrimp fishing was estimated to occur on 14.5% (or 297,780 days) of total angler days[2] in 2010. BC residents account for most (93% in 2010) of the recreational fishing effort directed at prawns and shrimp (Fisheries & Oceans Canada 2012; surveys are conducted every five years). However, the number of individuals that this represents is unknown.

First Nations' harvest for FSC purposes may occur where authorized by an Aboriginal communal licence or, under treaty, a harvest document for domestic purposes. Fifty-four communal licences and 4 harvest documents may be issued annually in the Pacific Region including harvest for a number of shellfish species. Except where designation is made by the First Nation or First Nation organization to fish under a communal licence or harvest document, the number of individuals that this represents is unknown. At least 26 First Nations or First Nations organizations have identified that they harvest prawns for FSC/domestic purposes.

1.4. Location of Fishery

The Pacific Region prawn and shrimp trap fishery takes place along the BC coastline in near-shore areas in depths of 40 to 100 m. The majority of commercial landings have historically come from the fishing areas inside of Vancouver Island (>60%), with the remainder from the WCVI (<10%) and north and central coasts (25%). The presence of prawns in areas offshore (PFMAs 101 to 111, and 121 to 143) is known from shrimp trawl and groundfish trawl fisheries, however, the short commercial fishing season provides insufficient time and incentive for the prawn fleet to search for additional fishing opportunity in these areas. While there have been a number of proposals for surveys of offshore areas, these surveys did not find any concentrations of prawns of particular note. A small directed trap fishery for Humpback Shrimp occurs in Prince Rupert Harbour (PFMAs 4-10 and 4-11) and, rarely, Masset Inlet (PFMA 1-6). A small directed trap fishery for Coonstripe Shrimp may occur in Sooke Harbour and Basin (PFMAs 20-6 and 20-7).

Most of the recreational prawn catch comes from the south coast in the Strait of Georgia (66%) and the WCVI (20%) (Fisheries & Oceans Canada 2012). The highest recreational prawn fishing effort is in Saanich Inlet, Stuart Channel, and Alberni Inlet and includes also the waters around Howe Sound, Quadra / Cortes Islands, Powell River and Sechelt, Nanaimo, Barkley Sound, and Gold River / Tahsis.

First Nations' communal licences and harvest documents identify the area where First Nations may fish for FSC harvest.

Permanent area closures are listed in Appendix 1 for the commercial fishery. Permanent area closures for the recreational fishery are listed in Appendix 2 and in the BC Tidal Waters Sport Fishing Guide available on the internet at:

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

[2] All recreational fishing effort is measured in terms of angler days. More than one species may be fished per angler day.

Permanent area closures in the First Nations fishery under communal (FSC) licences or, under treaty, harvest documents for domestic purposes are listed in Appendix 3.

1.5. Fishery Characteristics

1.5.1. Commercial

The commercial fishery is a limited entry, competitive fishery with seasonal closures, in-season area closures, gear limits, gear marking requirements, trap mesh size requirements, minimum size limits, non-retention of prawns with eggs, daily fishing time restrictions and a daily single haul limit. Over 90% of the catch is prawns.

An escapement-based model, referred to as the Spawner Index Model (Boutillier and Bond 2000), is the primary tool used to assess prawn stocks and manage the commercial fishery season. This is a standardized catch per unit effort (CPUE) model based on ensuring a minimum number of female spawners are available at time of egg hatch, which normally occurs around the end of March. Seasonal closures are implemented as fishing effort approaches the monthly index. Once implemented, the area remains closed to commercial fishing to the end of the spawning cycle and the opening date of the commercial season the following year. The closure protects the remaining egg bearing females from commercial fishing mortality through to the end of the larval hatching period. The commercial fishery opens no earlier than May 1 to allow for the spawning cycle to complete and for increased growth of the prawns prior to harvest, improving catch weight and value. The commercial season generally closes by the end of June.

Small directed commercial fisheries occur in the fall to the end of December for Humpback Shrimp in Prince Rupert Harbour (seven vessels in 2017) and, rarely, Masset Inlet and for Coonstripe Shrimp in Sooke Harbour and Basin.

1.5.2. Recreational

The recreational fishery is an open entry fishery with a daily limit, two-day possession limit, gear limits and gear marking requirements. The main target species is prawns. Beginning April 2018, prawns with eggs cannot be retained. There is no size limit. Humpback Shrimp and Coonstripe (or Dock) Shrimp may also be caught in localized areas. Pink Shrimp (Northern and Smooth) may also be caught incidentally.

The recreational fishery is open for most of the coast throughout the year. Sampling conducted in the fall prior to spawning helps to determine whether winter recreational harvest is permissible in selected areas where most recreational prawn effort occurs (Section 1.4). Based on the Spawner Index Model, seasonal closures are implemented to protect egg bearing female prawns from recreational fishing mortality during the critical winter spawning period, January 1 to March 31, through to the end of the larval hatching period (which normally occurs around the end of March).

Special measures are in place in three high use recreational fishing areas; Saanich Inlet and Stuart Channel since 2006 and Alberni Inlet since 2007. At these locations, additional management measures include higher spawner index targets, a one-week closure in May, and “pulse fishing” (two weeks closed, two weeks open) beginning in September. These measures were developed collaboratively by the commercial and recreational sectors and with agreement of local First Nations in an effort to leave more female prawns carrying eggs on the spawning

grounds, with an anticipated benefit of more prawns for all harvest sectors beginning two years later and a reduction in the need for winter recreational fishing closures.

BC Tidal Waters Sport Fishing Licences are available for purchase online and through point-of-sale retailers, such as tackle stores and marinas. Information is available at:

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

1.5.3. First Nations

Pre-season, DFO engages in a variety of consultation and collaborative harvest planning processes with First Nations at the community level, or at broader tribal or watershed (for salmon) levels. Fisheries are then authorized via a communal licence or, under treaty, a harvest document issued by DFO under the *Aboriginal Communal Fishing Licences Regulations*. These licences are typically issued to individual bands or tribal groupings, and describe the details of authorized fisheries including date, times, methods and locations of fishing. Communal licences, or harvest documents under treaty, and Aboriginal Fisheries Strategy (AFS) agreements (where applicable) include provisions that allow First Nations' designation of individuals to fish for the group and, in some cases, vessels that will participate in fisheries.

First Nations' fishing for FSC is the first priority after conservation and is currently open coast-wide throughout the year. First Nations fishing effort for FSC purposes is currently not limited by catch quantity, except in those First Nations where the Council or fisheries program has established their own catch limits for band members, or where allocated for domestic purposes under treaty. Gear marking is required. The main target species is prawns. Humpback Shrimp and Coonstripe (or Dock) Shrimp may also be caught in localized areas.

While prawns and shrimp were not allocated under the Maa-nulth, Tsawwassen or Nisga'a treaties, harvesting for domestic (FSC) purposes is permitted. The Tla'amin fishery for domestic purposes under the Tla'amin Final Agreement (Treaty) includes an allocation of prawns.

1.5.4. Aquaculture

There are currently limited culture projects for prawns or shrimp. Two land-based hatchery facilities are licensed to culture prawns but are currently inactive. There are two land-based closed containment aquaculture facilities licensed for White-legged Shrimp (*Litopenaeus vannamei*), a tropical species, and currently one facility is active.

1.6. Governance

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

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

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

These documents are available on the internet at:

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

More information on the *SARA* is available at:

www.sararegistry.gc.ca/

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

The Sustainable Fisheries Framework is available on the internet at:

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

Scientific advice for this fishery is peer-reviewed primarily through a committee called the Canadian Science Advisory Secretariat (CSAS).

Information about the CSAS and publications are available on the internet at:

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

1.7. Approval Process

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

2. STOCK ASSESSMENT, SCIENCE AND TRADITIONAL KNOWLEDGE

2.1. Biological Synopsis

Seven species of shrimp are harvested in BC in commercial, recreational and First Nations fisheries: *Pandalus platyceros* (Spot Prawn), *P. hypsinotus* (Humpback Shrimp), *P. danae* (Coonstripe or Dock Shrimp), *P. jordani* (Smooth Pink Shrimp), *P. borealis eous* (Northern or Spiny Pink Shrimp), *P. goniurus* (Flexed Shrimp), and *Pandalopsis dispar* (Sidestripe Shrimp). All are members of the family Pandalidae.

The trap fishery primarily targets Spot Prawns with limited effort directed towards Humpback and Coonstripe Shrimp. Spot Prawns are the largest of the Pacific coast shrimp species and are generally found on rocky or hard bottom. The global distribution of *P. platyceros* ranges from Unalaska Island AK in the north to San Diego CA in the south, and westward to Vladivostok, the Sea of Japan and the Korea Strait. Most commercial fishing in BC waters occurs in depths of 40 to 100 m in near-shore waters.

All pandalid shrimp species undergo a change of sex in midlife. They mature first as males and mate. Their sexual characteristics change during a transition phase and they become females in the final year or two of their lives. The biological term for this sex change is protandric hermaphrodism.

Spawning typically occurs in late autumn or early winter and the females externally carry the developing eggs until the eggs hatch in spring. Larvae are then released into the water column and are thought to have a three month pelagic phase prior to settlement.

Spot Prawns live to four years of age in BC (Butler 1980 and Boutillier and Bond 2000). Following release of the larvae, spent female mortality is rapid, usually within several weeks. Few if any prawns survive past the fourth year. Most prawns are harvested at age 2+ and 3+.

2.2. Ecosystem Interactions

Spot Prawns, like all other organisms, play a role in ecosystem interactions. Species-specific ecosystem linkages are difficult to identify owing to the multivariate nature of ecosystem function. Once prawns have settled to the bottom and have found suitable protective habitat, mortality is likely reduced (Butler 1980; Marliave and Roth 1995). At this stage they are preyed upon by bottom fish and octopus (Bergstrom 2000).

Spot Prawns are opportunistic foragers, consuming fresh, moribund or dead organic material. Stomach contents of Spot Prawns near Vancouver held remains of polychaete worms and unidentified crustaceans (Butler 1980).

2.3. Aboriginal Traditional Knowledge/Traditional Ecological Knowledge

Both Aboriginal Traditional Knowledge (ATK) and Traditional Ecological Knowledge (TEK) are cumulative knowledge gathered over generations and encompass regional, local and spiritual connections to ecosystems and all forms of plant and animal life. ATK is knowledge held by Aboriginal peoples and communities, while TEK is local knowledge held by non-Aboriginal communities, including industry, academia, and public sectors. While qualitatively different, both are cumulative knowledge that may be gathered over generations and are regionally and locally specific and can often be utilized to improve the management process. The growing awareness of the value of ATK and TEK is reflected in the increasing requirements to be included in environmental assessments, co-management arrangements, species at risk recovery plans, and coastal management decision-making processes. ATK and TEK may inform and fill knowledge gaps to aid decision making related to development and resource use. Government and the scientific community acknowledge the need to access and consider ATK and TEK in meaningful and respectful ways. However, the challenge for resource managers is how to engage knowledge holders and how to ensure that the information can be accessed and considered in a mutually acceptable manner, by both knowledge holders, and the broader community of First Nations, stakeholders, resource managers, and policy makers involved in fisheries.

For Spot Prawns and other shrimp species, ATK is not generally available.

2.4. Stock Assessment

Spot Prawn stocks are managed and assessed based on an escapement-based model (Boutillier and Bond 2000) (Section 1.5). Growth and mortality parameters for the model are obtained through semi-annual fishery independent surveys. Fishery independent index surveys are also conducted in the fall to monitor stock status prior to spawning. During the commercial fishing season, a sub-set of the commercial traps hauled are sampled by independent observers to monitor stock status relative to the in-season harvest reference points.

2.5. Stock Scenarios

Annual commercial fishery landings are considered a reasonable proxy of overall stock abundance. Annual landings generally showed an increasing trend from the development of the fishery up to 2009 (Section 3.1). Since 2009, annual catches have been variable. A large decrease in catch was observed in 2010 followed by a high annual catch in 2011. From 2012 to 2015, prawn landings remained relatively consistent ranging from approximately 1,648 t to 1,842 t. In 2016, commercial landings declined to approximately 1,219 t. The preliminary commercial catch estimates for 2017 is 1,111 t (all logbooks not available at time of publication). This coincides with abundance patterns seen in other shrimp populations such as pink and sidestripe shrimp throughout BC (DFO, 2018/19 IFMP for Shrimp by Trawl). The primary indicator of stock status for 2018 will be the sample results obtained at the start of the 2018 commercial prawn season.

2.6. Precautionary Approach

Provisional Harvest Control Rules (HCR) compliant with the Precautionary Approach (PA) have been developed. The reference points are expressed as base spawner index values and removal reference is accomplished through sequential Subarea closures. A detailed description of the PA for Spot Prawns is available in Proceedings of the PA workshop on Canadian shrimp and prawn stocks and fisheries, CSAS Proceedings Series 2008/031 available on the internet at:

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

2.7. Research

Several research projects are ongoing that include: improving understanding of Spot Prawn population dynamics, addressing juvenile rockfish by-catch issues (Rutherford et al. 2009), and gear standardization studies (Rutherford et al. 2004; Rutherford et al. 2010). Release of National policies may prompt new research into understanding ecosystem function and evaluating benthic impacts as they relate to prawns and prawn harvest.

3. ECONOMIC PROFILE OF THE FISHERY

The intent of this section is illustrative, and it provides a socio-economic context of the prawn and shrimp by trap fisheries in BC. Overviews of commercial, recreational, and Aboriginal sectors of the fishery are included.

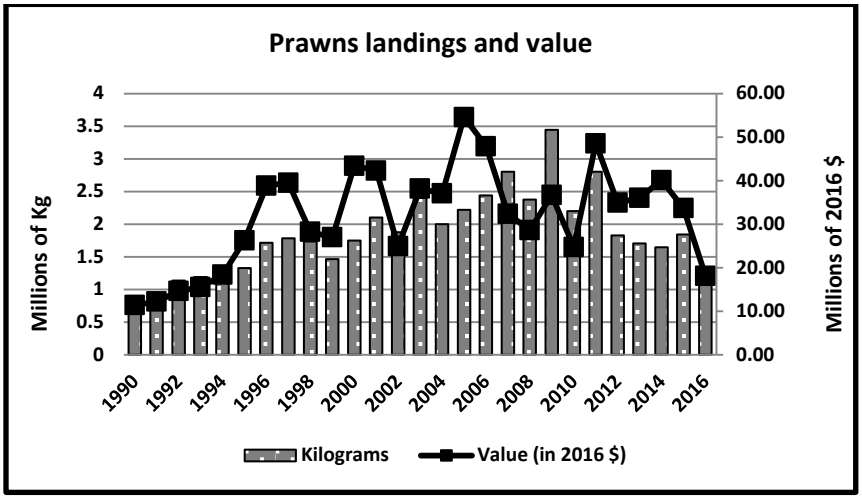
3.1. Commercial

Historically, the commercial prawn and shrimp by trap fishery has been one of the most valuable fisheries in the Pacific Region with a total landed value in the range of $33.5 - $39 million in 2013-2015. This changed in 2016 when the estimated landed value of the fishery sharply dropped. While the 2016 DFO estimates of the total value are at $16.1 million, the provincial estimates are at $18.1 million (BC Ministry of Agriculture, 2017 *in prep*). This difference in the total value for 2016 might be caused by bonus payments that tend to be realized with a delay (1-2 years).

Landings from commercial logbooks and their estimated value are provided in the following graph. Landed values have been adjusted for inflation and are measured in 2016 constant dollars. Landed value in 2011 was the highest of the past decade due to the combination of high price and volume. While the 2011-2016 landed value shows a high level of variability, prawn prices remained strong until 2014. In 2015, the total landed value of the fishery dropped by about 25%, and decreased further in 2016 (by about 50% when compared to the 2012-2015 average). While landed volume was relatively stable in 2012-2015; it decreased in 2016 by over 30%. The combination of lower average price and decreased volume of landings established 2016 as the year with the lowest landed values in the fishery in the past two decades.

However, the commercial harvest does not reflect the total contribution of the prawn and shrimp fishery to the provincial economy; the processing of prawns and shrimps landed in the province is another source of economic value. In 2016, the wholesale value of prawns processed in BC was about $38.1 million (BC Ministry of Agriculture, 2017 *in prep*), which was about 20% lower than in 2015. It is unclear whether this is 100% BC product or if it includes prawns that are imported for further processing.

A 2017 report on linkages between seafood harvesting and processing prepared by GS Gislason & Associates estimated that in 2016 direct prawn labour processing costs (i.e. wages paid to employees working in the prawn processing sector) were about $2.8 million. These estimates show the importance of economic impacts that this fishery has on the BC economy as a whole (spillover effect). The same report also states that prawns landings and processing occur mainly on Vancouver Island and in the Lower Mainland of BC. Only about 9% of landings and processing happens on the North Coast of BC.



Source: Landings from logbooks; value 1990-2011 and 2016 from BC Ministry of Agriculture, value from 2012 -2015, based on price from fish slips and does not include post-season price adjustments

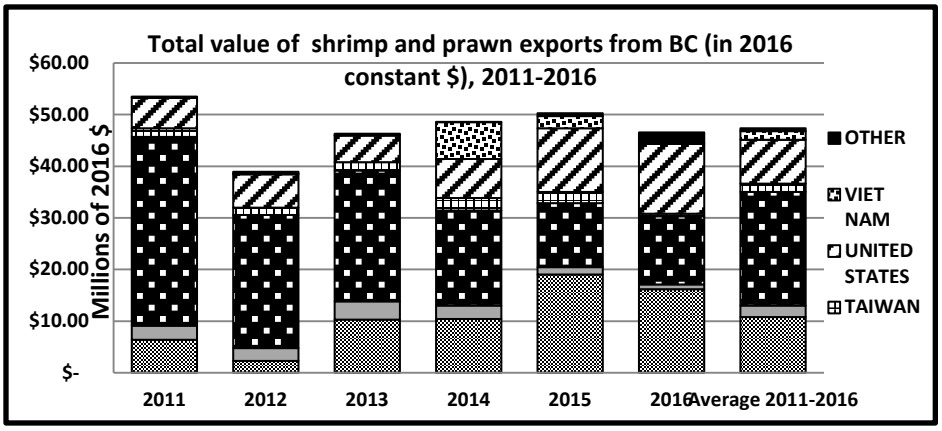
Almost 80% of W-licenced vessels engage in the prawn fishery with over 60% of vessels participating exclusively in the prawn fishery. Simpson (2016) estimated the value of prawn licences (W) held by the commercial sector in 2016 with a typical licence (on 36.7' vessel) to be valued at about $770,700 (Simpson, 2016). Most licence eligibility holders live around Vancouver Island or the Sunshine Coast and Lower Mainland, with a few from the North Coast and interior of BC.

3.1.1. Viability and Market Trends

Once almost totally reliant on the Japanese market, the prawn sector has diversified its market channels and enjoys high profile in local, domestic, and other export markets (Nelson 2011). Live and fresh prawns are sold to local markets, local restaurants, or through dock sales. Fresh prawns and some frozen prawns may be sold as whole or tailed product. BC Spot Prawns have been recognized by the Vancouver Aquarium's OceanWise program as a "Recommended" choice, and as a "Good Alternative" by the Monterey Bay Aquarium's Seafood Watch program. Such recommendations create marketing opportunities and raise the profile of Spot Prawns in local, domestic, and growing export markets such as China, Hong Kong, and Taiwan. However, participation in the export market means that BC's commercial fisheries are influenced by foreign price fluctuations, currency exchange rates, and market competition.

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 2016 was $47.4 million in 2016 constant dollars. All of the prawn and shrimp exported in 2011-2016 were exported either frozen or fresh. Average value per kilogram from prawn and shrimp exports peaked at about $21.3/kg (2016 constant dollars) in 2012, before dropping to about $16/kg in 2013 and 2014. 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. Between 2014 and 2016, export volume of shrimp and prawns to the United States of America (USA) increased about ten-fold, while the average export price for the USA declined from about $34/kg to around $5.8/kg. By contrast, the volume of exports to Japan dropped by about 50% while the price increased by 44%. Preliminary export values for 2017 show that export volumes overall are

lower. One of the reasons for this situation can be associated with lower volume of landings observed in 2016.



Source: Statistics Canada (EXIM), Accessed on November 30, 2017

Japan is one of the major markets for BC prawn and shrimp, accounting for about 35% of exports from 2011 to 2016 (volume), with an average value of about $22 million[3]; however, Japan's market share declined from 69% in 2011 to 14% in 2016. In 2015, Japan lost its position as the top market for BC shrimp and prawn, as China assumed the number one spot with exports valued at $19 million. Over the past 6 years, China has been the destination for about 25% of BC's shrimp and prawn export volume, for an average value of $10.75 million per year. Prior to 2013, the USA was generally the second largest market for BC shrimp and prawn. Over the period 2011-2016, the USA accounted for 18% of shrimp and prawn export value with an average value of $8.5 million per year. In 2016, the value of exports of BC shrimp and prawn to the USA increased by about 9% when compared to 2015. Other significant export markets include Vietnam, Hong Kong and Taiwan. The annual average value of shrimp and prawn imports by Vietnam, Hong Kong and Taiwan (combined) in 2011-2016 was $5.5 million (2016 constant dollars).

3.2. Recreational

The Survey of Recreational Fishing in Canada, conducted every five years, provides estimates of trip-related expenditures and major purchases for recreational fishing. Typically, BC's tidal water recreational fishery has been the third largest recreational fishery in Canada in terms of expenditures and major purchases[4]. Readers should note, however, that expenditures are not a measure of economic value, and cannot be compared across sectors[5].

The survey data show that expenditures by resident anglers, which increased 18% in real terms from 2005 to 2010, buoyed overall recreational spending, which increased by 2% over that same period[6]. The 2010 expenditures attributable to recreational fishing in BC tidal waters are

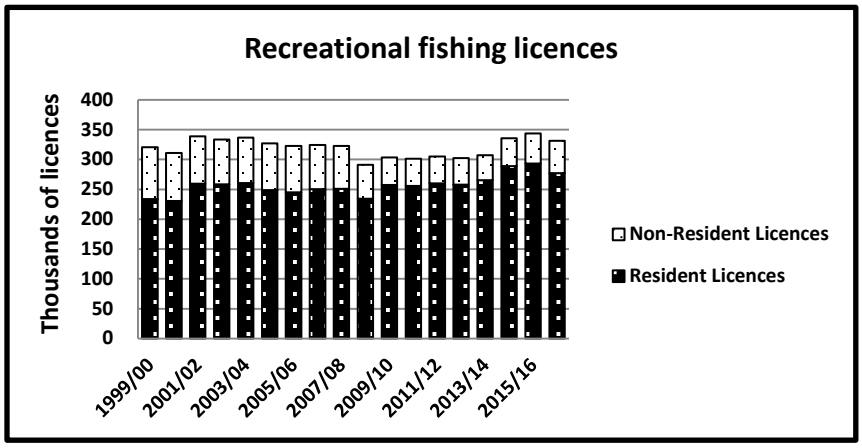
[3] Average export values are measured in constant 2016 dollars.

[4] Based on the Survey of Recreational Fishing in Canada, multiple years.

[5] Recreational fishing expenditures are not measures of economic value because they represent the value of final goods and services produced in other industries, rather than the value added to the economy as a result of recreational fishing.

[6] Growth rates in this section are based on expenditures that have been adjusted to account for inflation.

estimated at $696.5M, with $36.4M attributable to recreational fishing for prawn and shrimp[7]. Between 2005 and 2010, estimated expenditures attributed to prawn and shrimp increased by $4.9M, after adjusting for inflation. The percentage of recreational expenditures attributable to prawn and shrimp also increased slightly, from 4% in 2005 to 5% in 2010 (Fisheries & Oceans Canada 2012).



Source: DFO Fisheries Management Data Unit

Available at: www.pac.dfo-mpo.gc.ca/fm-gp/rec/licence-permis/Stats/99tocurrent-eng.html

The recreational harvesting of prawns and shrimp has grown, though salmon and halibut continue to account for most recreational fishing effort. In 2005, prawn and shrimp fishing occurred on 10% of angler days, or 219,939 days, while in 2010, prawn and shrimp fishing occurred on 14.5% of angler days (297,780 days of a total 2,052,957 days). Two-thirds of prawn and shrimp fishing effort in 2010 was undertaken in the Strait of Georgia, with another 12.5% in Barkley Sound. Despite this increase in fishing effort, when asked their top three preferred species, anglers continue to indicate halibut and three of the five salmon species. Nine percent of resident anglers, who accounted for over 93% of recreational fishing effort[8] directed at prawn and shrimp in 2010, identified prawns as a top-three species in the survey (Fisheries & Oceans Canada 2012). As shown in the graph above, there has been an increase in the number of resident anglers in the last few years, though the number of non-resident (including international) anglers has been stable after a large drop in 2007/08.

National and provincial summary information from the Survey of Recreational Fishing in Canada 2010 is available on the internet at:

www.dfo-mpo.gc.ca/stats/rec/canada-rec-eng.htm

3.3. First Nations

The Allocation Transfer Program (ATP) and Pacific Integrated Commercial Fishery Initiative (PICFI) have relinquished existing commercial licence eligibilities from fish harvesters on a voluntary basis and re-issued these to eligible First Nation organizations as communal commercial licences. The PICFI, announced in 2007, is aimed at achieving environmentally

[7] A special run of the survey data generated species-level estimates of expenditures, based on reported recreational fishing effort.

[8] All recreational fishing effort is measured in terms of angler days. More than one species may be fished per angler day, and the actual amount of time spent harvesting each species on a given day is undetermined.

sustainable and economically viable commercial fisheries, where conservation is the first priority and First Nations' aspirations to be more involved are supported. The Government of Canada committed $175 million over the first five years (2007-2012) to implement the initiative. The program was renewed on a temporary basis until Budget 2017 when it was announced that PICFI is to receive permanent long term funding of $22.05 million annually.

As a result of these programs, 24% of commercial prawn and shrimp by trap licence eligibilities are held by First Nations for participation in the commercial fishery.

For more information on the AFS ATP, contact a resource manager listed in Section 14 or see the internet at:

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

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

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

4. MANAGEMENT ISSUES

The following emerging issues may impact the management measures in place for the prawn and shrimp by trap fisheries.

4.1. Conservation and Sustainability

4.1.1. Biological and Environmental Variability

Every season marks a new prawn life stage with environmental conditions that influence prawn abundance. Ocean currents, larval distribution and changes in water temperature and salinity all have an impact on prawn survival and population strength. This means that recruitment and catch success is highly variable, from season to season, area to area, year over year.

A lack of shared understanding about this variability has made conversation difficult between harvest sectors, particularly in the south coast of BC where record high prawn catches per trap were enjoyed in the Strait of Georgia over 2006 to 2009 and off the west coast of Vancouver Island over 2009 to 2011.

DFO continues to use scientific evidence and the PA Framework policy when making decisions affecting fish stocks and ecosystem management and to incorporate new science work as it becomes available through the peer-reviewed Canadian Science Advisory Secretariat process. The Prawn Advisory Board (Section 15) supports working together and shared responsibility among all harvest sectors for conservation and improved monitoring of the fisheries.

4.1.2. Fishery Monitoring and Catch Reporting

DFO finalized the "Strategic Framework for Fisheries Monitoring and Catch Reporting in the Pacific Fisheries" (the Framework) in 2012. The Framework directs that an ecological risk assessment be undertaken for all fisheries to determine the level of monitoring required to provide information necessary to manage for the ecosystem risks posed by a fishery, while allowing for final monitoring and reporting programs to reflect the fishery's unique characteristics.

Risk assessments are performed using an excel-based tool that provides for a consistent approach to a structured conversation regarding ecological risk and other resource management considerations. Draft risk assessments will be initially completed by DFO, then presented to harvesters for review, comment, and revision through existing advisory processes established for fisheries management purposes (Section 15). Where no advisory process exists, engagement will occur through alternative means.

Should the risk assessment indicate a gap between the current level and target level of monitoring identified through the risk assessment, options to address the monitoring gap are to be identified through discussion between DFO and harvesters. The feasibility of these options (e.g. cost, technical considerations, etc.) is also to be considered through these discussions. The Strategic Framework directs that monitoring and reporting programs be both cost-effective and tailor-made for a fishery. As such, a collaborative approach is required.

Where monitoring options are determined to be feasible, the current monitoring and reporting program is to be revised to incorporate these options so the program provides sufficient information to resource managers to manage the ecological risk of the fishery effectively. Where monitoring options are not feasible, alternative management approaches are required to reduce the ecological risk posed by the fishery. If there is no gap between the current and target level of monitoring, then the management approach would not require any change.

Appendix 13 provides initial draft risk assessments for the recreational and FSC/domestic prawn and shrimp trap fisheries completed by DFO for review, comment and revision in 2018 with the Sport Fishing Advisory Board (SFAB) (recreational) and First Nations (FSC/domestic).

More information on the Framework and risk assessment is available on the internet at:

www.pac.dfo-mpo.gc.ca/fm-gp/docs/framework_monitoring-cadre_surveillance/page-1-eng.html

4.2. Social, Cultural and Economic

4.2.1. Commercial

The commercial prawn fishery has become increasingly professionalized. Catch is more evenly distributed among the commercial prawn fleet compared to some other fisheries where only a few full-time professional fishermen dedicate effort. A number of vessels participate only in the prawn fishery and are not active in other fisheries (Nelson 2011). High-speed live delivery vessels and efficient-freezing vessels, specifically built to participate in the prawn fishery, are common. Forty percent (40%) of the commercial catch is taken in the first two weeks of the season. Hydraulic haulers are standard and a single haul limit applies. Improvements in the traps and bait used are factored (corrected) in spawner index sampling analysis. GPS systems and bottom-typing allow precise plotting of the bottom and an electronic vessel monitoring system has been implemented by DFO to monitor the fishery, achieve sampling and factor effort into closure decisions and timing. With improved electronics technology, electronic vessel monitoring, and increased mobility of the fleet, short (3 days) notification of closures was fully implemented coastwide in 2017. DFO continues to review and identify other new management measures. Changes to trap limits have been brought forward for further discussion. Commercial prawn industry representatives continue to support improvements for conservation and ways to reduce conflicts and mitigate issues in lockstep with changes in other sectors.

The Transportation Safety Board (TSB) has investigated several fishing vessel accidents since 2002 and found that vessel modifications and loading of traps have been contributing factors in the capsizing of prawn vessels, F/V *Fritzi-Ann* (M02W0102) in 2002, F/V *Morning Sunrise* (M05W0110) in 2005, and F/V *Jesse G* (M12W0054) and F/V *Pacific Siren* (M12W0062) in 2012. The TSB expressed concern about the DFO maximum vessel length policy based on length of the buoyant hull and felt that it put constraints on vessel replacements and influenced fish harvester's decisions to make vessel bow alterations and stern extensions to meet maximum length constraints that may negatively impact on their vessel's stability. A code of best practices for the prawn fishery was developed in 2013 and is intended to address unsafe work practices that continue to put fishermen, their crew, and vessels at risk (contact Pacific Prawn Fishermen's Association, Section 15). Fishing vessel safety considerations are provided in Appendix 7. DFO has modified licence length restrictions in a number of fisheries and will look at removing restrictions in the prawn fishery given that trap limits and seasonal closures (based on assessment of the spawner index) are in place for management of the fishery.

The TSB issued five recommendations in 2016 following the capsizing of the trawl vessel F/V *Caledonian* (M15P0286) and subsequent fatalities. Three recommendations are aimed at ensuring all crews have access to adequate stability information that meets their needs.

In BC, roughly 70% of all fishing-related fatalities in the past decade came while not wearing a personal flotation device (PFD). Regulations currently require that PFDs be worn only if fishermen identify a risk but the TSB is recommending to Transport Canada and WorksafeBC to require persons to wear suitable PFD 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. Wearing a PFD was recommended also following drownings in 2014 in the prawn, F/V *Diane Louise* (M14P0110), and crab, F/V *Five Star* (M14P0121), fisheries.

TSB marine investigation reports are available on the internet at:

www.tsb.gc.ca/eng/rapports-reports/marine/index.asp

4.2.2. Recreational

Recreational prawn fishing occurs year-round with trap limits and catch limits in effect. With the development of the recreational fishery in the mid 1990s, active management through winter area closures was introduced in 2000 and remains a key component of the recreational management strategy. Participation and popularity in recreational prawn harvesting has since grown. Use of electric trap haulers, specifically designed and developed for the recreational 4-trap limit, are now common after a restriction to hand-hauling was removed in 1995. Improvements in traps and bait have also been adopted from the commercial fishery. GPS systems and depth sounders enable traps to be set and reset in the best locations. With improved technology, gear and bait, value and increased participation, DFO continues to review and identify new measures with the SFAB in light of this efficiency. The recreational catch limit is under review and subject to further discussion.

The SFAB and the recreational fishing sector strongly support effective fishery monitoring and catch reporting programs in recreational fisheries and have been working with DFO on initiatives to strengthen fishing monitoring and catch reporting in the recreational fishery for a number of years (Section 4.1.2). Non-response bias was identified as the most significant among several

potential biases in the internet recreational fishing effort and catch (iREC) survey and it was recommended that work continue to evaluate and, where possible, improve the iREC survey to address biases.

In 2016, the Prawn Advisory Board Members (Section 15) recommended the adoption of standardized buoys to differentiate prawn and crab fishing. This will eliminate the use of household plastic containers or blocks of Styrofoam that can often deteriorate in sunlight or waves and sink which contributes to garbage washing up on the shoreline and loss of trap(s) which will continue to "ghost fish" for years to come. Further work is being done with the SFAB in 2018 to specify what the standardized buoys will be for the recreational fishery.

The evaluation of the iREC survey methods is available from the CSAS Science Advisory Report (2015/059) on the internet at:

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

4.2.3. First Nations

Since 2012, DFO has been consulting with First Nations and seeking First Nations input on management measures for the FSC fishery to address the harvesting capacity of commercial vessels and gear. DFO is very concerned about the increasing number of commercial vessels harvesting prawns for FSC purposes with commercial gear and the impact this will have on the conservation and sustainability of the resource. In the past, effort was small enough that DFO did not specify gear or catch limits in communal licences for FSC harvest. Starting March 2016, for those First Nations that have an interest in using commercial vessels or gear for harvesting prawns for FSC purposes, DFO is requesting details about how this will occur (Appendix 3). These details are requested so that there can be a common understanding of the size, scope and timing of the fishery. DFO is implementing this approach while discussions with First Nations continue on longer-term management measures to ensure an orderly and manageable FSC prawn fishery and conservation and sustainability of the resource. Ongoing work is focused on a range of management measures for the FSC prawn fishery and building on a common goal of fisheries sustainability to develop FSC fishing plans that First Nations support. At least 26 First Nations or their organizations have identified to DFO that they are using commercial vessels or gear to harvest prawns for FSC purposes.

Catch monitoring programs are being developed in collaboration with some First Nations organizations and standards for all fishery monitoring and catch reporting programs are being developed through a number of recent workshops held in Pacific Region (Section 4.1.2).

Further work may be anticipated with those First Nations who are interested in adopting standardized buoys in their FSC/domestic fisheries to differentiate prawn and crab fishing and eliminate the use of household plastic containers or blocks of Styrofoam that can often deteriorate in sunlight or waves and sink which contributes to garbage washing up on the shoreline and loss of trap(s) which will continue to "ghost fish" for years to come.

First Nations seek more stability in FSC fisheries and a greater role in the aquatic resource and oceans management decisions that affect them. First Nations have stressed the importance of maintaining sufficient spawners to meet First Nations food needs looking seven generations ahead.

Information on the Integrated Aboriginal Policy Framework and programs is available on the internet at:

www.dfo-mpo.gc.ca/fm-gp/aboriginal-autochtones/iapf-cipa-eng.htm

4.3. Compliance

DFO is concerned about the increasing use of commercial vessels and gear outside the commercial fishing season. The investigation of illegal sales of prawns is an important enforcement priority.

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

4.4. Ecosystem

4.4.1. Depleted Species Concerns

Bycatch of most non-target species has not been a concern in the prawn and shrimp by trap fisheries due to the nature of trap fishing and the minimal diversity of bycatch. Non-target species are easily sorted and quickly returned to the water with presumed low mortality. However, juvenile rockfish (*Sebastes* spp.) that are small enough to be able to enter trap tunnels and that do not leave before being brought to the surface are presumed not to survive release due to their inability to equilibrate air bladders to rapid changes in depth (Rutherford et al. 2009).

A rockfish conservation strategy was first proposed in 1998, and measures were implemented in 2002 to protect inshore rockfish populations. These measures included catch restrictions, fishery monitoring, assessment programs and establishment of areas closed to certain fishing activities. Rockfish encounters in the commercial prawn and shrimp by trap fishery are a rare event (0.000 to 0.045 rockfish/trap) and the prawn and shrimp by trap fisheries were allowed to continue in the Rockfish Conservation Areas with the collection of bycatch information. The sampling program estimates total rockfish by-catch in the commercial fishery (Rutherford et al. 2009).

The prawn fishery has been permitted to continue under the existing management measures based on the recovery potential assessment conducted for Quillback Rockfish (*S. maliger*) which have been assessed as “Threatened” by the Committee on the Status of Endangered Wildlife in Canada (CSAS Science Advisory Report 2011/072). Quillback Rockfish are the most frequent rockfish species encountered in the prawn fishery (Rutherford et al. 2009).

Rockfish Conservation Areas have recently been prioritized for review as potential Other Measures that may contribute to Canada’s Marine Conservation Target 2020 (Section 4.4.2).

SARA-listed rockfish species in Pacific Region can be found at:

www.dfo-mpo.gc.ca/species-especes/sara-lep/identify-eng.html

Maps of Rockfish Conservation Areas are available on the internet at:

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

4.4.2. Canada’s Marine and Coastal Areas Conservation Mandate

The Government of Canada is committed to protecting 10% of Canada’s marine and coastal areas by 2020. The 2020 marine conservation target is both a domestic target (Canada’s

Biodiversity Target 1) and an international target as reflected in the Convention on Biological Diversity's Aichi Target 11 and the United Nations General Assembly's 2030 Agenda for Sustainable Development under Goal 14.

To meet these targets, Canada is establishing MPAs, National Marine Conservation Areas, marine National Wildlife Areas and "other effective area-based conservation measures" ("other measures"), in consultation with industry, non-governmental organizations, and other interested parties.

Specific management measures established for the prawn and shrimp trap fisheries have been identified to contribute to Canada's marine conservation targets. More information on these management measures and their conservation objectives are provided below (Sections 4.4.2.1 to 4.4.2.6).

An overview of the DFO tools, including a description of the role of fisheries management measures that qualify as other measures, is available on the internet at:

www.dfo-mpo.gc.ca/oceans/mpa-zpm-aoi-si-eng.html

More information on the background and drivers for Canada's marine conservation target is available on the internet at:

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

4.4.2.1. Hecate Strait and Queen Charlotte Sound Glass Sponge Reefs MPA

The Hecate Strait and Queen Charlotte Sound Glass Sponge Reefs MPA is located between Haida Gwaii and the mainland of BC in Hecate Strait and Queen Charlotte Sound. The reefs are made up of large colonies of glass sponges and are estimated to be 9,000 years old. They are located at depths of 140 m to 240 m below the surface. The Hecate Strait and Queen Charlotte Sound Glass Sponge Reefs MPA is comprised of three individual areas known as the Northern Reef, the two Central Reefs, and the Southern Reef. Together these three areas cover approximately 2,410 km^2.

The Hecate Strait and Queen Charlotte Sound Glass Sponge Reefs MPA has been established to conserve the biological diversity, structural habitat, and ecosystem function of the glass sponge reefs. The slow growth and fragility of these sponges make the reefs particularly vulnerable to damage and disturbance since recovery may take tens to several hundreds of years. Due to the highly sensitive nature and structure of the reefs, human activities in and around the reefs could pose a risk to the structural habitat, biological diversity and ecosystem function of the reefs.

Management measures under the *Fisheries Act* restrict all bottom contact and mid water trawl fishing activity, including prawn and shrimp trap fishing (Appendices 1 - 3). The Core Protection Zone is closed to all fishing activities and anchoring is also prohibited; the Adaptive Management Zone is closed to all commercial and recreational bottom contact gear and midwater trawl; and the Vertical Adaptive Management Zone allows for specified gear types only (i.e. midwater hook and line, seine and gillnet).

A management plan will be developed for the Hecate Strait and Queen Charlotte Sound Glass Sponge Reefs MPA and will seek to align with the relevant IFMPs. The management plan will be developed in collaboration with First Nations and in consideration of advice from an advisory committee, stakeholders through existing processes, and the public. This management plan will

elaborate on the regulations to implement the conservation and management objectives for the MPA and will address matters such as monitoring, enforcement and compliance.

Two MPAs have been designated in the Pacific Region where prawn and shrimp fishing does not occur. The Endeavour Hydrothermal Vents, designated in 2003, lie in waters 2,250 m deep 250 km southeast of Vancouver Island. The SGaan Kinghlas-Bowie Seamount, designated in 2008, is 180 km west of Haida Gwaii, rising from a depth of over 3,000 m to within 24 m of the sea surface. Work is ongoing also to consider MPA designation for the Race Rocks area off Rocky Point south of Victoria currently designated as a Provincial Ecological Reserve.

Prawn and shrimp trap fishing does not occur within the new Offshore Pacific Area of Interest (AOI) for MPA designation, which encompasses 140,000 km^2 in the southern portion of the Offshore Pacific Bioregion west from the toe of the continental slope to Canada's Exclusive Economic Zone boundary. It is approximately 80 km from the west coast of Vancouver Island at its closest point, but on average ranges from 100-150 km away. It includes hydrothermal vents and seamounts.

An overview map of the Hecate Strait and Queen Charlotte Sound Glass Sponge Reefs MPA is provided in Appendix 12. Detailed descriptions (coordinates) of individual closure areas and maps are available on the internet at:

www.dfo-mpo.gc.ca/oceans/mpa-zpm/hecate-eng.html

Information about integrated management planning, Pacific Region MPAs and planning under Canada's *Oceans Act* is available on the internet at:

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

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

www.dfo-mpo.gc.ca/oceans/ceccsr-cerceef/conservation-eng.html

4.4.2.2. Strait of Georgia and Howe Sound Glass Sponge Reef Conservation Areas

BC's ancient glass sponge reefs are a globally unique ecosystem that provides important habitat for many marine animals including Spot Prawns, rockfish, herring, halibut, and sharks. The protection of coral and sponge reefs is a key component to a number of international commitments made by Canada through the United Nations Convention on Biological Diversity and the United Nations Food and Agriculture Organization (FAO) Code of Conduct for Responsible Fisheries.

After reviewing input from the 2014 consultation process under the Sensitive Benthic Areas policy (Section 1.6), DFO decided to proceed with formal fishery closures to protect nine glass sponge reefs in the Strait of Georgia and Howe Sound. All commercial, recreational and FSC/domestic bottom contact fishing activities for prawn, shrimp, crab and groundfish (including halibut) are prohibited within 150 metres of all nine glass sponge reefs (Appendices 1 to 3).

During the consultation process, 13 newly identified sponge complexes in Howe Sound were brought to DFO's attention by the Marine Life Sanctuaries Society. At the time, DFO decided to proceed with the protection of the original nine glass sponge reefs, while allowing more time for research on the biological significance of the new sites. In 2017, DFO Science undertook surveys to ground-truth the location and scale of the new sites and to look at additional information

obtained from Natural Resources Canada geological datasets. In total, 19 new sponge sites were identified in Howe Sound, and a CSAS Science Response evaluating the sites for their status and ecological significance is in preparation. Ten sites were found to be glass sponge reefs with important ecological functions. DFO is requesting immediate voluntary avoidance of these areas as a precautionary measure (Appendices 1 to 3). Field surveys assessing live sponge cover using visual survey methods, as well as research focusing on the ecological importance of non-reef sponge aggregations (sponge "gardens") will help determine the status of the remaining nine sites. It is anticipated that consultations on these sites will take place over the winter of 2017-2018.

The nine Strait of Georgia and Howe Sound Glass Sponge Reef Conservation Areas that are currently closed to bottom contact fishing are included as other measures and contribute <0.01% towards Canada's marine conservation target. The closures protect approximately 29 km^2 of sensitive benthic areas.

Overview maps of the Strait of Georgia and Howe Sound Glass Sponge Reefs Conservation Areas are provided in Appendix 11. More information is available on the internet at:

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

4.4.2.3. Rockfish Conservation Areas

In the Pacific Region, Rockfish Conservation Areas have been prioritized for review as potential other measures that may contribute to Canada's marine conservation target in 2020. Many of these 164 areas are economically important to prawn and shrimp trap fishing (Section 3 and 4.4.1).

Information on Rockfish Conservation Areas is available on the internet at:

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

4.4.2.4. Northern Shelf Bioregion MPA Network

The *Oceans Act* mandates the Minister of Fisheries and Oceans with leading and coordinating the development and implementation of a national system (or network) of MPAs. The National Framework for Canada's Network of MPAs provides strategic direction for the design of a national network of MPAs that will be composed of a number of bioregional networks. This is an important step towards meeting Canada's domestic and international commitments to establish a national network of MPAs. Regionally, the Canada-British Columbia MPA Network Strategy has been developed jointly by federal and provincial agencies and reflects the need for governments to work together to achieve common marine protection and conservation goals. Bioregional MPA network planning will identify new areas of interest for protection by DFO, Parks Canada, Environment and Climate Change Canada (ECCC), the Province of BC, and any other agencies with a mandate for protecting marine spaces.

The Province of BC, the Government of Canada and 17 First Nations are working together to implement the Strategy in the Northern Shelf Bioregion, which extends from the top of Vancouver Island (Quadra Island/Bute Inlet) and reaches north to the Canada - Alaska border. This bioregion has the same footprint as the Pacific North Coast Integrated Management Area (Section 4.4.2.7). Ocean Advisory Committees have been established to provide input and advice on key elements of the planning process. The committees include broad representation from

interested stakeholders, supporting dialogue and building shared understanding on MPA network planning.

Sites identified for marine conservation through the network planning process will contribute to the Government of Canada's commitment to protecting 10% of marine and coastal areas by 2020. Future MPAs in this network may overlap or include prawn and shrimp fishing areas depending on the type and nature of the MPA.

More information on MPA Network Planning can be found at:

http://mpanetwork.ca/bcnorthernshelf/whats-happening/

4.4.2.5. Gwaii Haanas and Strait of Georgia National Marine Conservation Area Reserves

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

Gwaii Haanas is managed by the Archipelago Management Board, a cooperative body made up of equal representation from the Government of Canada (represented by DFO and Parks Canada) and the Council of the Haida Nation. The Gwaii Haanas marine area is currently managed under the Interim Management Plan and Zoning Plan, which includes "balancing protection and ecologically sustainable use" in its guiding principles. It includes closures to commercial and recreational prawn and shrimp fishing in Burnaby Narrows, Louscoone Estuary, Flamingo Estuary, Gowgaia Estuary, Cape Saint James and SGang Gwaay (Appendices 1 and 2).

Development of a Land-Sea-People Management Plan for the Gwaii Haanas National Marine Conservation Area is underway. The Management Plan and zoning process is being developed in consultation with key stakeholders. Annual fishing plans will be developed in consultation through DFO's established integrated fisheries planning and advisory processes. The Management Plan is due to be finalized by March 31 2018.

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". 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.

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

Since 2011, the two governments have been consulting with First Nations, local governments and industry. A preliminary concept is currently being developed to help advance consultations on the feasibility assessment. If the results of the feasibility assessment indicate that establishment of a National Marine Conservation Area Reserve is practical and feasible, an establishment agreement between the Governments of Canada and the Province of BC will be negotiated and an interim management plan developed. If the National Marine Conservation Area Reserve is determined to be feasible, further consultations related to establishment agreements and Aboriginal 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.

Work is underway to establish the Southern Strait of Georgia National Marine Conservation Area Reserve to contribute to the 2020 marine conservation target. The Southern Strait of Georgia is the most heavily utilized of all the marine regions on the west coast of Canada.

More information on National Marine Conservation Areas is available on the internet at:

www.pc.gc.ca/en/amnc-nmca/cnamnc-cnnmca

4.4.2.6. Scott Islands Marine National Wildlife Area

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

More information on the Scott Islands marine National Wildlife Area is available on the internet at:

www.ec.gc.ca/ap-pa/?lang=En&n=90605DDB-1

4.4.2.7. Pacific North Coast Integrated Management Area

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

The endorsement of the PNCIMA plan supports the Government of Canada's commitment to collaborative oceans management for the Pacific North Coast and provides a joint federal-provincial-First Nations planning framework for conservation and the management of human activities in the Pacific North Coast. The plan includes MPA network development as a planning priority. It is anticipated that the network development will support the Government of Canada's commitment to protecting 10% of Canada's marine and coastal areas by 2020 (Section 4.4.2.1).

The PNCIMA Plan is available online at:

www.pncima.org

4.4.3. Gear Impacts

There are over 80 species of cold-water corals and some 250 species of sponges (Gardner 2009) that exist on Canada's Pacific Coast. Cold-water corals and sponges occur in both shallow coastal and deep offshore waters. Traps can impact biogenic structures, including corals and sponges, through crushing, entanglement or scouring. The potential impact of traps on marine habitats is dependent on a variety of factors, including characteristics of the bottom where they are set, weight, size and construction of traps, retrieval methods, sea state, weather, tides and currents, and ground line length. An evaluation of the nature and scale of impacts is an important step in identifying appropriate mitigation measures.

A scientific review of the potential impacts of fishing gears, excluding mobile bottom-contacting gears but including traps, on marine habitats and communities (CSAS Proceeding Series 2010/002 and CSAS Science Advisory Report 2010/003) is available on the internet at:

www.isdm-gdsi.gc.ca/csas-sccs/applications/publications/index-eng.asp

Whales have entangled in trap ground lines and buoy lines. Sea turtles and Basking Sharks may also entangle in trap lines but sightings of sea turtles and Basking Sharks are infrequent in Pacific Canadian waters. Prohibitions under the *SARA* make it illegal to kill, harm, harass or capture Leatherback Sea Turtles or Basking Sharks and measures must be taken to avoid incidental capture and entanglement of these species.

DFO coordinates a network of government and non-government experts in disentanglement and to assist in response to sick, injured, distressed, or dead animals (Section 14). Encounter protocols to reduce the risk of entanglement and assist in response have been adopted by the commercial fishery (Appendix 1). Modification of fishing gear has been successful in mitigating entanglement rates for whales elsewhere (i.e. USA and Atlantic Canada) and recommendations to enact cost-effective modifications to gear may be considered in the future.

The US National Oceanic and Atmospheric Administration's National Marine Fisheries Service revised the regulations that implement provisions of the *US Marine Mammal Protection Act*. Under these provisions the USA shall ban the importation of commercial fish products where activities result in the incidental kill or incidental serious injury of marine mammals in excess of USA standards. The USA is establishing conditions for evaluating whether harvesting nations can demonstrate they have a regulatory program for reducing marine mammal incidental mortality and serious injury in fisheries from which fish and fish products are exported to the USA that is comparable in effectiveness to USA standards. A five-year exemption period has been given for implementation in 2021.

DFO welcomes assistance in the reporting of any whale, Leatherback Sea Turtle or Basking Shark entanglement or sighting. While there are many whale species found in Pacific Canadian waters, sightings of Basking Shark and Leatherback Sea Turtles are infrequent. The collection of sighting data is useful to scientists in determining population size and species distribution and aids in recovery efforts under the *SARA* (see Section 14 to report sightings).

5. OBJECTIVES

Sections 5.1 to 5.3 and 5.5 outline the "longer term" objectives for this and other invertebrate fisheries in the Pacific Region. Section 5.4 describes the species-specific "shorter-term" objectives for the prawn and shrimp by trap fisheries.

5.1. National

DFO aims to:

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

5.2. Pacific Region

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

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

The objectives remain relevant today, particularly in light of national objectives for sustainable fisheries.

5.3. Invertebrate Resource Management

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

- To ensure conservation and protection of invertebrate stocks and their habitat through the application of scientific management principles applied in a risk averse and precautionary manner based on the best scientific advice available;
- To meet the federal Crown's obligations regarding Aboriginal fisheries for 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;
- To provide opportunities for a recreational fishery.

5.4. Prawn and Shrimp by Trap

5.4.1. Conservation and Sustainability

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

To ensure a minimum number of female spawners are available at the time of egg hatch by using a fixed escapement model, the prawn spawner index. The spawner index model meets DFO's objective to adopt harvest control rules that are compliant with the PA.

To limit directed fisheries for Humpback and Coonstripe Shrimp to the existing fisheries in Prince Rupert / Masset Inlet and Sooke, respectively, until basic biological parameters to develop a biologically-based management strategy are determined. Any directed fishery for Humpback or Coonstripe Shrimp in non-traditional areas, or with new or modified trawl or trap gear, is subject to the Pacific Region Guidelines on New and Emerging Fisheries.

To develop standards for fishery monitoring and catch reporting for all sectors, including commercial, recreational and First Nations (Strategic Framework for Fisheries Monitoring and Catch Reporting in the Pacific Fisheries 2012).

5.4.2. Social, Cultural and Economic

DFO's objective is to continue to work collaboratively with the Prawn Advisory Board (Section 15) to ensure sustainable fisheries and to collect input from First Nations and the commercial and recreational fishing sectors in the annual development of the IFMP.

Commercial Fishery: DFO's objective is to continue to work collaboratively with the commercial industry on sustainable resource use and long-term economic viability of the prawn seafood industry recognizing that commercial fisheries play a vital role in Canada's economy. This will include adapting to changing resource and market conditions and extracting optimal value from world markets.

Vessel safety is an objective shared between DFO, Transport Canada, TSB, and WorkSafeBC (Appendix 7). All parties acknowledge the role of vessel masters and crew in responsibility for their own decisions regarding fishing vessel operations. DFO's objective, in conjunction with other responsible agencies, is to adopt an affirmative action profile in respect of vessel safety considerations.

First Nations involvement in the commercial fishery is a shared goal between DFO and Aboriginal people. First Nation participation in the commercial fisheries is being addressed through the ATP and PICFI (Section 3.3).

Recreational Fishery: DFO's objective is to affirm the social and economic importance of the recreational fishery, provide sustainable recreational harvesting opportunities as part of integrated management plans consistent with DFO's policies, and to establish working mechanisms in conjunction with the other fishing sectors to reduce conflict and mitigate issues.

"Recreational Fisheries in Canada, An Operational Policy Framework" is available on the internet at:

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

Recreational fisheries in the Pacific Region are also guided by "A Vision for Recreational Fisheries in British Columbia 2009-2013" developed cooperatively by DFO, the Province of BC and the SFAB for "a vibrant and sustainable recreational fishery in British Columbia, providing broad social and economic benefits through diverse opportunities that recognize and respect other users of the resource".

The Recreational Vision is available on the internet at:

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

First Nations Fishery: DFO's objective is to continue to provide opportunities for First Nations to harvest fish for FSC purposes, in a manner consistent with the decision of the Supreme Court of Canada in *R. vs. Sparrow* and subsequent court decisions.

The Integrated Aboriginal Policy Framework provides guidance in helping to achieve success in building on DFO relations with Aboriginal groups by fostering a respectful and mutually beneficial relationship with Aboriginal groups who are seeking a greater share of the fisheries resource, on contributing to the growth and well-being of their communities, and on providing them with a greater role in integrated aquatic resource and oceans management.

For more information, see the internet at:

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

www.dfo-mpo.gc.ca/fm-gp/aboriginal-autochtones/iapf-cipa-eng.htm

5.4.3. Compliance

DFO's objective is to pursue opportunities to monitor and enforce these fisheries, in conjunction with the monitoring and enforcement priorities in the Pacific Region.

5.4.4. Ecosystem

DFO's objective is to support, in conjunction with ECCC and Parks Canada, the Government of Canada's strategy for reaching its domestic and international marine conservation targets of protecting 10% of Canada's marine and coastal areas by 2020 (Section 4.4).

DFO's objective is to use the Ecological Risk Assessment Framework for Coldwater Corals and Sponge Dominated Communities, guided by the Policy for Managing the Impacts of Fishing on Sensitive Benthic Areas (Section 1.6), to determine the level of risk in these fisheries and whether mitigation measures are required in any areas.

DFO's objectives with respect to rockfish were identified through the rockfish/lingcod conservation strategy (May 2002). Objectives may also be defined in a recovery strategy, action plan, or management plan with *SARA*-listing.

DFO's objectives with respect to managing bycatch is to ensure that all Canadian fisheries are managed in a manner that supports the sustainable harvesting of aquatic species, that minimizes the risk of fisheries causing serious or irreversible harm to bycatch species and to account for total catch, including retained and non-retained bycatch.

6. ACCESS AND ALLOCATION

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

6.1. Commercial

The commercial fishery is limited entry, with seasonal and area closures, gear limits, minimum size limits, non-retention of prawns with eggs, daily fishing time restrictions, and a single haul limit.

6.2. Recreational

The recreational daily limit for prawns and shrimp species combined is 200 per day. The possession limit is two-times the daily limit. Gear limits, non-retention of prawns with eggs, and seasonal area closures apply.

6.3. First Nations

To date, DFO has not specified gear or catch limits in communal licences for FSC harvest. Discussions with First Nations continue on management measures to ensure an orderly and manageable FSC fishery and conservation and sustainability of the resource (Section 4.2.3).

Prawns and shrimp may be allocated under treaty, but were unallocated under the Maa-nulth, Tsawassen and Nisga'a Treaties. The Tla'amin fishery for domestic (FSC) purposes under the Tla'amin Final Agreement (Treaty) includes a domestic allocation for prawns.

6.4. Aquaculture

Consideration is given for aquaculturist access to relatively low numbers of wild juvenile or adult prawns and shrimp (e.g. for broodstock development) for limited time periods where populations would face insignificant to low risk from the additional harvest pressure (DFO 2004).

6.5. Experimental, Scientific, Educational or Public Display

DFO supports and facilitates scientific investigations related to prawns and shrimp. Scientific licence requests received from scientific, educational, and public display institutions, including biological collecting firms, are considered. Policies with respect to scientific licences and the use-of-fish apply.

Co-operative scientific assessment programs of mutual interest and agreement between DFO and industry may be established with the Pacific Prawn Fishermen's Association (PPFA) named as the scientific licence holder. Industry representatives undertake vessel selection and provide advice to DFO on aspects of the assessment program.

6.6. Requests for Access

Through the AFS Program, DFO provides FSC fishery access to aggregate groups or individual First Nations through fisheries agreements and communal licences or, under Treaty, harvest documents for domestic purposes. Where requests are put forward by First Nations for changes in FSC access arrangements, these are evaluated against a common set of criteria. FSC access should reflect some balance between the diversity and abundance of resources that are locally available, community needs and preferences, and operational management considerations. First Nations interested in bilateral discussion with DFO regarding FSC access should contact the Resource Manager for their area (Section 14 Contacts).

Information on the approach to the management of Aboriginal fishing in Pacific Region is available on the internet at:

www.pac.dfo-mpo.gc.ca/consultation/fn-pn/fnfc-2014/aboriginal-fishing-peches-autochtones-eng.html

7. MANAGEMENT MEASURES FOR THE DURATION OF THE PLAN

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

- Fishing Seasons/Areas;
- Control and Monitoring of Removals;
- Decision Rules; and
- Licensing.

8. SHARED STEWARDSHIP ARRANGEMENTS

8.1. Commercial Fishery

A joint project agreement is negotiated annually between DFO and the PPFA for delivery of co-management programs supportive of the commercial fishery. The PPFA contributed $36.5K for in-season support by fisheries management personnel, $65K for enhanced in-season support by science personnel, and $59.2K for in-season Fishery Officer activities throughout the coast, including plant, restaurant and retail inspections, in 2017. Unused funds are returned to the PPFA annually.

A joint project agreement is negotiated annually between DFO and the PPFA for delivery of the fall sampling program through in-kind contributions (previously, use of fish).

Vessel owners/licence eligibility holders are required to make arrangements with an approved industry service provider for the delivery of in-season information to DFO as required by conditions of licence regarding trap tags, vessel fishing and gear locations, vessel and gear characteristics, and spawner index information. The cost of this service to licence eligibility

holders is established by the service company and is negotiated by the PPFA on behalf of prawn licence eligibility holders. Harvest logbook costs may be included or provided separately. The PPFA distributed a Request for Proposals in November 2011 to private sector companies interested in providing in-season management services for prawn licence eligibility holders. The industry service provider for 2018 is J.O. Thomas and Associates, Ltd. of Vancouver, BC.

8.2. Fisheries & Oceans Canada

Two Science (Aquatic Resources Research and Assessment Division) and five Fisheries Management personnel are directly involved in this fishery for some part of their activities. Contributions to the IFMP are provided by Fisheries Management in the areas and at Regional Headquarters, the Science Branch and its Shellfish Data Unit, Conservation & Protection, the Pacific Fishery Licence Unit, and numerous administrative personnel. Generally, all personnel are multi-tasked.

9. COMPLIANCE PLAN

General information about the Conservation and Enforcement program is available at:

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

Fishery officers pursue opportunities to monitor and enforce this fishery, in conjunction with the monitoring and enforcement priorities directed by senior managers in the Pacific Region.

On-grounds monitors continue to provide an “observe, record and report” capability.

9.1. Priorities

The investigation of illegal sales of prawns is an important enforcement priority.

Other enforcement effort may be directed to monitoring for early setting before the season opening, patrolling for late fishing in local closures announced in-season, undersize prawns and follow up on delinquent logbook reporting.

Funding for enforcement of the single haul management program provided to DFO from industry within the terms of the collaborative agreement is negotiated annually (Section 8.1).

10. PERFORMANCE REVIEW

Performance indicators are reported in the Post-season Review (Section 16).

10.1. Stock Assessment

The number of spawner index samples will be compared to previous years and DFO Science research projects will be reported.

10.2. Commercial Fishery

DFO tracks the performance of the fisheries that it manages through the Sustainability Survey for Fisheries. The fish stocks in the survey are selected for their economic, ecological and/or cultural importance. The survey reports on DFO’s progress to implement its Sustainable Fisheries

Framework policies (Section 1.6), which guide the management of Canada's fisheries, and provides other information about these fish stocks.

The Sustainability Survey for Fisheries is available at:

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

The delivery of the commercial fishery will be reviewed annually through the timing of closures, catch and value compared to previous years, problems encountered with management or enforcement of the fishery that may necessitate changes, and for timely and accurate catch and effort data to monitor and enforce the fishery. This will include monitoring the directed fisheries for Humpback Shrimp and Coonstripe Shrimp for changes in effort.

10.3. Recreational Fishery

The delivery of the recreational fishery will be reviewed annually through the timing of closures, problems encountered with management of the fishery that may necessitate changes, and for improvements to collect annual catch and effort data to monitor the fishery.

10.4. First Nations Fishery

The delivery of the First Nations fishery will be reviewed for improvements to the collection of annual catch and effort data to monitor the fishery and for improvements to management of the fishery reflecting its priority.

10.5. Compliance

Evaluation will include time spent attending to enforcement of the fishery, counts of infractions by type, and counts of prosecutions initiated. Patrol hours will measure effort to achieve compliance, for monitoring of fishing activity outside of daily fishing time limits and for assessing closure compliance. It should be noted that low numbers of violations may be indicative of a successful proactive program, establishing a visible presence of enforcement authority as a deterrent to non-compliance.

10.6. Ecosystem

Results of the rockfish by-catch program will be described. Changes arising as a result of initiatives under the *Oceans Act* or the Ecological Risk Assessment Framework for Coldwater Coral and Sponge Dominated Communities under the Policy for Managing the Impacts of Fishing on Sensitive Benthic Areas will also be described. Progress on the initiatives related to the Government of Canada's goal to reach its marine conservation target of 10% by 2020 will also be described.

11. REFERENCES

Bergstrom, B.I. 2000. The Biology of *Pandalus*. Adv Marine Biol. 38:55-245.

Boutillier, J.A. 1994. Review of experimental prawn fishing in Howe Sound, 1993. *In* Hand. C.M., and J. Waddell (editors). 1996. Invertebrate working papers reviewed by the Pacific Stock Assessment Review Committee (PSARC) in 1993 and 1994. Can. Tech. Rep. Fish. Aquat. Sci. 2089.

Boutillier, J.A., and J.A. Bond. 2000. Using a fixed escapement strategy to control recruitment overfishing in the shrimp trap fishery in British Columbia. J. Northw. Atl. Fish. Sci., Vol 27:261-271.

BC Ministry of Agriculture. Various years. British Columbia Seafood Industry Year in Review. Available at: https://www2.gov.bc.ca/gov/content/industry/agriculture-seafood/statistics/industry-and-sector-profiles. Last accessed: December 1, 2017.

BC Stats. 2013. British Columbia's Fisheries and Aquaculture Sector, 2012 Edition. Prepared for Department of Fisheries and Oceans. Available online at: http://www.bcstats.gov.bc.ca/Publications/AnalyticalReports.aspx. Last accessed December 18, 2014.

Butler, T.H. 1980. Shrimps of the Pacific Coast of Canada. Can. Bull. Fish. Aquat. Sci. 202. 280 p.

DFO. 2004. National Policy on Access to Wild Aquatic Resources As it Applies to Aquaculture (www.dfo-mpo.gc.ca/Aquaculture/ref/AWAR_e.pdf).

DFO. 2012. Probability of spot prawn (*Pandalus platyceros*) stocks in fall survey areas in British Columbia being below spawner index reference points during the spawning period. DFO Can. Sci. Advis. Sec. Sci. Resp. 2012/041.

DFO. 2017. Integrated Fisheries Management Plan for Shrimp by Trawl+- fish processing sectors in British Columbia: Final phase I report. Prepared for Fisheries and Oceans Canada. December. 69pp.

Favaro, B., D.T. Rutherford, S.D. Duff, and I.M. Cote. 2010. By-catch of rockfish and other species in British Columbia spot prawn traps: Preliminary assessment using research traps. Fisheries Research 102 (2010): 199-206.

Fisheries & Oceans Canada. 2012. Survey of Recreational Fishing in Canada 2010. Economic Analysis and Statistics, Strategic Policy, Ecosystem and Fisheries Management, Fisheries and Oceans Canada, Ottawa, Ontario K1A 0E6. DFO/2012-1804. Report available online at: www.dfo-mpo.gc.ca/stats/rec/can/2010/index-eng.htm. Last accessed February 6, 2013.

Fong, K., B. Waddell, H. Nguyen, and D. Rutherford. *In prep*. Using Fisheries Observer Data for Estimating Rockfish Bycatch in the British Columbia Commercial Prawn Trap Fishery.

GS Gislason and Associates. 2004. British Columbia Seafood Sector and Tidal Water Recreational Fishing: A Strengths, Weaknesses, Opportunities, and Threats Assessment. Final Report *Prepared for*: BC Ministry of Agriculture, Food and Fisheries by: GS Gislason & Associates Ltd. in association with Kingzett Professional Services Ltd., Archipelago Marine Research Ltd., Edna Lam Consulting, Ellen F. Battle Consulting Ltd., G. Jones Consulting Ltd., Dr. James L. Anderson, Dr. Gunnar P. Knapp, February 2004.

GS Gislason and Associates. 2017. Linkages Between Seafood Harvesting and Processing. pp.1-7.

Harbo, R.M. and E.S. Wylie. 2006. Pacific Commercial Fishery Updates for Invertebrate Resources (2000). Can. Man. Rpt. Fish. and Aquat. Sci. 2735. pp. 235-273.

Marliave, J.B., and M. Roth. 1995. *Agarum* kelp beds as nursery habitat of spot prawns, *Pandalus platyceros*, Brandt, 1851 (Decapoda, Caridea). Crustaceana 68(1).

Monterey Bay Aquarium Seafood Watch www.seafoodwatch.org/.

Nelson, S. 2011. Pacific commercial fishing fleet: Financial profiles for 2009: estimated revenues, expenses, and earnings using a financial modeling approach. Fisheries and Oceans Canada WAVES Catalogue No. 343762.

Nelson, S. 2016. West coast fishing fleet: analysis of commercial fishing licence, quota, and vessel values as at March 31, 2015. Fisheries and Oceans Canada WAVES Catalogue No. 364124.

Parsons, D.G. 2005. Predators of the northern shrimp, *Pandalus borealis* (Pandalidae), throughout the North Atlantic. Mar. Biol. Res. 1:48-58. *Prepared for* Fisheries & Oceans Canada by Nelson Bros Fisheries Ltd, October 2010.

Rice, J., R.D. Humphreys, L. Richards, R. Kadowaki, D. Welch, M. Stocker, B. Turris, G.A. McFarlane, F. Dickson and D. Ware (eds). 1995. Pacific Stock Assessment Review Committee (PSARC) Annual Report for 1994. Can. Man. Rpt. Fish. and Aquat. Sci. 2318.

Rutherford, D.T., H. Nguyen, and J. Boutillier. 2004a. Assessment and management of spot prawn *Pandalus platyceros* along the British Columbia coast. Journal of Shellfish Research 23, 658-659.

Rutherford, D.T., H. Nguyen, and G.E. Gillespie. 2004b. Update on effort standardization for the in-season monitoring of the prawn by trap fishery. DFO Can Sci. Advis. Sci. Sec. Res. Doc. 2004/015.

Rutherford, D.T., K.H. Fong, and A.R. Kronlund. 2008. Description of the situation for Pacific prawn (biological information, context of the fishery and elements of a potential Precautionary Approach framework). *In* Proceedings of the Precautionary Approach Workshop on Canadian Shrimp and Prawn Stocks and Fisheries; November 26-27, 2008. DFO Can. Sci. Adv. Sec. Proceed. Ser. 2008/031.

Rutherford, D.T., K.H. Fong, and H. Nguyen. 2009. Rockfish Bycatch in the British Columbia Commercial Prawn Trap Fishery. DFO Can Sci. Advis. Sci. Sec. Res. Doc. 2009/109.

Simpson, I. 2016. Analysis of Commercial Fishing Licence, and Quota Values. Castlemain, 77p.

12. INTERNET SITES

Fisheries & Oceans Canada Pacific Region Prawn page:

www.pac.dfo-mpo.gc.ca/fm-gp/commercial/shellfish-mollusques/prawn-gcrevette/index-eng.html

Federal Science Library, Fisheries & Oceans Canada Library of Integrated Fisheries Management Plans:

www.dfo-mpo.gc.ca/libraries-bibliotheques/index-eng.htm

Pacific Region Fishery Management Area and Subarea maps:

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

Pacific Region, Fisheries Management, Fishery Openings and Closures:

www.dfo-mpo.gc.ca/fm-gp/peches-fisheries/comm/oc-of-eng.htm

BC Tidal Waters Sport Fishing Guide:

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

Centre for Scientific Advice, Pacific, research documents, proceedings and Invertebrate stock status reports, including prawn and shrimp:

www.isdm-gdsi.gc.ca/csas-sccs/applications/publications/index-eng.asp

13. GLOSSARY

AAROM	Aboriginal Aquatic Resources and Oceans Management (AAROM) program - DFO's AAROM funds aggregations of First Nation groups to build the capacity required to coordinate fishery planning and program initiatives and is focused on developing affiliations between First Nations to work together at a broad watershed or ecosystem level where there are common interests and where decisions and solutions can be based on integrated knowledge of several Aboriginal communities.
Aboriginal Traditional Knowledge (ATK)	Knowledge that is held by, and unique to Aboriginal peoples. It is a living body of knowledge that is cumulative and dynamic and adapted over time to reflect changes in the social, economic, environmental, spiritual, and political spheres of the Aboriginal knowledge holders. It often includes knowledge about the land and its resources, spiritual beliefs, language, mythology, culture, laws, customs and medicines.
AFS	Aboriginal Fisheries Strategy - DFO's AFS was implemented in 1992 to address several objectives related to First Nations and their access to the resource and continues to be the principal mechanism that supports the development of relationships with First Nations including consultation, planning and implementation of fisheries, and development of capacity to undertake fisheries management, stock assessment, enhancement and habitat protection programs.
abundance	Number of individuals in a stock or a population.
aquaculture	As defined by the United Nations Food and Agriculture Organization (FAO), aquaculture is the culture of aquatic organisms, including fish, molluscs, crustaceans and aquatic plants. Aquaculture implies some form of intervention in the rearing process to increase production, such as regular stocking, feeding, protection from predators, etc. It also implies individual

	or corporate ownership of the cultivated stock.
Area and Subarea	Defined in Section 2 of the *Pacific Fishery Management Area Regulations*. A map of Pacific Fishery Management Areas is available on the DFO internet site at: www.pac.dfo-mpo.gc.ca/fm-gp/maps-cartes/areas-secteurs/index-eng.htm
ATP	Allocation Transfer Program - DFO's ATP facilitates the voluntary relinquishment of commercial licence eligibilities and the designation of the equivalent commercial fishing capacity to eligible Aboriginal groups as communal commercial licence eligibilities.
berried prawns	Refers to adult females carrying eggs under their tail (ovigerous). The eggs are visible and appear like a cluster of tiny red "berries" each about 1 mm in size. A female prawn will carry 2,000 to 4,000 eggs.
by-catch	The unintentional catch of one species when the target is another.
C&P	Fisheries & Oceans Canada, Conservation and Protection Branch.
carapace	The exoskeleton that covers the head and thorax, upon which commercial fishing size limits are based.
Caucus	Elected industry representatives of the Prawn Sectoral Committee. Elections are held every 2 years.
communal commercial licence	Issued to First Nation organizations pursuant to the *Aboriginal Communal Fishing Licences Regulations* for participation in the commercial fishery.
communal licence	Issued to First Nation's organizations pursuant to the *Aboriginal Communal Fishing Licences Regulations* to carry on fishing and related activities for food, social and ceremonial (FSC) purposes.
COSEWIC	The Committee on the Status of Endangered Wildlife in Canada.
crustaceans	A biologically related group of the class Crustacea that includes crabs, lobsters and shrimps.
Centre for Scientific Advice - Pacific (CSAP)	Centre for Scientific Advice - Pacific (formerly, Pacific Scientific Advice Review Committee), chaired by DFO and including other federal and provincial government agency representatives and external participants.
Canadian Science Advisory Secretariat (CSAS)	Canadian Science Advisory Secretariat - coordinates the peer review of scientific issues for Fisheries & Oceans Canada. The different Regions of Canada conduct their resource assessment reviews independently, tailored to regional characteristics and stakeholder needs. CSAS facilitates these regional processes, fostering national standards of excellence, and exchange and innovation in methodology, interpretation, and insight.

DFO	Fisheries & Oceans Canada. On behalf of the Government of Canada, DFO is responsible for developing and implementing policies and programs in support of Canada's scientific, ecological, social and economic interests in oceans and fresh waters.
escapement	The number of fish escaping the fishery and reaching the spawning grounds.
FAS	Frozen at sea.
fishing mortality	Death caused by fishing, often symbolized by the mathematical symbol *F*.
Food, Social and Ceremonial (FSC)	A fishery conducted by First Nations for food, social and ceremonial purposes.
forager	An animal searching (foraging) for food.
Harvest document	Issued to a First Nation pursuant to the *Aboriginal Communal Fishing Licences Regulations* in respect of a First Nation's fishing right defined under treaty to carry on fishing and related activities for food, social and ceremonial (FSC) purposes.
IFMP	Integrated Fisheries Management Plan.
inshore	Coastal waters landward of the "surfline".
invertebrate	An animal without a backbone.
iREC	The Internet Recreational Effort and Catch Survey used to estimate monthly and total recreational catch and effort statistics, by area, type of fishing, and species.
landed value	Value of the product when landed by a licensed commercial fishing vessel.
landings	Quantity of a species caught and landed.
larvae	The stage of development between egg and juvenile; in prawns this is the planktonic stage.
moribund	The state of being dead; dead.
mortality	Relating to cause of dying; death.
natural mortality	Mortality due to natural causes, symbolized by the mathematical symbol *M*.
Observer	An individual who has been designated as an Observer by the Regional Director General for the Pacific Region of Fisheries & Oceans Canada pursuant to Section 39 of the *Fishery (General) Regulations.*
offshore	Coastal waters seaward of the "surfline".
pelagic	Belonging to the upper layers of the open sea.
PICFI	Pacific Integrated Commercial Fisheries Initiative - DFO's PICFI is an initiative aimed at achieving environmentally sustainable and economically viable commercial fisheries, where conservation is the first priority and First Nations' aspirations to be more involved are supported.
plankton / planktonic	The chiefly microscopic organisms drifting or floating in the sea.

polychaete worms	An aquatic worm of the class Polychaeta.
population	Group of individuals of the same species, forming a breeding unit, and sharing a habitat.
PPFA	Pacific Prawn Fishermen's Association, registered in 2000, which enters into Joint Project Agreements with DFO for delivery of the commercial fishery.
prawn and shrimp	*Pandalus* and *Pandalopsis* species: In this plan, the term prawn refers solely to Spot Prawn, *Pandalus platyceros*, while the generic term shrimp refers to all other species of *Pandalus* and *Pandalopsis*. Prawns are the largest shrimp harvested on Canada's Pacific coast.
Precautionary Approach (PA)	In resource management, the PA is, in general, about being cautious when scientific information is uncertain, unreliable or inadequate and not using the absence of adequate scientific information as a reason to postpone or fail to take action to avoid serious harm to the resource. Information on the Fishery Decision-Making Framework Incorporating the Precautionary Approach for fisheries in Canada is available at: www.dfo-mpo.gc.ca/reports-rapports/regs/sff-cpd/precaution-back-fiche-eng.htm.
protandric hermaphrodism	All pandalid shrimp species undergo a change of sex in midlife. They mature first as males and mate. Their sexual characteristics change during a transition phase and they become females in the final year or two of their lives. The biological term for this sex change is protandric hermaphrodism.
PAB	Prawn Advisory Board, formerly Prawn Sectoral Committee, the primary advisory body to DFO on issues pertaining to the management of all prawn and shrimp trap fisheries.
"pulse" fishing	Fishing closures for the first half of a month and openings for the remainder of the month.
quota	Portion of the total allowable catch that a fishing licence eligibility is permitted to take from a stock in a given period of time.
recruitment	The process whereby young animals are added to a fishable stock or population.
sampling program	A program in which representative samples of animals are collected for the calculation of parameter estimates that describe such things as weight, length or age within the general population.
SFAB	Sport Fishing Advisory Board, which provides advice to DFO on matters of recreational (sport) fishing.
shellfish	Any species of invertebrate that may be harvested in commercial, recreational or First Nations fisheries.
SMA	Special Management Areas include Saanich Inlet, Alberni Canal, Howe Sound and Indian Arm, and Salmon and Sechelt Inlets. They have reduced trap limits.

spawner	Sexually mature individual. For prawns, this refers to females.
spawner index	The biological reference point to which the prawn fishery is managed. It is a measure of the average number of females or transitions (pre-females) caught per standard trap with standard bait fished for a 24-hour period (soak).
Spawning Stock	The sexually mature individuals in a stock. For prawns, this refers to females.
Species at Risk Act (*SARA*)	A federal Act to prevent wildlife species from being extirpated or becoming extinct and to provide for their recovery. It provides the legal protection of wildlife species and the conservation of their biological diversity.
stakeholders	Individuals or groups with an interest in a particular fishery or activity.
stock	Describes a population of individuals of one species found in a particular area, and is used as a unit for fisheries management.
stock assessments	Results of analyses of fisheries and research data used to evaluate the effects of fishing on a stock or population and to predict the reactions of populations to alternative management choices.
Subarea	A subdivision of an Area, as described in the Pacific Fishery Management Area Regulations. (See maps at Area or Subarea internet link above).
substrate	The ground (often the ocean bottom) and its composition, in or on which animals live.
tailed prawn	Prawns that have had the head and thorax removed which is the part covered by the carapace (shell). A minimum telson length is specified for tailed prawns.
telson	Middle segment of the prawn tail fan, at the most posterior portion of the tail.
tonne (t)	Metric tonne, which is 1000 kg or 2204.6 lbs.
Traditional Ecological Knowledge (TEK)	A cumulative body of knowledge and beliefs, handed down through generations by cultural transmission, about the relationship of living beings (including humans) with one another and with their environment.

14. CONTACTS

Observe, Record, and Report	1 800 465 4336
Fisheries Information and Shellfish Contamination Closure Update (24 Hours):	
Toll free	1 866 431 3474
Lower Mainland	(604) 666 2828
Commercial Fishery Hail Line	1 866 930 4000
Marine Mammal and Sea Turtle Incident Reporting Hotline	1 800 465 4336

Fisheries Management

Regional Shellfish Co-ordinator	Jeff Johansen	(604) 666 3869
Regional Recreational Fisheries Co-ordinator	Carole Eros	(604) 666 3271
Resource Management Biologist	Laurie Convey	(250) 756 7233
3225 Stephenson Point Road, Nanaimo, B.C. V9T 1K3	Fax	(250) 756 7162
North Coast Area	General Inquiries	(250) 627 3499
417 2nd Avenue West, Prince Rupert, B.C. V8J 1G8	Fax	(250) 627 3427
Resource Manager - Shellfish, Prince Rupert	Steven Groves	(250) 627 3455
Aboriginal Affairs Advisor - First Nations Fisheries	Amy Wakelin	(250) 627 3492
Resource Manager - Recreational Fisheries	John Webb	(250) 627 3409
South Coast Area	General Inquiries	(250) 756 7270
3225 Stephenson Point Road, Nanaimo, B.C. V9T 1K3	Fax	(250) 756 7162
Resource Manager - Shellfish, Georgia Basin	Mike Kattilakoski	(250) 756 7315
Resource Manager - Shellfish, WCVI	David Fogtmann	(250) 339 3799
Resource Manager - First Nations Fisheries (North Is.)	Rachel Saraga	(250) 286 5807
Resource Manager - First Nations Fisheries (G. Basin)	Jonathan Joe	(250) 756 7243
Resource Manager - First Nations Fisheries (G. Basin)	Brenda Spence	(250) 756 7329
Resource Manager - First Nations Fisheries (WCVI)	Mike Ballard	(250) 286 5881
Resource Manager - Recreational Fisheries	Brad Beaith	(250) 756 7190
Lower Fraser Area	General Inquiries	(604) 666 8266
Unit 3, 100 Annacis Parkway, Delta, B.C. V3M 6A2	Fax	(604) 666 7112
Resource Manager – Shellfish, Howe Sound / Area 16	Anna Magera	(604) 916 6743
Resource Manager - First Nations Fisheries	Matthew Parslow	(604) 666 6608
Resource Manager - Recreational Fisheries	Barb Mueller	(604) 666 2370

Science

Pacific Biological Station Hammond Bay Road Nanaimo, B.C. V9T 6N7	Ken Fong	(250) 756 7368

Conservation and Protection

4250 Commerce Circle Victoria, B.C.	Mya Cormie	(250) 363 3252

Licensing

Pacific Fishery Licence Unit	Phone	1 877 535 7307
401 Burrard Street, Vancouver, B.C. V6C 3S4	E-Mail:	fishing-peche@dfo-mpo.gc.ca

Aquaculture

Shellfish Advisor, Aquaculture Division	Gabrielle Kosmider	(250) 754 0394

Canadian Food Inspection Agency

150-3001 Wayburne Drive, Burnaby B.C.		(604) 666 9904
103 – 4475 Viewmont Avenue, Victoria, B.C		(250) 363 3618
457 E. Stanford Avenue, Parksville, B.C.		(250) 248 4772

BC Ministry of Agriculture

Industry Specialist, Marine Fisheries & Seafood	Allison Witter	(250) 356 5362

WorkSafeBC

Manager, Prevention Field Services, Courtenay	Pat Olsen	(250) 334 8777
Occupational Safety Officer, Courtenay	Mark Lunny	(250) 334 8732
Occupational Safety Officer, Courtenay	Greg Matthews	(250) 334 8734
Occupational Safety Officer, Courtenay	Cody King	(250) 334 8733
Occupational Safety Officer, Victoria	Jessie Kunce	(250) 881 3461
Occupational Safety Officer, Lower Mainland	Bruce Logan	(604) 244 6477
Manager of Interest for Marine	Pat Olsen	(250) 334 8777
	toll free	1 888 621 7233 (ext. 8777)
Projects related to commercial fishing	Bruce Logan	(604) 244 6477
	toll free	1 888 621 7233 (ext. 6477)

Sighting Networks

BC Cetacean and Sea Turtle Sighting Network (866) 472 9663
Email: sightings@vanaqua.org or turtles@vanaqua.org
On the internet at:
www.wildwhales.org/sightings/
www.bcreptiles.ca/reportsightings.htm#1

Basking Shark Sighting Network 1 (877) 50 SHARK
Email: BaskingShark@dfo-mpo.gc.ca
On the internet at:
http://dfo-mpo.gc.ca/species-especes/sharks/report-eng.html

15. CONSULTATION

DFO undertakes consultations in order to improve decision-making processes, promote understanding of fisheries, oceans and marine transport issues, and strengthen relationships. Policy guidance and strategic direction for DFO's consultation activities is provided by the DFO Consultation Secretariat in the Policy Branch.

A consultation process exists for the prawn and shrimp by trap fisheries and is a major part of the planning for these fisheries. The multi-sector consultation body, the Prawn Advisory Board (formerly the Prawn Sectoral Committee), includes participant members from First Nations,

PPFA and elected representatives of commercial licence eligibility holders (prawn industry caucus), processors, SFAB, and the Province of BC.

The Prawn Advisory Board addresses issues that affect multiple interests and is not intended to interfere with bilateral processes related to Aboriginal and treaty rights. DFO engages in a variety of consultation and collaborative harvest planning processes with First Nations at the community level, or at broader tribal or watershed (for salmon) level in authorizing FSC fisheries under a communal licence or, under treaty, a harvest document for domestic purposes. Information from bilateral and local consultations with First Nations is brought forward to the Prawn Advisory Board's attention. First Nations interested in bilateral discussions with DFO should contact the Resource Manager for their area (Section 14 Contacts).

Improvements to manage the recreational and commercial fisheries are brought forward, respectively, to the Prawn Advisory Board's attention through the SFAB and commercial industry representatives.

Prawn Advisory Board meetings are held twice annually to provide advice to DFO regarding management issues pertaining to the fishery and on the proposed IFMP. Meetings are usually held in September (post-season review) and November (pre-season planning). Consensus recommendations on changes being considered to improve management and address emerging issues identified in the post-season review are the focus of pre-season planning. Following the pre-season planning meeting, the draft IFMP is prepared by DFO incorporating any new science advice and advice received through the advisory and bilateral process, and is made available to all interested parties for review and comment. The IFMP then progresses through an internal DFO approval process considering all advice received. The meeting calendar is available from DFO (Section 14 Contacts) or from DFO's consultation internet site at:

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

Fisheries & Oceans Canada	**Name**	**Phone**
Chairperson, Resource Management Biologist	Laurie Convey	(250) 756 7233
North Coast Area	Steven Groves	(250) 627 3455
South Coast Area, WCVI	David Fogtmann	(250) 339 3799
South Coast Area, ECVI	Mike Kattilakoski	(250) 756 7315
Fraser River Area	Anna Magera	(604) 916-6743
Science	Ken Fong	(250) 756 7368
Conservation & Protection	Mya Cormie	(250) 363 3252
South Coast Area, Recreational Coordinator	Brad Beaith	(250) 756 7190

Province of BC		
Marine Fisheries & Seafood	Allison Witter	(250) 356-5362
WorksafeBC	Jesse Kunce	(250) 881 3461

Participant Members	**Name**	**Phone**
Ahousaht Fisheries Corporation	Marion Campbell	(250) 670 2338
A-Tlegay Fisheries Society	Christa Rusel	(250) 203 4719
Central Coast Indigenous Resource Alliance	Madeleine Greer	(778) 231 1104
Cowichan Tribes	Bernette Laliberte	(250) 748 3196
Haida Fisheries / Council of Haida Nation	Vanessa Bellis	(250) 626 3302

Ka:'yu:'k't'h'/Chek'tles7et'h' First Nations	Ron Frank	(250) 334 7997
Maa-nulth Fisheries Committee	Larry Johnston	(250) 927 3331
Metlakatla Band	William Beynon	(250) 628 3234
'Namgis First Nation	Nic Dedeluk	(250) 974 5556
'Namgis First Nation	Mona Madill (alternate)	(250) 974 5556
Nisga'a Lisims Government	Blair Stewart	(250) 641 2865
North Island Prawn Group	Emily Orr	(250) 857 4606
North Island Prawn Group	Guy Johnston	(250) 715 6647
North Island Prawn Group	Kelly Loxton (alternate)	(250) 203 0796
Nuu-chah-nulth Tribal Council	Andy Olson	(250) 724 1225
Nuu-chah-nulth Tribal Council	Jim Lane	(250) 724 5757
Pacific Prawn Fishermen's Association	Steven Richards	(604) 506 1721
Q'ul-lhanumutsun Aquatic Resources Society	Chad Ormond	(250) 210 2255
Seaplus Marketing	Ian Leitch	(604) 273 6686
Sport Fishing Advisory Board	Chuck Ashcroft	(250) 338 9935
Sport Fishing Advisory Board	Ted Brookman	(250) 246 9704
Sport Fishing Advisory Board	Wayne Harling	(250) 753 1864
Tla'amin Nation	Cathy Galligos	(604) 483 9646

DFO appreciates First Nations, recreational and commercial fishing representatives' participation in the advisory board meetings. Their commitment to the resource is acknowledged.

More information about Aboriginal consultation and other DFO consultative processes is available on the internet at:

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

16. POST-SEASON REVIEW

16.1. Stock Assessment

16.1.1. In-season Spawner Index Sample Analysis

During the 2017 commercial fishing season, the Aquatic Resources, Research and Assessment Division (ARRAD) of DFO received a total of 1,550 spawner index samples for processing down from 1,668 spawner index samples in 2016 due to a shorter season. However, the average number of samples per week was 310, which is consistent with the most recent years. The spawner index sample data were processed and analyzed by ARRAD and in-season advice on stock strength was provided to prawn fishery managers based on sample results.

These data are available from the Government of Canada's Open Data Portal on the internet at:

www.open.canada.ca/en/open-data

16.1.2. Post-season Spawner Index Surveys

Fall spawner index surveys were carried out in ten selected areas of the coast. Surveys in nine of the areas were jointly coordinated by the PPFA and DFO and conducted by commercial vessels (Section 8). These areas included Saanich Inlet, Stuart Channel, Alberni Inlet / Barkley Sound, Quadra / Cortes Islands area, Powell River, Madeira Park, Salmon / Sechelt Inlets, Gold River / Muchalat Inlet, and Nanaimo area. DFO conducted the survey in Howe Sound. DFO and PPFA coordinated the industry-conducted surveys and funding was provided by the PPFA.

These fishery-independent surveys have been conducted since 2001 to monitor stocks prior to spawning season relative to their spawner index reference points. A review of the 2001 to 2011 sampling results in relation to spawner index reference points found that, based on past sampling results, the probability of prawn stocks in the fall survey areas being below the base spawner index reference point was 32%.

The results of this review can be found in the CSAS Science Response 2012/041, available on the internet at:

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

For 2017, DFO received and reviewed at total of 370 spawner index samples. Advice on stock strength was provided to prawn fishery managers based on sample results.

These data are available from the Government of Canada's Open Data Portal on the internet at:

www.open.canada.ca/en/open-data

16.1.3. Rockfish By-catch

The rockfish by-catch monitoring program continued for the 2017 season. The program has been in place since 2002 (Rutherford et al. 2009). The data collection for this program is funded by industry. On-grounds monitors are responsible for the collection of rockfish by-catch data as part of the in-season spawner index sampling.

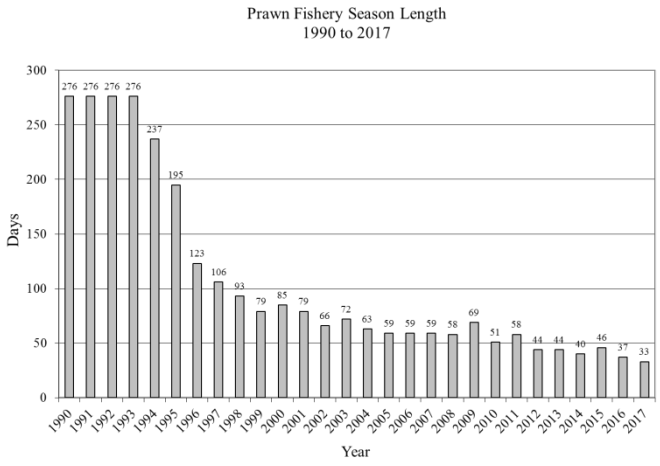
The annual number (point estimate) of juvenile rockfish incidentally caught between 2002 to 2016 ranged from a low of 13,564 in 2014 to a high of 32,011 in 2011. The 2016 estimate of juvenile rockfish bycatch is 17,346 (Fong et al. *in prep*). The 2017 data are not available as not all logbooks are available at the time of IFMP publication.

16.1.4. Howe Sound Study Area

DFO ARRAD continued its semi-annual survey of Howe Sound prawn stocks with surveys in February and November, 2017. Established in 1985, this represents a unique and invaluable time series data set for understanding prawn recruitment and productivity parameters.

16.2. Commercial Fishery

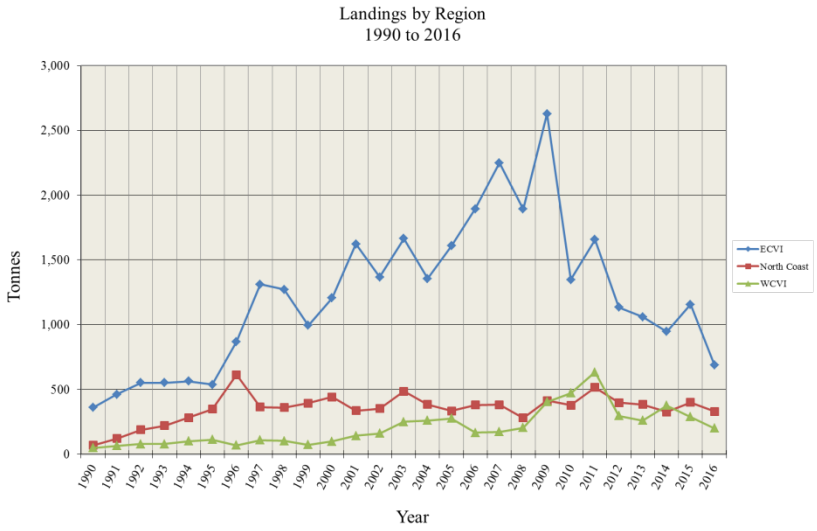
A post-season review of the 2017 commercial prawn fishing season was undertaken at the Prawn Advisory Board meeting in October 2017. The commercial season commenced May 11, 2017 and closed June 12, 2017 (33 days) and was the shortest season on record. The commercial season opening was delayed from May 1 to allow additional time to complete the prawn spawning cycle.



A summary of commercial catch, price, and landed value from 2001 to 2016 is provided in the following table. Section 3.1 provides a graph of annual landings and value adjusted for inflation to compare trends and is presented in 2016 constant dollars. The preliminary commercial catch estimates for 2017 is 1,111 t (Five logbooks outstanding at time of publication).

Year	Catch (t)	Average Price ($/kg)	Landed Value
2016	1,227	$14.76	$18.1 M
2015	1,842	$18.28	$33.6 M
2014	1,648	$24.33	$40.1 M
2013	1,706	$21.12	$36.0 M
2012	1,827	$19.13	$34.9 M
2011	2,804	$17.31	$48.6 M
2010	2,198	$11.26	$24.7 M
2009	3,446	$10.64	$36.7 M
2008	2,375	$12.04	$28.6 M
2007	2,802	$11.57	$32.4 M
2006	2,422	$19.61	$47.9 M
2005	2,218	$24.61	$55.0 M
2004	2,000	$18.53	$37.1 M
2003	2,402	$15.88	$38.1 M
2002	1,878	$13.27	$24.9 M
2001	2,101	$20.14	$42.3 M

Note: Landed values, as reported in the BC Agriculture publication, BC Seafood Industry Year in Review.



Source: commercial logbooks

J.O. Thomas and Associates Ltd. (JOT) delivered at-sea monitoring components of the fishery in 2017. JOT issued trap tags to 202 vessels, of which 163 were licenced for a single trap allotment and 39 were licenced with the additional trap allotment transferred from another licence. Four licences were in inventory and one licence has been acquired and relinquished for treaty mitigation.

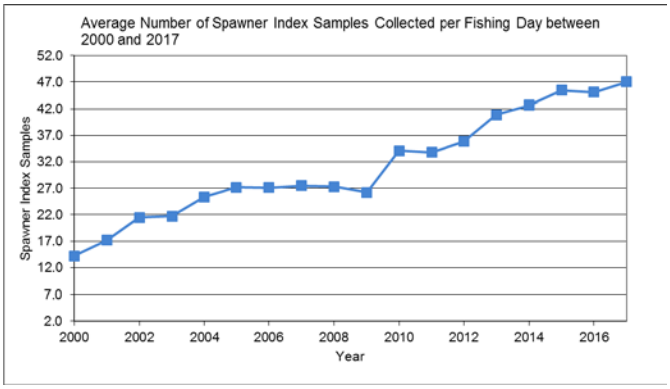
Fifteen at-sea observers were deployed coast-wide. This included four north coast assignments and ten south coast assignments. Several of them have participated annually since monitors have been an integral component of the commercial fishery. Their experience and contribution to delivery of the fishery and on-board training of new observers has been invaluable.

Vessel position and set and haul position reports were received near real time and used to direct at-sea observers for spawner index sampling for the Fourth year. A total of 590,000 position reports (525,000 vessel position reports and 65,000 set and haul position reports) were received during the May 11 to June 12 season. This position information is used in-season for decision-making related to vessel and fishing effort, sampling planning and in-season closures. It also provides location information to direct enforcement effort.

In 2017, 1,551 strings were sampled for spawner index data, an average of 47.0 strings/fishery day. The following graph compares the number of samples collected per day compared to previous years (2000-2017). 176 of the 202 active fishing vessels were sampled. 368 person-days of on-grounds monitoring occurred for this year's 33-day fishery. Sampling commences early in priority interest areas in Saanich Inlet, Stuart Channel, Alberni Canal, and Howe Sound. Samples collected by DFO personnel are integrated in-season, providing supplemental data for closure decisions. In-season closures of Subareas were implemented on short (3 days) notice coastwide compared to previous seasons.

At-sea observers also provided vessel gear inspections of 87% of the 202 active vessels. Inspections provide an "observe, record and report" function for assessment of each vessel's compliance with basic licence requirements for trap tagging, trap mesh size, buoy identification

and logbook completion. At-sea observers continued to collect information about rockfish by-catch (since 2002).



Source: J.O. Thomas and Associates Ltd.

The 2017/18 season was the 16th year in which delivery of the commercial fishery was supported by industry funding arrangements between DFO and the PPFA (Section 8).

There is a limited trap fishery for Humpback Shrimp in Prince Rupert Harbour open from September 1 to December 31, annually, upon application. Prawns may not be retained in this fishery. Fish harvesters must arrange for in-season catch samples which are measured and sexed to improve biological knowledge of this stock. Six vessels opted to fish in 2017. Preliminary Humpback Shrimp landings in 2017 were 17,298 kg (all logbooks not available at time of publication). Masset Inlet in Haida Gwaii may open on request for Humpback Shrimp but fishing in this area is rare.

Sooke Harbour and Basin is open for Coonstripe Shrimp in the fall but has received little to no effort since 2007.

Incidental octopus retention is permitted in the prawn and shrimp trap fishery. Octopus landings in 2017 are not yet available. The industry Caucus and the PPFA encourages all prawn and shrimp trap harvesters to accurately record octopus catch so that this privilege may be retained.

The 2016 Sustainability Survey for Pacific Prawn is available at:

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

16.2.1. Vessel Safety

There were no Transportation Safety Board marine investigation reports safety reports issued in 2017 (Appendix 7).

16.2.2. Sanitary Guidelines

Potential contamination of fish products may occur if adequate controls over sanitation and hygiene are not followed during the fishing and handling, both on board the vessel and during holding and transporting to the processing plant. In the past, prawn/shrimp have been found to be contaminated with *E. coli* and, more recently, there have been reports of suspected norovirus contamination.

Adherence to the CFIA prawn and shrimp sanitary guidelines will reduce potential contamination of fish products (Appendix 8).

16.3. Recreational Fishery

A Survey of Recreational Fishing in Canada is conducted every five years and shows trends over the survey period but is not considered to provide official catch figures due to one year memory recall. The estimated recreational catch of prawns and shrimp was 326 t in 2010, which was 13% of the combined recreational and commercial catch of prawns and shrimp (Fisheries and Oceans Canada 2012). Results from the 2015 survey should be available in 2018.

Catch estimates from the internet recreational fishing effort and catch (iREC) survey are pending publication by the CSAS (Section 4.2.2).

Amendment to the *BC Sport Fishing Regulations* to regulate aspects of recreational fishing for prawns and crab have stalled. This included eliminating line floating at the surface; mandatory requirement to have phone numbers (or Unique Fisher Identification #'s) on floats; and rot cord for prawn traps and round stainless steel crab traps. Work is focused on the *Oceans Act* and regulations to support the creation of MPAs, *Fisheries Act* and regulations to restore habitat protections, and the protection of marine mammals and other *SARA*-listed species. Other changes are considered as resources may allow.

A Recreational and First Nation prawn and crab buoy survey program was conducted from 2009-2012 to provide DFO with improved knowledge of recreational and First Nations FSC fishing effort in key prawn and crab fishing areas on the South Coast. The program was conducted by working collaboratively between DFO, First Nations, and volunteers from the recreational fishing sector who had offered to conduct buoy counts and carry out the data collection. The objectives of the buoy count program were:

- To produce maps of the geographical distribution of recreational and FSC fishing effort in key prawn and crab fishing areas in the south coast of BC; and
- To provide an index of recreational and FSC fishing effort in key prawn and crab fishing areas in the south coast of BC.

The following table provides a summary of the relative crab and prawn recreational fishing effort by Area (PFMA) and month based on an estimated number of traps (i.e., per buoy) from the peak recreational buoy counts conducted (2009- 2012).

Nine fall surveys were conducted in October-November 2017 under a collaborative agreement between DFO and the PPFA with the financial support for the surveys provided by commercial licence holders. DFO conducted the survey in Howe Sound. Closures in place during the critical winter spawning period allow berried female prawns to complete egg incubation and release larvae with reduced fishing disturbance and handling mortality and are an important component of the recreational management strategy (Appendix 2).

Meetings between the SFAB and DFO in 2017 continued to focus on developing shared understandings and a way forward. DFO continues to support collaborative approaches to reduce conflict and mitigate issues in high use areas. The SFAB recommended mandatory release by recreational harvesters of berried prawns carrying eggs for 2018 (Appendix 2).

Area Name	Area	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Quadra / Cortes Islands	13							83					
Comox / Baynes Sound	14	12	15	24		26	41	64	65	59	30	14	12
Powell River / Lund	15								328				
Malaspina Strait / lower Jervis & Sechelt Inlets	16								330				
Stuart Channel	17	16	49	19	556	195	113	198	177	207	105	76	173
Nanaimo Harbour	17	29	20	24		21	37	47	53	42	33	11	18
Cowichan Bay	18	33	41	57		51	81	80	77	91	103	36	22
Fulford & Ganges Harbours	18							54					
Saanich Inlet	19	29		238		206	284	618	512	473	382	229	124
Becher Bay	20		43	47				93	131	63		40	45
Pedder Bay	20	10	13	15		17	23	50	58	40	29	20	7
Port Renfrew	20	5	6	11	12	81	207	299	202	95	60	4	
Barkley Sound	23							167					
Alberni Inlet	23	15	10	35	252	368	174	176	224	179	75	52	57
Gold River / Tahsis & Tlupana Inlets	25							142					
Neurotsos & Holberg Inlets	27								168				
Howe Sound	28							165					

16.4. First Nations Fishery

DFO has consulted with First Nations since 2012 about measures for the FSC/domestic prawn fishery to manage the harvesting capacity of commercial vessels and gear (Section 4.2.3). Work is focused on bilateral discussions between DFO and individual First Nations or organizations focusing on FSC/domestic needs, current practices, and management measures that may work for First Nations and DFO. Discussions also continued through the Island Marine Aquatic Working Group and at Prawn Advisory Board meetings. Island Marine Aquatic Working Group Members have supported mandatory release of berried female prawns and winter closures to allow berried female prawns to complete egg incubation and release larvae with reduced fishing disturbance and handling mortality.

Catch information is collected by some First Nations, by fisheries program personnel or by Band administration offices. Some catch data have been collected under AFS agreements. Prawns constitute roughly 12% of the reported catch by weight of any shellfish species (2009-2012). Based on the available reports, 12.8 t of prawns or shrimp were reported in 2012.

The First Nations Fishery Council and other area aggregate groups have assisted in engagement and workshops to communicate the requirements of the *Strategic Framework for Fishery Monitoring and Catch Reporting in the Pacific Fisherie*s and importance of receiving catch information. In addition, a significant focus has been on the development of integrated and coordinated data management and data entry systems within DFO and First Nation band offices.

Prawn Advisory Board meetings in 2017 through which advice was provided to DFO were attended by: Ahousaht Fishing Corporation, A-Tlegay Fisheries Society, Central Coast Indigenous Resource Alliance, Cowichan Tribes, Haida Fisheries / Council of Haida Nation, Ka:'yu:'k't'h'/Chek'tles7et'h' First Nations, Maa-nulth Fisheries Committee, Malahat Nation, Metlakatla Fisheries, Namgis First Nation, Nuu-chah-nulth Tribal Council, Quatsino First Nation Fisheries, Q'ul-lhanumutsun Aquatic Resources Society, and Tla'amin Nation. The Island Marine Aquatic Working Group attends as an observer.

Areas previously identified as important by First Nations continued to be monitored with special attention. This included Saanich Inlet, Village Island area in Johnstone Strait, Uchucklesaht Inlet in Alberni Canal, Cumshewa Inlet in Queen Charlotte Islands and Loughborough Inlet northeast of Campbell River.

There were 55 communal commercial licences held by First Nations for participation in the commercial fishery in 2017 (Section 16.2).

16.5. Compliance

DFO Conservation & Protection is focused on building its capacity to conduct intelligence-led "major case" investigations and seeking higher success in prosecutions.

16.5.1. Conservation and Protection

Enforcement was again provided $59.2K of industry funding in 2017. This is mobilization funding, intended for vehicle and vessel fuel, operating expenses, overtime and travel expenses for Fishery Officers to become engaged in enforcement of the single haul management feature of the Commercial Harvest Plan (Appendix 1). This management control is intended to reduce handling mortality of undersize prawns. A summary of single haul violations is provided in the following table.

Year	Single Haul Violations
2002	2 convictions, 6 other associated charges
	1 charge, 10 other associated charges stayed
2003	1 conviction, 2 other associated charges
2004	2 convictions, 7 other associated charges
	2 charges not approved
2005	1 charge stayed
2007	1 conviction, 5 other associated charges
2010	1 conviction
2011	1 warning
2012	1 charge (court pending)
2013	0 charges
2014	0 charges
2015	0 charges, 1 early setting conviction
2016	0 charges
2017	0 charges

DFO Conservation & Protection registered 76 dedicated commercial prawn fishery patrols, 92 patrols overall where commercial prawn was included, and more than 81 restaurant/retail/plant inspections for illegal sales in 2017. Fifty-one violations were encountered during the commercial fishery for registration/licence (no/fail to produce fisher registration card, fish without licence/conditions onboard, no designation), fishing during closed area/time, illegal possession, failure to hail, obstructed vessel registration number, reporting (logbooks), gear (over limit, not properly marked) and obstructing observer/fishery officer.

49 prawn violations were encountered in the recreational fishery to date for fishing during closed time/area, gear illegal/used illegally (unmarked), registration/licence (no/fail to produce licence), and quota/bag limit.

Six violations were encountered in the First Nations FSC/domestic fishery to date for registration/licence (fish without licence), gear-illegal/used illegally (unmarked) and illegal buy/sell of prawns.

16.5.2. At-sea Observers

In 2017, JOT at-sea observers boarded 176 vessels for biological sampling. In so doing, they also provided an Observe, Record and Report (ORR) function including 166 fishing gear and catch inspections specifically for trap mesh size, trap tags and product size. In all, 82% of the fleet was checked for general compliance by at-sea observers on board during the season.

16.6. Ecosystem

On-ground monitors continued to collect information about rockfish bycatch (since 2002).

DFO has concluded that ten newly identified glass sponge reefs in Howe Sound are biologically significant enough to warrant a precautionary management approach and are asking the public to voluntarily avoid fishing in these areas with bottom contact gear until further scientific analysis and consultations with First Nations and stakeholders regarding protection measures can occur (Appendices 1 – 3). Bottom contact fishing gear includes crab by trap, prawn and shrimp by trap, shrimp by trawl, scallop by trawl, and groundfish by trawl, hook and line, and trap. Further scientific analysis and consultations are anticipated through winter 2017-18.

New marine refuges off the coast of BC and in the Gulf of the St. Lawrence in Quebec contributed an additional 1.59% of protected ocean area to Canada's coasts, bringing Canada past its domestic 5% target for 2017 and closer to its international marine conservation target (Section 4.4.2.1). These refuges were created thanks to close collaboration with partners and stakeholders. The marine refuge in the Pacific coast is located within the boundaries of the new large Offshore Pacific AOI, and protects underwater seamounts and several hydrothermal vents by prohibiting all bottom-contact commercial and recreational fishing activities within the refuge (Appendices 1 and 2). In two years, the percentage of protected marine and coastal areas in Canada has increased from 0.9% to 5.22%.

Two humpback whales entangled and were cut free from recreational fishing gear in 2017.

In 2018, reporting of all interactions, including collision and entanglement, with marine mammals is mandatory during all commercial fishing trips (Appendices 1 and 6).

Amendment to the *BC Sport Fishing Regulations* to require rot cord in recreational traps to release bycatch in event traps are lost has stalled (Section 16.3).

Assessment by the Monterey Bay Aquarium Seafood Watch of BC commercial trap-caught prawns as "good alternative" is available on the internet at:

www.seafoodwatch.org/

DFO State of the Pacific Ocean reports series are available on the internet at:

http://dfo-mpo.gc.ca/oceans/publications/soto-rceo/2012/intro-eng.html

Appendix 1: 2018/19 Prawn and Shrimp by Trap Commercial Harvest Plan

TABLE OF CONTENTS

1. COMMERCIAL HARVEST PLAN CHANGES FOR 2018

1.1. Five Nuu-chah-nulth First Nations located on the West Coast of Vancouver Island (the T'aaq-wiihak First Nations) have Aboriginal rights to fish for any species of fish within their Fishing Territories and to sell that fish, with the exception of Geoduck. Fisheries & Oceans Canada (DFO) is working with the First Nations to find the manner in which the rights of the five First Nations can be accommodated and exercised without jeopardizing Canada's legislative objectives and societal interests in regulating the fishery. The outcome of these discussions could lead to in-season management changes. DFO will make effort to advise stakeholders of any such changes in advance of changes being implemented.

1.2. The 2018 commercial season will open no earlier than noon, May 10, 2018. This is a delayed opening from May 1 to allow additional time for the spawning cycle (release of eggs) to complete (Section 2.1).

1.3. DFO requests voluntarily avoidance of ten newly identified Glass Sponge Reefs in Howe Sound from all bottom contact fishing, including prawn and shrimp, until further scientific analysis and consultations regarding protection measures can occur. The reefs are located in Subareas 28-2 and 28-4 by Lion's Bay, Anvil Island, Halkett Point on Gambier Island, Bowyer Island, Dorman Point on Bowen Island and the Defence Islands (Section 3.3.29 and Appendix 11).

1.4. All commercial and recreational bottom contact fisheries using bottom trawl, hook and line, and trap gear for groundfish, Halibut, Sablefish, and shellfish closed November 10, 2017 to protect seamount and hydrothermal vents in Subareas 123-9, 124-1, 124-2, 125-6, 126-3, 126-4, 127-2, 127-4, and 130-1. The Offshore Pacific Seamounts and Vents are an Area of Interest for establishment of a Marine Protected Area under the *Oceans Act*. Prawn and shrimp trap fishing does not occur in the area (Section 3.3.33 and Section 4.4.2 of the Integrated Fisheries Management Plan for Prawn and Shrimp by Trap).

1.5. In 2018, reporting of all interactions with marine mammals, including collision and entanglement with fishing gear, is mandatory during all commercial fishing trips to the Marine Mammal Incident Hotline 1-800-465-4336 (Section 4.6 and Appendix 6).

1.6. The USA will ban the importation of commercial fish products under new provisions of the *US Marine Mammal Protection Act* where activities result in the incidental killing or serious injury of marine mammals in excess of USA standards. A five-year exemption period has been given for implementation in 2021.

1.7. Vessel masters are required to take an observer from the dock or boarding at-sea at any time identified during the course of the season to collect information reports from sea (spawner index sampling). With improved electronics technology, electronic vessel monitoring and increased mobility of the fleet, DFO requires an increased number of samples for timely decisions in-season (Section 7.2).

2. OPEN TIMES

2.1. Coast-wide

The commercial prawn and shrimp by trap fishing season will open no earlier than 12:00 hours (noon), May 10, 2018. This will include in-shore and offshore areas and the Special Management Areas (SMA). A fishery notice will announce the actual opening date and time.

All openings referred to in this plan are tentative until confirmed by issuance of a variation order accompanied by a fishery notice.

2.2. Prince Rupert Harbour

The Prince Rupert Harbour Humpback Shrimp fishery will open no earlier than 12:00 hours (noon), September 1, 2018 and will remain open until further notice or until 19:00 hours, December 31, 2018, whichever occurs first. The opening will be confirmed by a variation order accompanied by a fishery notice.

Fish harvesters are required to request and receive amended Conditions of Licence from the National Online Licensing System (NOLS). Amended Conditions of Licence are required once arrangements have been made to provide observer coverage and sampling for this fishery as described in Section 5.1. Standardized biological sampling information for Humpback Shrimp is being collected.

2.3. Masset Inlet

The Masset Inlet Humpback Shrimp fishery will open on request to the North Coast Area Resource Manager (see Contacts in Section 14 of the Integrated Fisheries Management Plan for Prawn and Shrimp by Trap) no earlier than 12:00 hours (noon), May 10, 2018 (Section 2.1) and will remain open until further notice or until 19:00 hours, December 31, 2018, whichever occurs first. The opening will be confirmed by a variation order accompanied by a fishery notice.

2.4. Sooke Harbour and Basin

Sooke Harbour and Basin (Subareas 20-6 and 20-7) will open at 12:00 hours (noon), November 1, 2018 for a Coonstripe Shrimp trap fishery and will remain open until further notice or until 19:00 hours, December 31, 2018, whichever occurs first. Alternative opening dates for a two month fishery will be considered if recommended by the Prawn Industry Caucus. The opening will be confirmed by a variation order accompanied by a fishery notice.

2.5. Daily Fishing Hours

Other than the first day of any opening, trap gear may only be set, hauled, handled, or re-set between 07:00 hours and 19:00 hours. On the first day of an opening, trap gear may only be set, hauled, handled, or re-set between 12:00 hours (noon) and 19:00 hours. Only one haul per day of each string is permitted.

3. CLOSURES

3.1. In-season Closures

There is no fixed date for the coast-wide closure of the commercial fishery. In-season commercial fishery closures of local areas will be announced as spawner indices in those areas approach management targets: 1.25 in Howe Sound and Indian Arm (Subareas 28-1 to 28-7, 28-9, 28-11 to 28-14), Powell River (Subareas 15-1, 15-2, 15-3), Malaspina Strait / lower Jervis (Subareas 16-1, 16-2, 16-10, 16-16 to 16-18) and Nanaimo (Subareas 17-10 to 17-13, 17-15, 17-16, 17-18); 1.5 in Saanich Inlet (19-7 to 19-12), Stuart Channel (17-5, 17-6, 17-9) and Alberni Inlet (Subareas 23-1 to 23-3) under the adaptive management strategy developed collaboratively by recreational and commercial fishing representatives in 2006; and 1.10 in other coastal areas. Sampling coverage, time to next achievable sampling and fishing effort are also considered. Subareas adjacent to sampled areas may also close (Section 3.2).

Coast-wide closure of the commercial fishery occurs when the remaining open fishing grounds are considered by DFO fishery managers to be too limited in extent to support continued fishing by the remainder of the fleet. Based on recent seasons (2013-2017 average), the commercial fishery is anticipated to be about 40 days long in 2018.

All closures will take effect at 19:00 hours unless otherwise announced.

3.2. Procedure for In-season Decision Making

During the commercial fishery, there are twice weekly in-season conference calls at which time DFO fishery managers, Science (Aquatic Resources Research and Assessment Division) personnel and a representative of the industry service provider co-ordinating at-sea observers review the available spawner index sample results and fishing effort (set/haul and vessel position reports). Comments that have been received from the at-sea observers, fish harvesters, and buyers are considered. Vessel movement patterns in the past week are summarized to assess changing distribution of effort. The ability to sample areas showing signs of fishing effort is determined. Decisions are made by DFO about areas for closure and sampling. Subareas close in-season as required on the basis of the following:

a.) Approaching spawner index values;
b.) Approaching spawner index values in an adjacent Subarea where prawn grounds are contiguous;
c.) To provide a stock reservoir for adjacent areas having low spawner indices;
d.) Adequacy of spawner index sampling and time to next achievable sampling by at-sea observers;
e.) If DFO is of the opinion that there is too great a concentration of vessels such that the fishery in an area is considered to be unmanageable;
f.) If non-compliance is occurring and enforcement cannot be achieved;
g.) If there are insufficient funds to continue to manage and monitor the fishery, or to continue in a specific remote coastal area;
h.) At the end of the season as determined by DFO.

The time from sampling to closure is usually four to six days. On occasion, closures may be put into effect within a week of sampling and in some cases within 48 hours.

As individual coastal areas close during the season, fleet mobility increases, and vessel effort is concentrated into the remaining open areas. The effect of fishing may be seen as more variable spawner index results. Manageability of the remaining fishing effort becomes increasingly challenging due to the concentration of gear contributing to the decision for a final coast-wide closure. A coast-wide closure decision is made when the remaining open coastal areas are showing signs of being fished to the target index. Fish harvesters' and buyers' comments from the fishing grounds may also be considered to direct sampling and inform the decision for final closure of the prawn fishing season.

Areas remain closed until the prawn spawning cycle completes and the fishery opens in the following year.

3.3. Area Closures, Octopus Closures and Advisories

Unless otherwise noted, the following areas are closed to prawn and shrimp trap fishing. In areas noted for octopus closures, all octopus must be released unharmed at all times of the year.

3.3.1. Area 1 Closure

3.3.1.1. Masset Inlet (Subarea 1-6): Closed to retention and possession of prawns at all times. Closed until 12:00, noon, May 12, 2018 (earliest) for Humpback Shrimp trap fishing. (Humpback Shrimp trap fishing area)

3.3.2. Area 2 Closures

3.3.2.1. Gwaii Haanas National Marine Conservation Area Reserve and Haida Heritage Site, Burnaby Narrows: Those waters of Subareas 2-13 and 2-16 inside a line commencing at 52°23.049' N and 131°23.438' W east to 52°23.077' N and 131°22.908' W, following the southern shoreline of Kat island east to 52°23.107' N and 131°22.274' W, then east to 52°23.295' N and 131°21.34' W, following the western shoreline of Burnaby Island south to 52°20.951' N and 131°20.509' W, then west to 52°20.733' N and 131°21.072' W, and then north following the eastern shoreline of Moresby Island back to the point of commencement. (National Marine Conservation Area)

3.3.2.2. Gwaii Haanas National Marine Conservation Area Reserve and Haida Heritage Site, Louscoone Estuary: Those waters of Subareas 2-33 and 2-34 north of a line drawn from 52º11.836' N and 131º15.658' W east to 52º12.271' N and 131º14.594' W. (National Marine Conservation Area)

3.3.2.3. Gwaii Haanas National Marine Conservation Area Reserve and Haida Heritage Site, Flamingo Estuary: Those waters of Subarea 2-37 north of a line drawn from 52º14.456' N and 131º22.234' W southeast to 52º14.246' N and 131º21.489' W. (National Marine Conservation Area)

3.3.2.4. Gwaii Haanas National Marine Conservation Area Reserve and Haida Heritage Site, Gowgaia Estuary: Those waters of Subarea 2-41 east of a line drawn from 52º24.944' N and 131º32.138' W southeast to 52º24.238' N and 131º32.024' W. (National Marine Conservation Area)

3.3.2.5. Gwaii Haanas National Marine Conservation Area Reserve and Haida Heritage Site, Cape Saint James: Those waters of Subareas 2-19, 102-3, 130-3 and 142-1 inside a line commencing at 51º56.523' N and 131º01.522' W, southwest to 51º55.627' N and 131º02.574' W, then southeast to 51º52.5' N and 130º57.919' W, then south to 51º51.676' N and 130º57.805' W, then southeast to 51º50.349' N and 130º56.442' W, then northeast to 51º51.062' N and 130º54.717' W, then north to 51º53.888' N and 130º55.608' W, then northwest to 51º58.671' N and 130º59.464' W, then west to 51º58.743' N and 131º00.606' W, and then following the southern shore of Kunghit Island west to the point of commencement. (National Marine Conservation Area)

3.3.2.6. Gwaii Haanas National Marine Conservation Area Reserve and Haida Heritage Site, SGang Gwaay: Those waters of Subareas 2-31 and 142-1 inside a 3 km radius from the centre point on Anthony Island located at 52º05.655' N and 131º13.178' W. (National Marine Conservation Area)

3.3.3. Area 4 Closure

3.3.3.1. Prince Rupert Harbour (Subareas 4-10 and 4-11): Closed to retention and possession of prawns at all times. Closed until 12:00, noon, September 1, 2018 (earliest) for Humpback Shrimp trap fishing. (Humpback Shrimp trap fishing area)

3.3.4. Area 6 Octopus Closure

3.3.4.1. Subarea 6-2. (First Nations access for food, social and ceremonial [FSC] purposes)

3.3.5. Area 12 Closure

3.3.5.1. Robson Bight - Michael Bigg Ecological Reserve: Subarea 12-3 (portion). From a point on shore due north to a point at 50°30.33' N and 126°37.47' W then east to a point at 50°29.65' N and 126°30.23' W then due south to the shoreline. (Ecological Reserve). Additional details and a map are available at:

www.env.gov.bc.ca/bcparks/eco_reserve/robsonb_er.html

3.3.6. Area 13 Octopus Closure

3.3.6.1. 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 and Research Closure)

3.3.7. Area 14 Octopus Closures

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

3.3.7.2. Mitlenatch Nature Park: As described in Area 15 Octopus Closures.

3.3.8. Area 14 Glass Sponge Reef Closures

3.3.8.1. Parksville: Those portions of Subareas 14-2 and 14-3 that lie inside a line that begins at 49°21.680'N and 124°19.762'W, then southeasterly to 49°21.514'N and 124°18.893'W, then to 49°21.191'N and 124°17.723'W, then to 49°21.064'N and 124°17.724'W, then to 49°20.725'N and 124°18.380'W, then to 49°21.432'N and 124°19.811'W, then to the beginning point. (Glass Sponge Reef Conservation Area)

3.3.8.2. Achilles Bank: That portion of Subarea 14-6 that lies inside a line that begins at 49°33.490'N and 124°29.230'W, then southerly to 49°32.701'N and 124°28.760'W, then to 49°31.657'N and 124°29.434'W, then to 49°31.663'N and 124°29.896'W, then to 49°32.651'N and 124°29.752'W, then to 49°33.340'N and 124°29.935'W, then to 49°33.498'N and 124°29.773'W, then to the beginning point. (Glass Sponge Reef Conservation Area)

3.3.9. Area 15 Octopus Closures

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

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

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

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

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

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

3.3.10. Area 16 Octopus Closure

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

3.3.11. Area 17 Glass Sponge Reef Closure

3.3.11.1. Gabriola (Entrance) Island: That portion of Subarea 17-11 that lies inside a line that begins at 49°13.672'N and 123°47.577'W, then southerly to 49°13.235'N and 123°47.429'W, then to 49°13.185'N and 123°47.882'W, then to 49°13.391'N and 123°48.119'W, then to 49°13.623'N an d123°48.166'W, then to the beginning point. (Glass Sponge Reef Conservation Area)

3.3.12. Area 17 Department of National Defence Prohibited Area

3.3.12.1. Winchelsea Island: Fish harvesters are advised that due to the large number of submarine cables terminating at Winchelsea Island the Department of National Defence prohibits all trap and bottom contact fishing and anchoring in a zone bounded by the following coordinates within the Military Sea Area WG: 49°18.456’ N and 124°06.156’ W, 49°17.128’ N and 124°02.081’ W, 49°17.274’ N and 124°04.346’ W, and 49°17.438’ N and 124°05.138’ W. (Department of National Defence Prohibited Area)

3.3.13. Area 18 Closure

3.3.13.1. Satellite Channel: Closed year round in Subareas 18-6 and 18-7 starting at 48°42.472’ N and 123°30.216’ W, then to 48°42.815’ N and 123°28.800’ W, then to 48°41.883’ N and 123°28.285’ W, then to 48°41.540’ N and 123°29.699’ W, and then back to the point of origin. (British Columbia Provincial Ecological Reserve #67)

3.3.14. Area 18 Glass Sponge Reef Closures

3.3.14.1. Outer Gulf Islands #1: That portion of Subarea 18-1 that lies inside the following lines: begins at 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. (Glass Sponge Reef Conservation Area)

3.3.14.2. Outer Gulf Islands #2: That portion of Subarea 18-1 that lies inside the following lines: begins at 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. (Glass Sponge Reef Conservation Area)

3.3.14.3. Outer Gulf Islands #3: That portion of Subarea 18-1 that lies inside the following lines: begins at 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. (Glass Sponge Reef Conservation Area)

3.3.15. Area 19 Sponge Reef Advisory

3.3.15.1. Saanich Inlet: It is recommended that gear should avoid cloud sponge areas in Saanich Inlet in waters less than 40 metres depth at Henderson Point, at the mooring buoy northwest of Senanus Island, Willis Point, Repulse Rock, the point south of Misery Bay, Christmas Point, McCurdy Point and adjacent to the Bamberton cement plant.

3.3.16. Area 19 Saanich Inlet VENUS Advisory

3.3.16.1. Subarea 19-8, Pat Bay: Fish harvesters are advised to avoid setting gear within Pat Bay in Saanich Inlet at locations as described in a notice to mariners to avoid entanglement with sea bed oceanographic instruments deployed by the Oceans Network Canada VENUS project. Please note that there are also power and data cables from the location running to shore. GPX formatted files available for use with Electronic Navigational Systems and additional information are available at:

www.oceannetworks.ca/observatories/notices/information-mariners

In event of fishing gear entanglement or other emergency incident, please call their 24-hour emergency line**:** 250-721-7599.

Contact: 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.

3.3.17. Area 19 Octopus Closures

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

3.3.17.2. 10 Mile Point: Those waters of Subareas 19-4 and 19-5 within 0.4 nautical miles of Cadboro Point navigation light. (Marine Reserve)

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

3.3.17.4. Saanich Inlet: Subareas 19-7 to 19-12 inclusive. (First Nations access for FSC purposes; recreational fishing permitted)

3.3.18. Area 20 Closure

3.3.18.1. Sooke Harbour and Basin (Subareas 20-6 and 20-7): Closed to retention and possession of prawns at all times. Closed until November 1, 2018 for coonstripe shrimp trap fishing. (Coonstripe shrimp trap fishing area)

3.3.19. Area 20 Mooring Buoy Advisory

3.3.19.1. Constance Bank: Mooring AS04 is deployed by the Institute of Ocean Sciences to help define the inflow of ocean water into the Georgia Basin along submarine depressions of Juan de Fuca Strait and Georgia Strait. The mooring is located at 48°18.00' N and 123°22.50' W in 117 metres depth. The mooring is entirely subsurface, standing only six metres tall above the bottom and consists of ocean current measuring devices, suspended from a three foot diameter yellow steel subsurface float and a cluster of one foot diameter orange plastic floats providing approximately 1/2 ton of buoyancy. It is held in place by a one ton anchor. If it is seen on the surface it will appear as a cluster of orange floats, closely attached to the large yellow float with a xenon flashing light active in the dark hours only at one flash per two seconds, and it will also transmit its location to satellite. A one kilometre clearance zone has been recommended by the Institute of Ocean Sciences.

For additional information or to report gear hang ups, contact Tamás Juhász, telephone: (250) 363-6598; fax: (250) 363-6746; pager: (250) 389-8806 or email: Tamas.Juhasz@dfo-mpo.gc.ca. If Mr. Juhász is unavailable for reports of gear hang ups, contact the Coast Guard Regional Operations Centre at (250) 413-2802.

3.3.20. Area 20 Octopus Closures

3.3.20.1. Botanical Beach Provincial Park: That portion of Subarea 20-3 between the lowest low water on record and the highest high water on record from San Juan Point

thence following the Vancouver Island shoreline easterly to the mouth of Tom Baird Creek. (Marine Reserve)

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

3.3.21. Area 21 Octopus Closure

3.3.21.1. Pacific Rim National Park: That portion of Area 21 between the lowest low water on record and the highest high water on record from Pachena Point thence following the Vancouver Island shoreline easterly to Bonilla Point. (Park)

3.3.22. Area 23 Closure

3.3.22.1. 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. All commercial resource extraction is prohibited by the Park Act. (Park)

3.3.23. Area 23 Octopus Closures

3.3.23.1. Pacific Rim National Park: That portion of Subarea 23 between the lowest low water on record and the highest high water on record from Whittlestone Point to Cape Beale. (Park)

3.3.23.2. Bamfield Marine Station Research Area Closure: Those waters of Subareas 23-4, 23-6 and 23-7 bounded by a line commencing at the light at Whittlestone Point and running directly to the southern tip of Haines Island; from the north-western tip of Haines Island to the southern tip of Seppings Island; from the north-western tip of Seppings Island to Kirby Point on Diana Island; from Kirby Point directly to the northwest tip of Fry Island; from the north-western tip of Fry Island to the nearest adjacent point on Tzartus Island; from Foucault Bluff on Tzartus Island to the northwest tip of Nanat Island; from the eastern tip of Nanat Island to the nearest adjacent point on Vancouver Island and thence along the coastline of Vancouver Island to the point of commencement. (Research Area)

3.3.24. Area 23 Neptune Project Advisory

3.3.24.1. Neptune Project Advisory: The Neptune project includes data and power cables departing the shoreline just north of Polly Pt., then following the centre line of Alberni Canal and Trevor Channel to Barkley Canyon, Endeavour Ridge, and Middle Valley in the offshore. Other than the offshore, there is one instrument cluster proposed for Folger Passage near Hornby Rock in 23-7. Alberni Canal and Barkley Sound fish harvesters are recommended to get additional up to date information and maps from the Neptune web site:

www.oceannetworks.ca/

3.3.25. Area 25 Sponge Reef Advisory

3.3.25.1. Tahsis Narrows: It is recommended that gear should avoid cloud sponges and corals in Tahsis Narrows around Mozino Point in waters less than 80 metres depth.

3.3.26. Area 26 Octopus Closures

3.3.26.1. Checleset Bay Fishery Closure Area: Those waters of Checleset Bay within Subareas 26-7, 26-8 and 26-10 and 126-1 on the northwest coast of Vancouver Island enclosed by a line drawn from a point on the Brooks Peninsula at 50°05.18' N and 127°49.58' W, then true south to the intersection with the parallel passing through 50°00.0' N, then easterly to Alert Point on Lookout Island, then northeasterly to 50°02.1' N and 127°25.03' W on Vancouver Island, then northwesterly following the shore of Vancouver Island to 50°05.53' N and 127°28.95 W at Malksope Point, then true west to a point midchannel on the southeast end of Gay Passage at 50°05.53' N and 127°30.1' W, then to 50°06.7' N and 127°31.8' W, then to 50°07.7' N and 127°32.8' W, near Theodore Point, then westerly following the Vancouver Island shore to 50°08.75' N and 127°38.6 W on the east side of Nasparti Inlet, then westerly across Nasparti Inlet to 50°08.7' N and 127°37.8' W on Vancouver Island, then following the shoreline of Vancouver Island to the beginning point. (Ecological Reserve)

3.3.26.2. Kyuquot Sound Marine Communities Study Area: Those waters consisting of:

Kyuquot Bay: A portion of Subarea 26-6 inside or northerly of a line from White Cliff Head to Racoon Point; and

Entrance to Crowther Channel: From the western point of Union Island at 50°0.35' N and 127°19.29' W, northerly along the shoreline to 50°0.50' N and 127°19.25' W, then westerly to a point on an island at 50°0.52' N and 127°19.29' W, then along the western shoreline to 50°0.58' N and 127°19.35' W, then westerly to a point on an island at 50°0.58' N and 127°19.40' W, then along the western shoreline to 50°0.71' N and 127°19.60' W, then south-westerly to a drying rock at 50°0.45' N and 127°20.18' W, then south-easterly to the point of commencement. (Research Area)

3.3.27. Area 28 Closures

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

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

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

3.3.27.4. False Creek (Subarea 28-8). (Navigation)

3.3.27.5. Burrard Inlet (Subarea 28-10). (Navigation)

3.3.28. Area 28 Glass Sponge Reef Closures

3.3.28.1. Defence Islands, Howe Sound: That portion of Subarea 28-4 that lies inside the following lines: begins at 49°34.102'N and 123°17.070'W, then southerly to 49°33.730'N 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. (Glass Sponge Reef Conservation Area)

3.3.28.2. Queen Charlotte Channel #1: That portion of Subarea 28-2 that lies inside the following lines: begins at 9°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 and 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. (Glass Sponge Reef Conservation Area)

3.3.28.3. Queen Charlotte Channel #2: Those portions of Subareas 28-2 and 29-3 that lie inside the following lines: begins at 49°20.288'N and 123°17.693'W, then southeasterly to 49°20.2249'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. (Glass Sponge Reef Conservation Area)

3.3.28.4. Queen Charlotte Channel #3: Those portions of Subareas 28-2 and 29-3 that lie inside the following lines: begins 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. (Glass Sponge Reef Conservation Area)

3.3.29. Area 28 Glass Sponge Reefs Advisories

DFO is asking for voluntarily avoidance of the following areas from all bottom contact fishing, including prawn and shrimp trap fishing, until further scientific analysis and consultations regarding protection measures can occur. An overview map is provided in Appendix 11.

3.3.29.1. East Defence Island (#1): That portion of Subarea 28-4 that lies inside a line that begins at 49° 34.716' N and 123° 16.430' W then northeast to 49° 34.717' N and 123° 16.384' W, then southeast to 49° 34.633' N and 123° 16.372' W, then northwest to 49° 34.641' N and 123° 16.425' W, then to the beginning point.

3.3.29.2. East Defence Island (#2): That portion of Subarea 28-4 that lies inside a line that begins at 49° 34.770' N and 123° 16.312' W, then true east to 49° 34.770' N and 123° 16.261' W, then southeast to 49° 34.647' N and 123° 16.214' W, then northwest to 49° 34.648' N and 123° 16.311' W, then to the beginning point.

3.3.29.3. Anvil Island: That portion of Subarea 28-4 that lies inside a line that begins at 49° 32.790' N and 123° 17.343' W, then southeast to 49° 32.788' N and 123° 16.955' W,

then southwest to 49° 32.572' N and 123° 16.978' W, then northwest to 49° 32.574' N and 123° 17.345' W, then to the beginning point.

3.3.29.4. Lost Reef: That portion of Subarea 28-2 that lies inside a line that begins at 49° 29.801' N and 123° 18.059' W, then northeast to 49° 29.857' N and 123° 17.957' W, then southeast to 49° 29.651' N and 123° 17.737' W, then southwest to 49° 29.633' N and 123° 17.885' W, then to the beginning point.

3.3.29.5. Brunswick Point: That portion of Subarea 28-2 that lies inside a line that begins at 49° 28.384' N and 123° 15.181' W, then northeast to 49° 28.479' N and 123° 14.987' W, then southeast to 49° 28.417' N and 123° 14.870' W, then southwest to 49° 28.315' N and 123° 15.038' W, then to the beginning point.

3.3.29.6. Lions Bay: That portion of Subarea 28-2 that lies inside a line that begins at 49° 27.483' N and 123° 15.611' W, then northeast to 49° 27.499' N and 123° 15.420' W, then southeast to 49° 27.239' N and 123° 15.347' W, then southwest to 49° 27.227' N and 123° 15.536' W, then to the beginning point.

3.3.29.7. Kelvin Grove: That portion of Subarea 28-2 that lies inside a line that begins at 49° 27.268' N and 123° 15.047' W, then northeast to 49° 27.290' N and 123° 14.639' W, then southwest to 49° 27.036' N and 123° 14.715' W, then southwest to 49° 27.032' N and 123° 15.037' W, then to the beginning point.

3.3.29.8. Halkett Point: That portion of Subarea 28-2 that lies inside a line that begins at 49° 26.771' N and 123° 18.823' W, then northeast to 49° 26.912' N and 123° 18.660' W, then southeast to 49° 26.879' N and 123° 18.594' W, then southwest to 49° 26.722' N and 123° 18.700' W, then to the beginning point.

3.3.29.9. Bowyer Island: That portion of Subarea 28-2 that lies inside a line that begins at 49° 24.403' N and 123° 16.282' W, then northeast to 49° 24.737' N and 123° 16.113' W, then southeast to 49° 24.676' N and 123° 15.911' W, then southwest to 49° 24.274' N and 123° 16.106' W, then to the beginning point.

3.3.29.10. Dorman Point: That portion of Subarea 28-2 that lies inside a line that begins at 49° 22.485’ N and 123° 19.259' W, then southeast to 49° 22.472' N and 123° 19.191' W, then southwest to 49° 22.391' N and 123° 19.268' W, then northwest to 49° 22.416' N and 123° 19.321' W, then to the beginning point.

3.3.30. Area 29 Glass Sponge Reef Closures

3.3.30.1. Sechelt (McCall) Bank: That portion of Subarea 29-2 that lies inside a line that begins at 49°25.948'N 123°48.889'W, then easterly to 49°25.899'N 123°47.266'W, then to 49°25.373'N 123°46.494'W, then to 49°24.734'N 123°47.083'W, then to 49°24.910'N 123°47.951'W, then to 49°24.253'N 123°48.283'W, then to 49°24.845'N 123°49.914'W, then to the beginning point. (Glass Sponge Reef Conservation Area)

3.3.30.2. Halibut Bank: That portion of Subarea 29-2 that lie inside a line that begins at 49°21.768'N and 123°41.501'W, then southerly to 49°21.174'N and 123°40.045'W, then to 49°20.961'N and 123°40.139'W, then to 49°20.803'N and 123°39.860'W, then to 49°20.565'N and 123°40.182'W, then to 49°21.610'N and 123°41.843'W, then to 49°21.673'N and 123°42.643'W, then to 49°21.895'N and 123°43.908'W, then to 49°22.174'N and 123°44.748'W, then to 49°22.555'N and 123°44.456'W, then to

49°22.188'N and 123°42.167'W, then to the beginning point. (Glass Sponge Reef Conservation Area)

3.3.30.3. Passage Island, Queen's Sound: Those portions of Subareas 28-2 and 29-3 that lie inside the following lines: begins at 49°20.288'N and 123°17.693'W, then southeasterly to 49°20.2249'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. (Glass Sponge Reef Conservation Area)

3.3.30.4. Passage Island, Queen's Sound: Those portions of Subareas 28-2 and 29-3 that lie inside the following lines: begins 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. (Glass Sponge Reef Conservation Area)

3.3.30.5. Passage Island, Queen's Sound: That portion of Subarea 29-3 that lies inside the following lines: begins at 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, then 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. (Glass Sponge Reef Conservation Area)

3.3.30.6. Foreslope Hills, Strait of Georgia: That portion of Subarea 29-3 that lies inside a line that begins at 49°09.634'N and 123°23.048'W, then southeasterly to 49°09.389'N and 123°22.622'W, then to 49°09.187'N and 123°22.587'W, then to 49°09.211'N and 123°23.567'W, then to 49°09.646'N and 123°23.543'W, then to the beginning point. (Glass Sponge Reef Conservation Area)

3.3.30.7. Outer Gulf Islands - Galiano Island: That portion of Subarea 29-4 that lies inside the following lines: 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. (Glass Sponge Reef Conservation Area)

3.3.31. Areas 105, 106, 107, 110 Hecate Strait and Queen Charlotte Sound Glass Sponge Reefs Marine Protected Areas

3.3.31.1. Hecate Strait and Queen Charlotte Sound Glass Sponge Reefs Marine Protected Areas – Northern Reef: Those waters of Subareas 105-2 and 106-1 bounded by a series of rhumb lines drawn from a point 53º11'52.9" North latitude and 130º19'47.2" West longitude, to a point having coordinate values of 53º09'22.0" North latitude and 130º18'53.0" West longitude, then to a point having coordinate values of 53º02'54.5" North latitude and 130º25'16.2" West longitude, then to a point having coordinate values of 53º03'06.9" North latitude and 130º30'35.6" West longitude, then to a point having coordinate values of 53º07'17.8" North latitude and 130º42'03.2" West longitude, then to a point having coordinate values of 53º07'44.5" North latitude and 130º46'26.5" West

longitude, then to a point having coordinate values of 53º13'28.7" North latitude and 130º47'28.7" West longitude, then to a point having coordinate values of 53º19'20.0" North latitude and 130º54'24.2" West longitude, then to a point having coordinate values of 53º24'05.4" North latitude and 130º48'37.8" West longitude then to a point having coordinate values of 53º23'40.7" North latitude and 130º42'52.2" West longitude then to a point having coordinate values of 53º18'42.5" North latitude and 130º38'09.3" West longitude, then to a point having coordinate values of 53º15'20.6" North latitude and 130º33'01.3" West longitude, then back to the point of commencement. (Marine Protected Area)

3.3.31.2. Hecate Strait and Queen Charlotte Sound Glass Sponge Reefs Marine Protected Areas – Central Reefs: Those waters of Subareas 106-2, 107-1, and 107-2 bounded by a series of rhumb lines drawn from a point 52º00'24.4" North latitude and 129º14'12.6" West longitude, to a point having coordinate values of 51º55'50.5" North latitude and 129º18'13.8" West longitude, then to a point having coordinate values of 51º51'32.5" North latitude and 129º36'37.4" West longitude, then to a point having coordinate values of 51º53'00.7" North latitude and 129º44'03.4" West longitude, then to a point having coordinate values of 52º05'14.1" North latitude and 129º36'14.1" West longitude, then to a point having coordinate values of 52º08'46.0" North latitude and 129º33'33.5" West longitude, then to a point having coordinate values of 52º15'42.6" North latitude and 129º44'12.3" West longitude, then to a point having coordinate values of 52º29'35.4" North latitude and 129º52'32.7" West longitude, then to a point having coordinate values of 52º32'05.4" North latitude and 129º53'06.2" West longitude, then to a point having coordinate values of 52º34'05.6" North latitude and 129º47'51.4" West longitude, then to a point having coordinate values of 52º25'42.7" North latitude and 129º35'12.2" West longitude, then to a point having coordinate values of 52º20'02.8" North latitude and 129º29'51.7" West longitude, then to a point having coordinate values of 52º09'52.3" North latitude and 129º25'29.5" West longitude, then back to the point of commencement. (Marine Protected Area)

3.3.31.3. Hecate Strait and Queen Charlotte Sound Glass Sponge Reefs Marine Protected Area – Southern Reef: Those waters of Area 110 bounded by a series of rhumb lines drawn from a point 51º24'44.2" North latitude and 128º47'58.3" West longitude, to a point having coordinate values of 51º18'32.5" North latitude and 128º40'35.6" West longitude, then to a point having coordinate values of 51º14'57.6" North latitude and 128º47'01.2" West longitude, then to a point having coordinate values of 51º14'33.9" North latitude and 128º55'45.5" West longitude, then to a point having coordinate values of 51º17'42.3" North latitude and 129º00'29.0" West longitude, then to a point having coordinate values of 51º19'24.5" North latitude and 129º00'53.6" West longitude, then back to the point of commencement. (Marine Protected Area)

3.3.32. Areas 101 and 142 Closure

3.3.32.1. Bowie Seamount Marine Protected Area: Those waters of Subareas 101-1 and 142-2 inside a line commencing at 53º03'07.6" N and 135º50'25.9" W, to a point 53º16'20.9" N and 134º59'55.4" W, then to a point 53º39'49.2" N and 135º17'04.9" W, then to a point 53º39'18.0" N and 135º53'46.5" W, then to a point 53º52'16.7" N and 136º30'23.1" W on the EEZ Boundary, then following the EEZ Boundary to 53º49'19.6" N and 136º47'33.1" W on the EEZ Boundary, then to a point 53º40'02.5" N and

136º57'03.5" W, then to a point 53º13'59.2" N and 136º10'00.0" W, then back to the point of commencement. (Marine Protected Area)

3.3.33. Areas 123 to 127 and 130 Closure

3.3.33.1. Offshore Pacific Seamounts and Vents Fishery Closure: Those waters within Subareas 123-9, 124-1, 124-2, 125-6, 126-3, 126-4, 127-2, 127-4, and 130-1 described in Fishery Notice 1241 - Offshore Pacific Seamounts and Vents: Commercial and Recreational Bottom Contact Fisheries Closure - Portions of Areas 123 to 127, and 130. (Area of Interest)

3.4. Rockfish Conservation Areas

Rockfish Conservation Areas (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 on the internet at:

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

3.5. Closure Notifications and Announcements

It is the fish harvesters' responsibility to ensure that an area is open before setting gear and to ensure that the area has not closed while their gear remains in the water.

3.5.1. Routine Notification Procedures

Fishery notices of variation orders that open and close fisheries are available on the internet at:

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

Information about closures is also available from a fishery manager (see Contacts Section 14 of the Integrated Fisheries Management Plan for Prawn and Shrimp by Trap), or from a local DFO office. DFO enforcement vessels and industry service provider vessels may also have information about impending closures.

3.5.2. Recorded Announcements

Telephone answering machine recordings are available after office hours and on weekends for North and Central Coast waters at (250) 627-3455 and for South Coast waters and Fraser River / Howe Sound at (250) 756-7233.

3.5.3. Canadian Coast Guard Announcements

Once a week, Canadian Coast Guard will announce current prawn fishery openings and closures. This announcement will only be made if time permits, following regular WX scheduled broadcasts. The announcement may be interrupted or delayed for Search and Rescue (SAR) priorities. Broadcast times are as follows:

Prince Rupert MCTS (south coast – west coast Vancouver Island)	Tuesdays	1915 UTC	1215 DST
Victoria MCTS (south coast – Nanaimo to Juan de Fuca)	Tuesdays	1510 UTC	0710 DST
Victoria MCTS (south coast – north of	Tuesdays	1520 UTC	0720 DST

Nanaimo)
Prince Rupert MCTS (north coast) Tuesdays 1915 UTC 1215 DST

4. MANAGEMENT MEASURES – PRAWN FISHERY

4.1. Species

Prawns and other shrimp species (*Pandalus* species and *Pandalopsis dispar* Sidestripe Shrimp). In this commercial harvest plan, the term prawn refers solely to the Spot Prawn *Pandalus platyceros,* while the term shrimp refers to all other species of shrimp other than prawns.

Fish harvesters are authorized to incidentally catch and retain Octopus *Enteroctopus dofleini* while prawn and shrimp trap fishing except in octopus closure areas (Section 3.3). Conditions of Licence require all fish harvesters to accurately complete octopus catch and retention information in the prawn and shrimp trap logbook.

Prawn and shrimp by trap licence eligibility holders are also permitted to fish for species described in Schedule II Part 2 of the *Pacific Fishery Regulations*. Conditions of Licence for these species are included with all prawn and shrimp by trap licences. Schedule II Conditions of Licence apply even if the catch is only intended for bait. For information regarding the harvest of Schedule II, Other Species please refer to the groundfish IFMP for Lingcod, Dogfish, Sole and Flounder, Skate and Pacific Cod. For information regarding transporting please refer to Part III of the Conditions of Licence.

4.2. Size Limit

The minimum legal size limit for prawns is 33 millimetres carapace length measured from the most posterior part of the eye orbit to the posterior mid-dorsal margin of the carapace (see Appendix 4 for a diagram). Catch shall be sorted and undersized prawns released immediately.

The minimum legal size limit for headed prawns is 22 millimetres telson length, measured along the mid-dorsal line of the telson from the anterior margin to the posterior margin. The telson is the central piece of the tail "fan." This size limit applies **only** to product that has had the head and thorax removed including the carapace. The telson should be measured before "tailing" to ensure that the product will meet the size limit.

Do not assume that a prawn that met the carapace length requirement will also meet the telson length requirement once it is headed. Due to natural variability, some will not. If you will be tailing, measure the telson on the prawn tails before removing the head. Release prawns with undersize telsons, unharmed, immediately.

There is no minimum size for species of shrimp other than the prawn, *Pandalus platyceros*.

Undersized prawns shall be returned to the water immediately. Traps shall be pulled, emptied and undersized prawns sorted out for release, **on a trap by trap basis**. **Waiting until the entire string is pulled before sorting begins is illegal. Prawns may not be kept in a tank or bucket for later sorting and release.** All undersized prawns must be released in the area of capture and shall not be removed from the general location of

capture, prior to release, for any reason. In no instance are prawns to be chemically treated or "dipped" prior to sorting and release of the undersized prawns.

Industry representatives have discussed various means of releasing undersized and berried prawns to increase their survival. In particular, those locations with fresh water runoff on the surface and increased water temperatures may increase mortality. Prawn vessels should have sorting tables to improve the speed with which undersized and berried prawns may be released. Survival may be increased if prawns are released into a bucket or tube on the side of the boat, which extends below the surface through the fresh water layer.

4.2.1. Warning, Undersize Prawns and Wastage of Medium Prawns

DFO is concerned about those fish harvesters who are not using accurate measuring devices or not measuring their prawns at all. Fish harvesters should measure small prawns with a set of inexpensive vernier callipers to ensure that no undersize are retained. DFO recommends that buyers also check product size upon delivery, that undersize prawns are sorted out and not boxed. Investigations by DFO to correct problems will prove disruptive to fish harvesters and buyers.

If reports of dumping small legal sized prawns following landing are received, it will be investigated.

4.3. Berried Females

All prawns carrying eggs externally on the underside of the tail shall be returned to the water immediately and in the manner that causes the least harm. Prawns carrying eggs may not be kept and eggs may not be removed from the underside of prawns carrying eggs. Catch must be sorted as it comes on board and the females released **on a trap by trap basis** and in the manner that causes the least harm. **Waiting until the entire string is pulled before sorting is illegal**. It is recommended that fish harvesters relocate to other grounds if they find that they are catching large numbers of berried females. High proportions of berried females may result in closure.

4.4. Catch Prohibited On Board While Fishing

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.

4.5. Gear

4.5.1. Trap Limits and Groundlines

All traps must be tagged with numbered tags authorized by DFO. Tag numbers must correspond to numbers registered with DFO for that vessel. Registration is accomplished by entry of the information into a DFO database, by means of an internet page provided for this purpose. Vessel owners may make arrangements with the DFO approved service provider for tags and registration of trap tag numbers. The trap tag number shall be registered with DFO within 24 hours of issuance of a trap tag set by the industry service provider.

A single licence may fish a maximum of 300 traps on six groundlines. There is an allowance for an annual transfer of traps from one W / FW licence to another regardless of vessel length or licence configuration for the purpose of transferring trap allocations (Section 6.4). Where a trap allocation has been transferred, 100 traps are relinquished, and the receiving vessel is permitted to fish a maximum of 500 traps on 10 groundlines. The transferring W / FW licence is issued with a trap allocation of zero for the licence year.

The Transportation Safety Board has investigated several fishing vessel accidents and found that loading of traps has been a contributing factor in the capsizing of prawn vessels. Vessel masters are advised to carefully consider stability when transporting gear (Appendix 7 Fishing Vessel Safety). Vessel masters are reminded that a second vessel or skiff may be used to transport gear, provided that all gear setting and hauling is done from the licensed vessel. A code of best practices for the prawn fishery was developed in 2013 and is intended to address unsafe work practices that continue to put fishermen, their crew, and vessels at risk. A copy is available from the Pacific Prawn Fishermen's Association or Fish Safe (see Section 14 Contacts of the Integrated Fisheries Management Plan for Prawn and Shrimp by Trap).

4.5.2. Trap and Groundline Limits in Special Management Areas

Trap limits are reduced in the following SMAs: Howe Sound and Indian Arm (Subareas 28-1 to 28-5 and Subareas 28-11 to 28-14), Salmon and Sechelt Inlets (Subareas 16-5 to 16-8), Alberni Inlet (Subareas 23-1 to 23-3), and Saanich Inlet (Subareas 19-7 to 19-12). Individual W and FW licences are permitted to fish 150 traps on three groundlines. Where a trap allocation has been transferred, the receiving vessel is permitted to fish 250 traps on five groundlines in these areas.

A vessel fishing in both an SMA and in an adjacent non-SMA area at the same time, shall not fish more than a combined total of 300 traps on six groundlines for a single licensed vessel or 500 traps on 10 groundlines for a vessel having received a trap allocation transfer.

4.5.3. Trap and Groundline Limits in Sooke Harbour

A vessel fishing in the Sooke Harbour and Basin coonstripe fishery in the fall may use a maximum of 50 traps. These may be set on groundlines buoyed at each end, or may be single buoyed traps.

4.5.4. Maximum Groundline Length

The maximum allowable length of groundline between each buoy line is two skates (1,100 metres or 3,600 feet).

4.5.5. Gear Hauling Limits

Trap gear may be hauled only once per day. This applies to all parts of the gear.

Holding cages may be hung on the same buoy and line as trap gear. However, the stipulation that the fishing gear may only be handled once daily also applies to the holding cages if they are on the same buoys and lines as trap gear.

4.5.6. Marking of Gear

Following the opening of the season, all prawn traps on board the fishing vessel, with the exception of replacement gear described in the subsequent paragraph, must be tagged with prawn trap tags. Tag numbers must correspond to numbers registered with DFO for use by that vessel, by means of the DFO internet page and database established for that purpose. Tags must be securely fastened and attached to the frame or webbing of the trap such that it is visible from the outside, without opening the trap. New tags issued by the service provider will be required each year.

Trap tags are only available from the industry service provider. DFO does not issue tags and does not issue replacement tags in-season.

All previous trap tags shall be removed from the traps when new trap tags are attached. Once tag replacement begins, no trap may be returned to the water until the tag has been replaced and all previous tags removed. Once tag replacement begins, all tags are required to be replaced within 96 hours.

4.5.7. Replacement Traps on Board

Replacement traps may be carried provided that they are in a non-fishable condition as follows: no tags are to be attached and there must be no snaps on the bridles or any other means of immediately attaching the replacement trap to the groundline, until such time as it is needed for replacement purposes.

4.5.8. Buoys

Prawn gear must be marked at both ends of the groundlines by 127 centimetre (50 inch) circumference or larger, red, or orange buoys or by 10 centimetre diameter x 122 centimetre (4 inch x 48 inch) white PVC pipe weighted at one end and painted orange at the other. The latter has been recommended by industry representatives for use in areas of frequent boat traffic.

The commercial fishing vessel registration number (VRN) and the letters PRN or PRNS, must be painted or otherwise affixed to each buoy such that it is visible at all times without raising the gear from the water. PRN will signify gear being fished from a vessel holding a W or FW licence with an allotment of 300 traps. PRNS is required to identify gear for those vessels fishing a W or FW licence with an allotment of 500 traps. The VRN shall be in solid black Arabic numerals, without ornamentation. Numbers and characters shall not be less than 75 millimetres in height. Improperly marked gear may be removed from the water.

The vessel name may also be displayed. The DOT licence number shall not be displayed on buoys or PVC pipes, in order to avoid confusion with the VRN.

Fish harvesters may add single identifying numbers, letters or symbols to pairs of buoys so that other vessels can better tell where groundlines are located if this may help to reduce oversetting. Any marking shall not obscure the VRN.

Buoys or PVC pipe labelled, as described above, with PRN or PRNS and the VRN shall only be attached to groundlines that have prawn and shrimp traps attached. At the request of the prawn industry and to reduce conflicts between harvesters, setting additional buoys to stake ground is not permitted.

Holding cages hung on separate buoys must be marked with vessel name, VRN, and the word "CAGE". The VRN shall be in solid black Arabic numerals, without ornamentation. Numbers and characters shall not be less than 75 millimetres in height.

4.5.9. Buoys – Sooke Coonstripe Fishery

Individual traps in the Sooke Coonstripe Shrimp trap fishery may be marked with individual bullet floats. The minimum bullet float size is 10L. The VRN and the letter W must be painted or otherwise affixed to each buoy such that it is visible at all times without raising the gear from the water. The VRN and the letter W shall be in solid black Arabic numerals, without ornamentation. Numbers and characters shall not be less than 75 millimetres in height. Improperly marked gear may be removed from the water.

4.5.10. Trap Mesh Size and Biodegradable Escape Mechanism

Traps shall include the following trap escapement modifications except in Subareas 20-6 and 20-7.

Other than the frame, trap mesh must be unobstructed. Trap mesh size requirements apply to the prawn trap fishery and to the Humpback Shrimp trap fishery. Minimum mesh sizes do not apply to the Coonstripe Shrimp trap fishery in Sooke Harbour and Basin, Subareas 20-6 and 20-7.

The trap escapement modifications described below will significantly reduce the capture of undersize prawns but will not totally eliminate them from the catch, particularly in areas when there are high concentrations of small prawns. Fish harvesters are required to sort their catch as each trap comes on board and to release undersized prawns immediately, before the next trap is recovered. Sorting must occur prior to any transfer of catch to live tanks, buckets or other holding devices.

4.5.10.1. Web or Soft Mesh Traps

Web or soft mesh traps shall be covered with a single layer of mesh. The mesh shall measure a minimum of 38.1 millimetres (1 1/2 inch). Mesh size is measured as described in the definition section of the *Pacific Fishery Regulations, 1993* as follows: "means the total length of twine measured along two contiguous sides of a single mesh, including the distance across the knot joining those sides but not including any other knots." All mesh used in the trap including the tunnels must conform to this minimum size. Other than the trap frame, trap mesh must be unobstructed.

Industry representatives have recommended tools for fish harvesters to make a quick assessment of soft web mesh size. This is a "flat slat" made out of high-density nylon or other equivalent material 38 millimetres wide (1.5 inch), 3 millimetres thick (1/8 inch), and as long as may be convenient (6 inch), tapered at one end. If the flat slat cannot be pushed through the mesh, or if it is difficult to do so, then the mesh is likely too small. This is not a legal measuring device; however, fish harvesters can use the flat slat as a quick check. A ruler may also be used. Vernier callipers are the legal measuring tool for determination of legal mesh size. Fish harvesters are encouraged to check their gear in advance of the fishing season and to check the web when receiving new traps or re-webbed traps from suppliers. If the trap mesh appears to be undersize when checked by DFO personnel during the fishing season, traps may be collected for further testing and

for legal procedures, or the fish harvester may be requested to remove all gear from the water for inspection.

DFO is concerned about fish harvesters using stretched and distorted web to reduce the sorting efficiency of web traps.

The sort area on these traps is considered to be the lower 15 centimetres of the side wall above the bottom ring. It is recommended that mesh on the trap be constructed, so that upon insertion, a high density round plastic peg that is 19 millimetres (3/4 inch) in diameter and 20.3 centimetres (8 inch) long, weighing no less than 50 grams and no more than 60 grams, will drop completely through the web by its own weight. The bottom of the trap may also be important for sorting. DFO will continue to assess this and additional measures will be introduced if sorting appears to be compromised by mesh stretching or bunching.

4.5.10.2. Wire Mesh Traps

These traps must have either/or:

Four opposing tunnels constructed of an unobstructed rigid square mesh material having a minimum dimension (after dip coating) that will allow the passage of a 22.2 millimetre (7/8 inch) square peg through the mesh without altering the shape of the mesh opening. The lower side of each tunnel must extend to the bottom edge of the trap and must be at least one-half the length of the trap side.

The bottom and two opposing sides must be constructed of an unobstructed square mesh material that will allow the passage of a 19 millimetre (3/4 inch) square peg through the mesh without altering the shape of the mesh opening.

The bottom and all sides must be constructed of an unobstructed square mesh material that will allow the passage of a 22.2 millimetre (7/8 inch) square peg through the mesh without altering the shape of the mesh opening.

4.5.11. Biodegradable (“Rot”) Cord

All prawn traps shall contain a biodegradable escape mechanism to allow bycatch to escape in the event traps are lost.

Web and soft mesh traps shall contain an opening equal to or exceeding 30 cm in length. The opening shall be within 15 cm of the bottom of the trap and parallel with the bottom frame. The opening shall be laced, sewn, or otherwise secured by a single strand of no greater than #30 untreated cotton twine. The cotton twine shall be knotted at each end only. The twine shall not be tied or looped around the frame of the trap.

Wire or hard mesh traps shall have a biodegradable (“rot”) panel. The rot panel shall consist of a section in a trap side wall that has been laced, sewn, or otherwise secured by a single strand of no greater than #30 untreated cotton twine, such that the entire panel remains under tension when the panel is intact but on deterioration or parting produces an unrestricted opening. The opening shall exceed a square 11cm by 11cm.

4.5.12. Maximum Allowable Trap Size

No web or soft mesh trap with a volume greater than 170 litres is permitted. No wire or hard mesh trap with a volume greater than 100 litres is permitted except those traps

constructed with the bottom and all sides with a mesh that will pass a 22.2 millimetre square peg, which may have a volume no greater than 170 litres. All measures are determined from the outside dimensions of the trap. These measures include tunnel volumes.

Maximum volumes by trap type have been adopted to prevent the practice of "trap doubling," which is the practice of tying two traps together to be fished as a single unit. This practice was deemed to circumvent the intent of the trap limitation management provisions in this fishery.

The Transportation Safety Board has expressed concern for large diameter heavier traps. The future use of traps with a wet weight greater than 7 kg (rigged, no bait) may be prohibited. Fish harvesters should make sure they have registered their number of "heavy traps" with the Lead Fishery Manager (L. Convey at 250-756-7233).

4.5.13. Maximum Allowable Trap Size, Sooke Coonstripe Fishery

Cedar lathe traps may be used in the Sooke Coonstripe Shrimp trap fishery, with a maximum volume of 230L. Trap volumes are based on the overall outside dimension of the trap, inclusive of the frame and the tunnels.

4.5.14. Recovery of Lost Trap Gear

In-season, a W or FW licensed vessel may not carry, set or recover tagged traps for another W or FW licensed vessel.

If a fish harvester locates and recovers their own lost gear, all catch must be released. Recovered traps must be emptied and rendered non-fishable immediately as they come on board. Alternatively the fish harvester may attach a marker and line to the gear and advise a DFO manager or fishery officer of the location of the gear. Lost gear may not be recovered after the season has closed. Contact the local DFO fishery office.

4.5.15. Fishing Gear Conflicts

Commercial harvesters are required to exercise care when setting gear near recreational and First Nations' FSC fishing gear. Fouled gear should be untangled without cutting and returned to the water intact. If a line must be cut, it should be the commercial harvester's line.

Continued gear conflict with recreational and First Nations harvesters will lead to closure requests from that sector or First Nations. DFO's preference is to provide a mutually satisfactory harvest experience for all user groups through respect of the other person's gear and fishing practices, rather than invoking closures to separate fishing effort.

4.5.16. Extra and Replacement Sets of Trap Tags

4.5.16.1. Additional Tags

The licence holder or vessel master may receive additional tags with the main tag set. These additional tags are only to be used as required to replace tags on traps lost on the grounds. A fishery officer or guardian may request to see the unused tags. Vessels are permitted to fish only the maximum number of traps specified on the licence, and may not use the additional tags to increase gear in the water greater than the licence limits.

4.5.16.2. Full Replacement Sets

In-season full replacement tag sets are available from the industry service provider. They are not available from DFO. Once installation of the new tags has commenced, all tags must be replaced and no traps can be returned to the water with old tags attached to them. All previously issued tags must be removed from the gear.

4.6. Whale Encounter Protocols and Reporting Marine Mammal Interactions

If a marine mammal becomes entangled in fishing gear, immediately log your coordinates and contact the Marine Mammal Incident Hotline 1-800-465-4336 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.

In 2018, 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.

A marine mammal interaction reporting form is available in Appendix 6.

4.7. Basking Shark Entanglement Protocols

Incidental entanglement of 'endangered' Pacific Basking Sharks (*Cetorhinus maximus*) in trap lines is rare but may occur. Pursuant to subsection 73(2) (c) through 73(6) of the *Species at Risk Act* (*SARA*), the vessel master must ensure that every measure is taken to avoid the incidental entanglement of basking sharks while conducting prawn and shrimp fishing activities, that fishing gear is not set or hauled when a Basking Shark is within 10 m of the fishing vessel and/or visible at the water's surface, and that any live Basking Shark entangled in fishing gear is released in a manner that causes the least harm to the shark.

Should a shark entangle in trap lines, assess whether the shark is alive or dead and in good (e.g. active swimming, minimal wounds) or poor (e.g. sluggish, visibly wounded) condition. Proceed accordingly, and with extreme caution. Always avoid the strong caudal (tail) fin, which can cause injury by thrashing.

If the shark is alive, attempt to disentangle the shark as quickly as possible, and in a manner that causes the least amount of harm to the animal.

a.) Maneuver your boat as close to the shark as possible without causing further injury or entanglement. Turn off your engine, if possible, or switch it into neutral.

b.) Grapple the line, and bring the shark as close to the side of the boat as possible.

c.) Pull the line to restrict the shark's movement. Hold the shark firmly against the side of the boat, preventing it from thrashing further. Avoid the use of restraining devices such as straps, tail ropes, gaffs, etc. Do not hold the shark by its gills. This may cause serious injury. Do not attempt to bring the shark onboard the vessel.

d.) Try to unwind the line without cutting it. If you cannot untangle the line from the shark without cutting it, use a gaff to pull the line away from the shark before cutting the line free.

Document all entanglement encounters in the harvest logbook and notify DFO of the encounter through the Basking Shark Sightings Network (1-877-507-4275). Dead basking sharks cannot be retained and must be disentangled from the fishing gear and discarded at-sea.

4.8. Multi-licensed Vessels

Where a Prawn and Shrimp by Trap (category W or FW) licensed vessel also holds a Shrimp Trawl (Category S or FS) licence eligibility, all shrimp including prawns caught under the authority of the S or FS licence must be offloaded prior to that vessel fishing under the authority of the W or FW licence. Likewise, all prawns caught under the authority of the W or FW licence must be offloaded before fishing commences under the authority of the S or FS licence.

5. MANAGEMENT MEASURES - HUMPBACK AND COONSTRIPE FISHERIES

5.1. Prince Rupert Harbour and Masset Inlet Humpback Fisheries

A directed fishery for Humpback Shrimp (*Pandalus hypsinotus*) occurs in Subareas 4-10 and 4-11 (Prince Rupert Harbour) and may occur in Subarea 1-6 (Masset Inlet) by request. Prawns may not be retained or possessed in these fisheries. Vessels must offload all prawns prior to fishing Humpback Shrimp in these areas. Trap limits, tag requirements, groundline limits, minimum mesh size, hail and set/haul location, and vessel location requirements are in effect (Section 4).

The Prince Rupert Harbour Commission and the Prince Rupert Harbour Humpback Shrimp harvesters requested a later opening date of September 1 for this fishery commencing in 2003. This was reviewed and unanimously agreed to by elected industry representatives. DFO supported this change as it allows for increased growth of the shrimp prior to harvest (reduces growth over fishing), improving catch weight and value.

The Minister wrote in 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.” It also includes: “industry is responsible for providing biological, management, and assessment information that will lead to the proper understanding of this fishery and of these stocks.” Accordingly, additional fishing effort on Humpback Shrimp will only be considered where there is a scientific plan established to collect stock assessment information, supported by funding from industry.

Humpback Shrimp samples are required from Prince Rupert Harbour, as discussed with local harvesters and industry representatives in 2003. Results from the pilot study in 2003 indicated that index sampling may be an effective management tool, however, base index levels need to be determined. Beginning in 2004, fish harvesters participating in the Prince Rupert Harbour Humpback Shrimp trap fishery have been required to make

arrangements for the collection of samples by observers. Each participating fish harvester is required to arrange for one day of observer sampling. The W or FW licence issued in April does not include fishing access to Prince Rupert Harbour. Prior to the September opening, fish harvesters must make arrangements for extra observer sampling, vessel monitoring system (VMS) coverage and request amended Conditions of Licence through NOLS to allow for fishing Humpback Shrimp by trap in Prince Rupert Harbour.

The use of small mesh in humpback shrimp trap fisheries was discontinued in 1999. Prior to this, catch per unit effort (CPUE) had plummeted. With the adoption of larger mesh, CPUE has improved. Total annual catches have stabilized at approximately 22,680 kg (50,000 lbs), comparable to or greater than historic landings. DFO received a request for a return to small mesh in this fishery for 2006. This request was refused on the basis of risk to sustainability of the fishery. Humpback Shrimp data was reviewed in a research paper by DFO Science in 2006.

5.2. Sooke Harbour and Basin Coonstripe Fishery

A directed fishery for Coonstripe (or Dock) Shrimp (*Pandalus danae)* occurs in Subareas 20-6 and 20-7. The fishery has occurred from November 1 to December 31. Prawns may not be retained or possessed in this fishery. Tag requirements and hail requirements are in effect (Section 4). A maximum of 50 traps per vessel may be fished. Traps may be set on groundlines or individually buoyed. There is no minimum mesh size requirement for traps used in this fishery.

Industry representatives have expressed interest in the past in varying fishing times in this fishery. The commencement date may be varied but there is insufficient biological information to extend the length of the fishing period beyond 2 months. Fish harvesters who want to contribute through the collection of on-board samples with DFO or observers are invited to contact DFO prior to the fishery opening.

6. LICENSING

6.1. National Online Licensing System (NOLS) Client Support - Licensing Services

All fish harvesters/licence holders/vessel owners are now required to use 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 (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 (7:00 AM to 8:00 PM Eastern, Monday to Friday).

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

6.2. Licence Category

A prawn and shrimp by trap, category W or communal commercial category FW licence is required to commercially harvest prawn and shrimp by trap gear.

Category W licence eligibilities are limited entry and vessel based. Category FW licence eligibilities are limited entry and party based; a First Nations group is the licence eligibility holder and the eligibility must be designated annually at the time of licencing to a commercially registered fishing vessel that meets maximum vessel length restrictions.

6.3. Licence Fees

The annual licence application fee for a commercial, category W, licence is $320.00. There is no annual licence fee for a communal commercial, category FW, licence.

6.4. Licence Application and Issuance

Licence renewal and payment of fees are mandatory on an annual basis prior to the expiry date of December 31st in order to maintain eligibility in the future. Licence eligibility will cease if not renewed annually.

Upon DFO receiving the required payment and information, and the licence has been issued, notification will be sent via email to advise Licence Holders that a change has been made to the licence holder's online account. The licence documents, licence conditions and receipt are available to be printed at that time.

Prior to annual application for either a category W or FW licence, please ensure:

a.) Any Ministerial conditions placed on the licence eligibility are met;

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

c.) Any application for transfer of a trap allocation has been submitted by **April 30, 2018**.

6.5. Licence Documents

Prawn and Shrimp by Trap licence documents are valid from the date of issue to December 31st. Replacements for lost or destroyed licence documents may be obtained by reprinting the licence document through the NOLS.

6.6. Trap Re-allocation

Temporary transfer or trap re-allocation is permitted on an annual basis. Where a trap allocation is transferred to another vessel, 100 traps are relinquished and the receiving vessel may fish a maximum of 500 traps. The transferring W / FW licence is issued with a trap allocation of zero for the licence year. Application for transfer of a trap allocation will only be accepted prior to payment for licence renewal. This applies to both vessels.

For 2018, application for transfer of a trap allocation must be submitted using NOLS by **April 30, 2018**, without exception. Applications submitted after April 30, 2018 will not be accepted.

6.7. 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 Section 14 of the Integrated Fisheries Management Plan for Prawn and Shrimp by Trap).

6.8. Vessel Replacement

Only one shrimp & prawn by trap licence is allowed on a vessel at a time.

Replacing vessels may not exceed the overall length of the existing vessel.

Category W licence eligibilities become married to other vessel based licence eligibilities when combined on a vessel.

6.9. Fish Buying Station Licence and Transporting Licence Requirements

When product is transferred from one vessel to another vessel or a vehicle, that vessel or vehicle requires a provincial Fish Buying Station licence. This licence is required for all types of vessels and vehicles, including aircraft. The licence may also be required for personal vehicles in some instances, when a vehicle is carrying the catch from more than one vessel, even if the licence holder owns both vessels. Fish harvesters should contact the Ministry of Agriculture and Lands, Courtenay Access Centre (250) 897-7540, for additional information.

Information is available on the internet at:

www.frontcounterbc.gov.bc.ca/info/

If catch is transferred from a category W or FW licensed vessel to another vessel, the receiving vessel must have a commercial fishing licence or a transporting, category D, licence issued under *Pacific Fishery Regulations*, Part II, Section 24.

A category W or FW licensed vessel may not transport prawns and shrimps for another W or FW licensed vessel (Section 4.4).

7. CONTROL AND MONITORING OF COMMERCIAL FISHING ACTIVITIES

7.1. Requirement to hail out

Vessel masters must arrange for fishing commencement information, or hail out, to be provided by the industry service provider, Monday to Friday 8:00 a.m. to 4:00 p.m. to DFO by means of an internet reporting system established for this purpose.

The vessel master shall have the industry service provider notify DFO prior to commencement of fishing of the following:

a) Vessel name, vessel master's name, and VRN;
b) The time and date the report was made;
c) The name of the person supplying the information from the vessel;
d) The name of the person who entered the information into DFO's Internet Access database on the vessel master's behalf;
e) The date for which the report is effective;
f) Management Subareas (as defined in the *Pacific Fishery Management Area Regulations, 2007*) to be fished;
g) Time and date that fishing will commence;
h) Set and haul validation number; and
i) The hail verification number issued by the industry service provider to the vessel master.

Fishing may not commence until a hail has been made and a hail verification number received.

Vessel masters must provide set and haul information for in-season assessment of effort and for the deployment of industry service provider observers (Section 7.2). Prior to fishing, vessel masters must acquire a set and haul validation number from the industry service provider.

Vessel masters using a DFO-approved VMS which integrates the set and haul programming will obtain a set and haul validation number from the industry service provider.

Vessel masters using a DFO-approved VMS which does not integrate the set and haul programming, must contact their industry service provider to obtain a set and haul validation number by phoning 1-866-930-4000 and arrange for set and haul information to be transmitted to the industry service provider within five minutes of each set and haul throughout the fishing season.

7.1.1. Fishing Activity Location Reports

All vessels are required to have a fully operational DFO-approved VMS and to report the geographic position (latitude and longitude) of the vessel, date and time corresponding to this position, and Communication Service Provider identifier for the VMS unit. This information shall be reported automatically to the DFO Vessel Monitoring Operations Centre (Newfoundland) every 15 minutes throughout the season, from the time the vessel leaves port for the first fishing trip until it returns to port and all catch on board the vessel is offloaded after its last fishing trip. A list of DFO-approved VMS units can be found at: www.nfl.dfo-mpo.gc.ca/e0011108 or by contacting DFO by telephone at 1 (709) 772-5789 or Toll Free at 1 (888) 772-8225.

A completed DFO National VMS Form shall be faxed to DFO at 1 (709) 772-5787 **not less than two business days** before commencing fishing for each VMS unit installation, replacement, transfer, or change to the licence holder.

The DFO National VMS Form is available on the internet at:

http://www.nfl.dfo-mpo.gc.ca/e0010178

In event the VMS unit or equipment becomes inoperative, is turned off, or malfunctions, the industry service provider must be notified immediately by telephone at 1-866-930-4000 Monday to Friday 8:00 a.m. to 4:00 p.m. and provide the following information:

a) Vessel name, vessel master's name, and VRN;
b) The date and time of sailing;
c) The port of landing; and
d) The telephone number where the vessel master can be reached.

A back-up VMS unit must be activated within 72 hours of the malfunction. A back-up VMS unit may be obtained by phoning 1-866-930-4000 and provide the following information:

a) Vessel name, vessel master's name, and VRN;
b) The telephone number where the vessel master can be reached.

Once 72 hours from the malfunction has elapsed, fishing may only resume once the VMS unit is turned on and fully operational or when the vessel master has received approval from DFO.

In the event of a VMS unit failure where a vessel carries two or more approved VMS units on board, it is the responsibility of the vessel master to immediately notify DFO that a secondary unit is being activated and subsequently ensure it is fully operational, turned on and in use before resuming fishing activity.

7.2. Information Reports from Sea (Spawner Index Sampling)

Vessel masters shall arrange to have information about fishing operations and spawner index information reported to DFO or the industry service provider as required.

During the course of the season, each vessel must provide a Fishing Operations At-sea Report and data from spawner index samples collected by the industry service provider observers during fishing operations. Each spawner index sample consists of a sample of one complete string of gear which has been set for a minimum of 12 hours, with a minimum of every fourth trap contributing to the sample. A minimum of 12 traps is sampled from each string of gear. Species, number and weight of all rockfish bycatch caught in the string that is sampled for spawner index data must also be provided. A minimum of 45 traps shall be hauled from the water and examined for the purposes of completing the Fishing Operations At-sea Report.

Set and haul data must be provided to the industry service provider during fishing operations. The set and haul data must include:

a) Vessel name;
b) VRN;
c) Activity: set or haul
d) GPS source: GPS device or manual entry;
e) Vessel GPS location (latitude and longitude);
f) String GPS location (latitude and longitude);
g) Subarea of string location;
h) Communication Service Provider Number;
i) UTC date and time (yyyy-mm-dd, HH:MM:SS);

j) Speed (knots);
k) Heading; and
l) International Mobile Station Equipment Identifier (IMEI).

Set and haul data must be transmitted to the industry service provider not later than five minutes following the setting or retrieval of each string of gear.

A DFO-approved VMS unit (Section 7.1.1) which integrates the set and haul programming shall automatically provide vessel location data every 15 minutes to the industry service provider, and the vessel master shall enter the set and haul data of a given set or haul activity using the facilities of the VMS unit.

The vessel master using a DFO-approved VMS unit which does not integrate the set and haul programming, shall provide the set and haul data by sending the information by electronic mail to prawnsethaul@jothomas.com, or by phoning 1-866-930-4000 and providing the information verbally. The Communication Service Provider Number and IMEI are not required for verbal reports. Contact the industry service provider to make arrangements to provide vessel location.

Providing this information will reduce search time, improve opportunities for sampling, and avoid unnecessary closures by DFO due to lack of information. Fish harvesters are encouraged also to maintain communications with their industry service provider's local observer vessels when they are fishing. **DFO will close fishing areas if there is insufficient sampling because observers cannot locate vessels and gear.**

7.3. Catch Reporting

7.3.1. Harvest Log Data

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

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

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

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

Fisheries & Oceans Canada
Shellfish Data Unit
Pacific Biological Station
3190 Hammond Bay Road
Nanaimo, B.C., V9T 6N7

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

As an alternative to harvest log provision through a service provider, the vessel master may provide a hard copy log in the same form and providing the same particulars as shown in the fishing log sample Appendix 5: Example of Prawn and Shrimp by Trap Harvest Log. The vessel master 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 DFO on Shellfish Data Unit approved media. All media will remain the property of DFO. The electronic copy must be a database table of specific design created by Microsoft Access 2010 (or earlier version).

Contact the Shellfish Data Unit at the above address to obtain the full requirements and acceptable data formats that meet the Conditions of License. The hard copy and the electronic copy of the harvest log must be forwarded within 28 days following the end of the month in which fishing occurred. This information must be sent to the above address.

For enforcement purposes, information regarding the latitude and longitude of each string of fishing gear, and the haul time of that gear shall be entered in the logbook within ½ hour (30 minutes) of the string being hauled and prior to any additional hauling of gear. The latitude and longitude shall be entered in the "location" field of the harvest log. The time of haul shall be entered in the "time of haul" field. This information shall be entered on a string by string basis.

The remaining logbook harvest information must be recorded in the harvest log by 23:59 hours 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.*

7.3.1.1. Submission and Release of Harvest Log Data

The licence eligibility holder is responsible to ensure that the vessel master has completed and submitted a copy of the harvest log data. DFO can only release harvest log data to the licence eligibility holder of record reported with the Pacific Fishery Licence Unit, and only upon written request.

7.3.1.2. Nil Report for Harvest Log - License Issued but not Fished

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

DFO reminds harvesters that harvest logs must be completed accurately during fishing operations and submitted to DFO in accordance with the timing set out in Conditions of License. Delay of completion or submission of logs is a violation of the Conditions of License.

7.3.1.3. Confidentiality of Harvest Data

Harvest data, including fishing location data supplied through latitude/longitude co-ordinates, collected for use under the harvest logbooks for shellfish fisheries programs are used by DFO in the proper assessment, management and control of the fisheries.

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

7.3.2. Fish Slip Requirements

An accurate written report shall be submitted by the vessel master on a fish slip of all fish and shellfish caught. A written report must be submitted 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
Fisheries Management Branch, Regional Data Unit
200 - 401 Burrard St.
Vancouver, B.C. V6C 3S4

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

www.pac.dfo-mpo.gc.ca/stats/fishslips-carnets/index-eng.html

Phone (604) 666-2716 for more information.

8. GENERAL INFORMATION

8.1. Rockfish and Assistance to At-Sea Observers

The commercial prawn and shrimp trap fishery has been allowed to continue fishing in the RCAs with the collection of by-catch information. Observers are required to identify and record all of the rockfish caught in strings of gear that are sampled for spawner index data. This applies coast-wide. To accomplish this, while an observer is on board, the vessel master or crew is requested to put all rockfish from the sample string into a holding bucket for later identification and counts by the observer. Vessel masters or crew who are experienced in rockfish identification are requested to assist the observer. Additional strings may not be hauled until the rockfish data recording is complete, unless other arrangements have been made with the observer. It is understood that this may cause some delays on board. However, collection of the data is essential to allow the prawn trap fishery to continue within the RCAs.

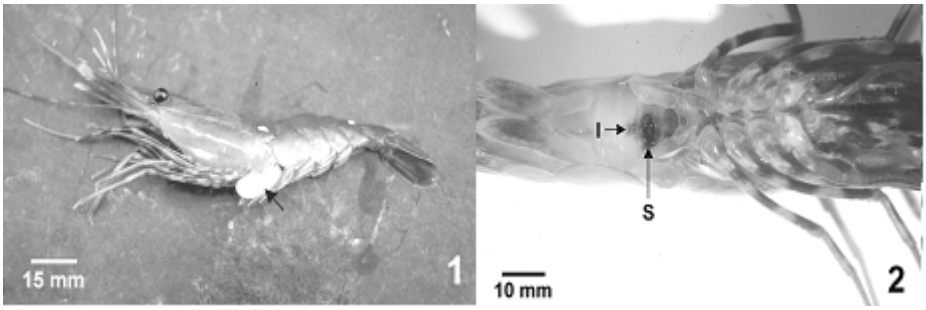
In addition, vessel masters and crew are invited to identify to the elected industry representatives or the Pacific Prawn Fishermen’s Association those types of traps and bait combinations which appear to capture, or reduce, the greatest numbers of rockfish.

Maps of RCAs are available at:

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

8.2. Sylon Parasites and Live Transport of Prawns

Live transport of prawns from northern and central coast areas could result in the unintentional introduction of a parasitic barnacle, *Sylon sp.* (see pictures below), to southern waters where it is currently not known to occur on prawns. Introduction of this parasite could occur through the release of viable larvae in water discharged from live holding tanks. Precautions can be taken by disinfecting all seawater in which prawns are transported, prior to discharging holding tanks.



Examples of sylon parasites on prawns.

Contact the following for more information:

Gary Meyer
Pacific Biological Station
Nanaimo, B.C. V9T 6N7
Phone: (250) 756-7000

More information is available on the internet at:

http://www.dfo-mpo.gc.ca/science/aah-saa/diseases-maladies/sylonsp-eng.html http://www.pac.dfo-mpo.gc.ca/science/species-especes/shellfish-coquillages/diseases-maladies/toc-eng.htm - shr

8.3. On-Board Freezing

Prawns and shrimp may be frozen at-sea (FAS) on the catcher vessel only. They may be transferred to a second vessel only after freezing is complete (for FAS product), or as live or fresh product. The receiving vessel requires a commercial fishing licence or a transporting, category D, licence issued in accordance with the *Pacific Fishery Regulations*, Part II, Section 24. Prawn and shrimp trap vessels may not transport prawns or shrimp caught by another vessel (Section 4.4).

In order to be eligible for export outside of BC, all (live or frozen) prawns and shrimp must be processed in a facility federally registered with the Canadian Food Inspection Agency (federal *Fish Inspection Regulations*, Section 14). The Quality Management Plan (QMP) enacted by the federally registered processor must employ adequate controls from harvest, through transportation, holding and processing. Refer to Appendix 8 Canadian Food Inspection Agency Prawn and Shrimp Sanitary Guidelines.

Provincial regulations apply to non-federally registered facilities processing prawns and shrimp for sale within BC. Contact the Ministry of Agriculture and Lands, Courtenay Access Centre at (250) 897-7540.

8.4. Glazed Prawn Sale Requirements

Fish harvesters are reminded that prawns that have been "dipped" or otherwise chemically treated must be done in a manner such that compliance to the *Food and Drug Regulations* and the *Fish Inspection Regulations* is maintained.

Where additives have been used, the additive must be declared in the label's list of ingredients. In the case of sulphites, the name of the actual sulphite used must be declared on the label or box.

Information on labelling requirements is available on the internet at:

http://inspection.gc.ca/food/labelling/food-labelling-for-industry/eng/1383607266489/1383607344939

Sulphite mixtures or other mixtures, which include additives not permitted for that use by Division 16 of the *Food and Drug Regulations*, may only be used via a permit whereby the product will be exported through a fish processing facility federally registered with the Canadian Food Inspection Agency (not simply a cold storage) to a country that permits their use. The permit is issued to the registered processor, as products must be "processed" in a registered plant under an acceptable Quality Management Program to be eligible for export.

For further information, contact the local Canadian Food Inspection Agency fish inspection office:

Burnaby: (604) 666-9904
Victoria: 250-363-3618
Parksville: (250) 248-4772

Commercial fish harvesters are reminded that a Fisher Vendor Licence is required to sell prawns or shrimp directly to the public for that person's personal use. Fish harvesters should contact the Ministry of Agriculture and Lands, Courtenay Access Centre at (250) 897-7540 for additional information. Information is also available on the internet at:

www.frontcounterbc.gov.bc.ca/info/

8.5. Commercial Vessels Participation in First Nation's FSC Fisheries

There are restrictions on commercial vessel participation in First Nations FSC fisheries authorized under an Aboriginal communal licence. Conditions of the Aboriginal communal licence must be followed.

Commercial vessels are restricted to commercial catch during the commercial fishery.

8.6. Octopus Retention

All fish harvesters are required to accurately report information about the octopus catch. This information is required to develop further understanding of the distribution and strength of octopus species caught by commercial trap harvesters. Failure to provide this

information will result in termination of this fishing privilege. The elected industry representatives encourage all commercial fish harvesters to accurately report octopus catches so that this fishing privilege may continue.

8.7. Groundfish Taken for Bait

Fish harvesters are reminded that any groundfish taken for bait must be caught in accordance with the appropriate groundfish licence and attached Conditions of Licence. Dockside monitoring is an essential element of groundfish stock monitoring and quota management. Therefore, it is required that fish harvesters using any groundfish for bait (e.g. dogfish) land and validate that groundfish catch prior to using it for bait, in accordance with the Schedule II Conditions of Licence under which authority that groundfish species is taken. Hook and line gear is prohibited in RCAs.

Appendix 2: 2018/19 Prawn and Shrimp by Trap Recreational Harvest Plan

TABLE OF CONTENTS

1. RECREATIONAL HARVEST PLAN HIGHLIGHTS AND CHANGES FOR 2018/19

Recreational prawn fishery regulations are described in the British Columbia (BC) Tidal Waters Sport Fishing Guide:

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

1.1 Nine Strait of Georgia and Howe Sound Glass Sponge Reefs Conservation Areas were closed to bottom contact fishing in 2015. In 2018, Fisheries and Oceans Canada (DFO) requests voluntarily avoidance of 10 newly identified Glass Sponge Reefs in Howe Sound from all bottom contact fishing, including prawn and shrimp trap fishing, until further scientific analysis and consultations regarding protection measures can occur. The reefs are located in Subareas 28-2 and 28-4 by Lion's Bay, Anvil Island, Halkett Point on Gambier Island, Bowyer Island, Dorman Point on Bowen Island and the Defence Islands (Section 4.2.2 and Appendix 11).

1.2 All commercial and recreational bottom contact fisheries using bottom trawl, hook and line, and trap gear for groundfish, Halibut, Sablefish, and shellfish closed November 10, 2017 to protect seamount and hydrothermal vents in Subareas 123-9, 124-1, 124-2, 125-6, 126-3, 126-4, 127-2, 127-4, and 130-1. The Offshore Pacific Seamounts and Vents are an Area of Interest for establishment of a Marine Protected Area under the *Oceans Act*. Prawn and shrimp trap fishing does not occur in the area (Section 4.2.10 and Section 4.4.2 of the Integrated Fisheries Management Plan [IFMP] for Prawn and Shrimp by Trap).

1.3 "Berried" refers to female prawns and shrimp that are carrying eggs held under their tails. Effective April 1, 2018, it is a condition of the BC Tidal Waters Sport Fishing Licence that all prawns carrying eggs externally on the underside of the tail shall be returned to the water immediately and in the manner that causes the least harm. Eggs may not be removed from the underside of prawns carrying eggs. Release of berried prawns at the fishing location and careful handling without dropping allows a greater chance of the prawns returning to their preferred habitat for survival (Sections 6.4 and 8.3).

1.4 DFO is working with the Sport Fishing Advisory Board (SFAB) towards adopting standard buoys in the recreational fishery to differentiate prawn and crab fishing gear and to eliminate the use of household plastic containers or blocks of styrofoam as these can often deteriorate in sunlight or waves and sink, contributing to garbage washing up on the shoreline and loss of trap(s) which continue to "ghost fish" for years to come (Sections 6.5 and 8.3).

2. CONTACTS AND SOURCES OF INFORMATION

DFO contacts, including the Recreational Fisheries Coordinator, are listed in Section 14 of the IFMP for Prawn and Shrimp by Trap. SFAB representatives are listed in Section 15.

Information for recreational fisheries is available in the BC Tidal Waters Sport Fishing Guide on the internet at:

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

3. OPEN TIMES

3.1. Coast-wide

The recreational prawn and shrimp by trap fishing season occurs throughout the year from April 1 to March 31. It remains open except for permanent closures (Section 4.2) and seasonal closures (Section 4.1) where recreational fishing effort occurs. If necessary, the seasonal area closures will be established by variation order and announced by public fishery notice (Section 4.3).

4. CLOSURES

4.1. Seasonal Closures

4.1.1. Spawning Closures January 1 to March 31

Seasonal closures may apply in coastal areas in the south coast where recreational effort is focused. These areas are subject to recreational fishing closure during the critical winter spawning period for prawns from January 1 to March 31.

Spawner index surveys are conducted in the fall to determine the status of female prawns prior to spawning. This helps DFO to determine whether a winter recreational harvest is permissible. These areas include waters in or around Quadra / Cortes Islands, Powell River, Malaspina Strait / lower Jervis Inlet, Sechelt / Salmon Inlets, Nanaimo, Stuart Channel, Saanich Inlet, Alberni Inlet / Barkley Sound, Tahsis / Muchalat Inlet and Howe Sound.

Closures will be announced in-season by fishery notice.

4.1.2. May (one-week) and "Pulse Fishing" Closures

Under an adaptive management strategy for prawns developed collaboratively by recreational and commercial fishing representatives and applied in Saanich Inlet and Stuart Channel in early 2006 and later expanded to include Alberni Inlet in 2007, recreational fishing is closed for one week in May to allow the commercial fishery and spawner index sampling to start throughout the area. "Pulse fishing" closures begin in September the first day after Labour Day and continue to the end of December. Pulse fishing entails closures on the 1st (or 1st day after Labour Day in September) to the 15th of each month and openings on the 16th to the end of each month. Pulse fishing is extended to the end of March where winter fishing is permissible.

Closures will be announced in-season by fishery notice.

4.1.3. Procedure for In-season Decision Making

Fall spawner index surveys generally consist of six strings of 25 traps fished for 24 hours for six haul days in October - November. Participating vessels under scientific licence distribute sampling effort throughout the area, in locations and in a manner comparable to commercial fishing season activity. Every vessel has a certified observer on-board for all haul days to collect and record data from each trap. Data sheets are received and reviewed by DFO Science, Aquatic Resources Research and Assessment Division. Sets made outside commercial prawn locations and that have missed the prawn grounds are

excluded from the analysis.

Data is reviewed by DFO fishery managers and Science staff by conference call. If the results are at or below the baseline spawner index level for that month, then the area is closed. If samples are consistently greater (>1.10), the area remains open. Areas with index values between the baseline and 1.10 are considered for reduced fishing effort, such as partial weekly closures, or are closed. Data is considered first on a Subarea basis, then with respect to patterns in the overall sampling area. Adjacent areas are also closed if they are logical extensions of the area sampled, or are required to simplify enforceability of the closure boundaries.

Under the adaptive management strategy developed collaboratively by recreational and commercial fishing representatives in early 2006 a level of 1.35 is applied for Saanich Inlet, Stuart Channel and Alberni Inlet. A one-week closure in May and "pulse fishing" beginning in the fall also apply. The aspiration of the recreational and commercial fishing representatives was to leave more female prawns carrying eggs on the spawning grounds, with an anticipated benefit of more prawns for all harvest sectors beginning two years later and a reduction in the need for winter recreational fishing closures.

An arrangement to finance the surveys through use-of-fish or other approach is negotiated on an annual basis. If financial support for these surveys cannot be established by October, local area closure may be necessary from January 1 until March 31, 2019 while the spawning cycle completes. Other approaches, such as fishing time periods (e.g., weekend-only fishing or pulse fishing) and reduced catch limits, will be considered in areas, where possible, based on Scientific review of past sampling (Can. Sci. Adv. Sec. 2012/041).

At least two weekends of advance notice will be provided to recreational harvesters of any impending closure to allow time for gear removal. Closures take effect January 1 and are in place until the end of the spawning cycle, allowing recreational gear to go back into the water on April 1. Closures during the critical winter spawning period allow the remaining berried female prawns to complete egg incubation and release larvae with reduced fishing disturbance and handling mortality, and are a key component of the recreational management strategy.

4.2. Permanent Closures & Advisories

Closure descriptions are available in the BC Tidal Waters Sport Fishing Guide:

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

4.2.1. Gwaii Haanas National Marine Conservation Area

Harvesting of all species is prohibited in the Gwaii Haanas National Marine Conservation Area Reserve and Haida Heritage Site in Burnaby Narrows, Louscoone Estuary, Flamingo Estuary, Gowgaii Estuary, Cape Saint James, and SGang Gwaay.

Burnaby Narrows: Those waters of Subareas 2-13 and 2-16 inside a line commencing at 52°23.049' N and 131°23.438' W east to 52°23.077' N and 131°22.908' W, following the southern shoreline of Kat island east to 52°23.107' N and 131°22.274' W, then east to 52°23.295' N and 131°21.34' W, following the western shoreline of Burnaby Island south to 52°20.951' N and 131°20.509' W, then west to 52°20.733' N and 131°21.072'

W, and then north following the eastern shoreline of Moresby Island back to the point of commencement. (National Marine Conservation Area)

Louscoone Estuary: Those waters of Subareas 2-33 and 2-34 north of a line drawn from 52º11.836’ N and 131º15.658’ W east to 52º12.271’ N and 131º14.594’ W. (National Marine Conservation Area)

Flamingo Estuary: Those waters of Subarea 2-37 north of a line drawn from 52º14.456’ N and 131º22.234’ W southeast to 52º14.246’ N and 131º21.489’ W. (National Marine Conservation Area)

Gowgaia Estuary: Those waters of Subarea 2-41 east of a line drawn from 52º24.944’ N and 131º32.138’ W southeast to 52º24.238’ N and 131º32.024’ W. (National Marine Conservation Area)

Cape Saint James: Those waters of Subareas 2-19, 102-3, 130-3 and 142-1 inside a line commencing at 51º56.523’ N and 131º01.522’ W, southwest to 51º55.627’ N and 131º02.574’ W, then southeast to 51º52.5’ N and 130º57.919’ W, then south to 51º51.676’ N and 130º57.805’ W, then southeast to 51º50.349’ N and 130º56.442’ W, then northeast to 51º51.062’ N and 130º54.717’ W, then north to 51º53.888’ N and 130º55.608’ W, then northwest to 51º58.671’ N and 130º59.464’ W, then west to 51º58.743’ N and 131º00.606’ W, and then following the southern shore of Kunghit Island west to the point of commencement. (National Marine Conservation Area)

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)

4.2.2. Strait of Georgia and Howe Sound Glass Sponge Reef Closures

Parksville: Those portions of Subareas 14-2 and 14-3 that lie inside a line that begins at 49°21.680'N and 124°19.762'W, then southeasterly to 49°21.514'N and 124°18.893'W, then to 49°21.191'N and 124°17.723'W, then to 49°21.064'N and 124°17.724'W, then to 49°20.725'N and 124°18.380'W, then to 49°21.432'N and 124°19.811'W, then to the beginning point. (Glass Sponge Reef Conservation Area)

East of Hornby Island (Achilles Bank): That portion of Subarea 14-6 that lies inside a line that begins at 49°33.490'N and 124°29.230'W, then southerly to 49°32.701'N and 124°28.760'W, then to 49°31.657'N and 124°29.434'W, then to 49°31.663'N and 124°29.896'W, then to 49°32.651'N and 124°29.752'W, then to 49°33.340'N and 124°29.935'W, then to 49°33.498'N and 124°29.773'W, then to the beginning point. (Glass Sponge Reef Conservation Area)

Gabriola Island: That portion of Subarea 17-11 that lies inside a line that begins at 49°13.672'N and 123°47.577'W, then southerly to 49°13.235'N and 123°47.429'W, then to 49°13.185'N and 123°47.882'W, then to 49°13.391'N and 123°48.119'W, then to 49°13.623'N an d123°48.166'W, then to the beginning point. (Glass Sponge Reef Conservation Area)

Outer Gulf Islands #1: That portion of Subarea 18-1 that lies inside the following lines: begins at 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. (Glass Sponge Reef Conservation Area)

Outer Gulf Islands #2: That portion of Subarea 18-1 that lies inside the following lines: begins at 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. (Glass Sponge Reef Conservation Area)

Outer Gulf Islands #3: That portion of Subarea 18-1 that lies inside the following lines: begins at 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. (Glass Sponge Reef Conservation Area)

Outer Gulf Islands #4: That portion of Subarea 29-4 that lies inside the following lines: 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. (Glass Sponge Reef Conservation Area)

Howe Sound, Defence Islands: That portion of Subarea 28-4 that lies inside the following lines: begins at 49°34.102'N and 123°17.070'W, then southerly to 49°33.730'N 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. (Glass Sponge Reef Conservation Area)

Howe Sound, Queen Charlotte Channel #1: That portion of Subarea 28-2 that lies inside the following lines: begins at 9°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 and 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. (Glass Sponge Reef Conservation Area)

Howe Sound, Queen Charlotte Channel #2: Those portions of Subareas 28-2 and 29-3 that lie inside the following lines: begins at 49°20.288'N and 123°17.693'W, then southeasterly to 49°20.2249'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. (Glass Sponge Reef Conservation Area)

Howe Sound, Queen Charlotte Channel #3: Those portions of Subareas 28-2 and 29-3 that lie inside the following lines: begins 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. (Glass Sponge Reef Conservation Area)

Howe Sound, Queen Charlotte Channel #4: That portion of Subarea 29-3 that lies inside the following lines: begins at 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, then 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. (Glass Sponge Reef Conservation Area)

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

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

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

4.2.3. Winchelsea Island Department of National Defence Prohibited Area

Recreational harvesters are advised that due to the large number of submarine cables terminating at Winchelsea Island, the Department of National Defence prohibits all trap and bottom contact fishing and anchoring in a zone bounded by the following coordinates within the Military Sea Area WG: 49^{o}18.456’ N and 124^{o}06.156’ W, 49^{o}17.128’ N and 124^{o}02.081’ W, 49^{o}17.274’ N and 124^{o}04.346’ W, and 49^{o}17.438’ N and 124^{o}05.138’ W.

Contact the Department of National Defence, Canadian Forces Maritime Experimental and Test Ranges in Nanoose Bay.

4.2.4. Saanich Inlet Sponge Reefs Advisory

It is recommended that recreational harvesters should avoid setting trap gear in cloud sponge areas in Saanich Inlet in waters less than 40 metres depth at Henderson Point, at the mooring buoy northwest of Senanus Island, Willis Point, Repulse Rock, the point south of Misery Bay, Christmas Point, McCurdy Point and adjacent to the Bamberton cement plant.

4.2.5. Victoria Area Ecological Reserves

Harvesting of all shellfish is prohibited in waters shallower than 40 m at Race Rocks and

in waters within 1/3rd nautical mile of Cadboro Point navigation light.

4.2.6. Vancouver Harbour

Harvesting of crab, shrimp, and prawns is closed between Lions Gate Bridge and Ironworkers Memorial (Second Narrows) Bridge for navigation purposes. Contact the Vancouver Harbour Authority.

4.2.7. Area 28 Whytecliffe Park, Porteau Cove and Point Atkinson

Harvesting all marine life is prohibited in those waters off Whytecliff Park, Porteau Cove and Point Atkinson.

4.2.8. Howe Sound Glass Sponge Reefs Advisories

DFO is requesting voluntarily avoidance of the following areas from all bottom contact fishing, including prawn and shrimp trap fishing, until further scientific analysis and consultations regarding protection measures can occur. An overview map is provided in Appendix 11.

East Defence Island (#1): That portion of Subarea 28-4 that lies inside a line that begins at 49° 34.716' N and 123° 16.430' W then northeast to 49° 34.717' N and 123° 16.384' W, then southeast to 49° 34.633' N and 123° 16.372' W, then northwest to 49° 34.641' N and 123° 16.425' W, then to the beginning point.

East Defence Island (#2): That portion of Subarea 28-4 that lies inside a line that begins at 49° 34.770' N and 123° 16.312' W, then true east to 49° 34.770' N and 123° 16.261' W, then southeast to 49° 34.647' N and 123° 16.214' W, then northwest to 49° 34.648' N and 123° 16.311' W, then to the beginning point.

Anvil Island: That portion of Subarea 28-4 that lies inside a line that begins at 49° 32.790' N and 123° 17.343' W, then southeast to 49° 32.788' N and 123° 16.955' W, then southwest to 49° 32.572' N and 123° 16.978' W, then northwest to 49° 32.574' N and 123° 17.345' W, then to the beginning point.

Lost Reef: That portion of Subarea 28-2 that lies inside a line that begins at 49° 29.801' N and 123° 18.059' W, then northeast to 49° 29.857' N and 123° 17.957' W, then southeast to 49° 29.651' N and 123° 17.737' W, then southwest to 49° 29.633' N and 123° 17.885' W, then to the beginning point.

Brunswick Point: That portion of Subarea 28-2 that lies inside a line that begins at 49° 28.384' N and 123° 15.181' W, then northeast to 49° 28.479' N and 123° 14.987' W, then southeast to 49° 28.417' N and 123° 14.870' W, then southwest to 49° 28.315' N and 123° 15.038' W, then to the beginning point.

Lions Bay: That portion of Subarea 28-2 that lies inside a line that begins at 49° 27.483' N and 123° 15.611' W, then northeast to 49° 27.499' N and 123° 15.420' W, then southeast to 49° 27.239' N and 123° 15.347' W, then southwest to 49° 27.227' N and 123° 15.536' W, then to the beginning point.

Kelvin Grove: That portion of Subarea 28-2 that lies inside a line that begins at 49° 27.268' N and 123° 15.047' W, then northeast to 49° 27.290' N and 123° 14.639' W, then

southwest to 49° 27.036' N and 123° 14.715' W, then southwest to 49° 27.032' N and 123° 15.037' W, then to the beginning point.

Halkett Point: That portion of Subarea 28-2 that lies inside a line that begins at 49° 26.771' N and 123° 18.823' W, then northeast to 49° 26.912' N and 123° 18.660' W, then southeast to 49° 26.879' N and 123° 18.594' W, then southwest to 49° 26.722' N and 123° 18.700' W, then to the beginning point.

Bowyer Island: That portion of Subarea 28-2 that lies inside a line that begins at 49° 24.403' N and 123° 16.282' W, then northeast to 49° 24.737' N and 123° 16.113' W, then southeast to 49° 24.676' N and 123° 15.911' W, then southwest to 49° 24.274' N and 123° 16.106' W, then to the beginning point.

Dorman Point: That portion of Subarea 28-2 that lies inside a line that begins at 49° 22.485’ N and 123° 19.259' W, then southeast to 49° 22.472' N and 123° 19.191' W, then southwest to 49° 22.391' N and 123° 19.268' W, then northwest to 49° 22.416' N and 123° 19.321' W, then to the beginning point.

4.2.9. Hecate Strait and Queen Charlotte Sound Glass Sponge Reefs Marine Protected Area

Northern Reef Closure (Core Protection Zone): Those waters of Subareas 105-2 and 106-1 bounded by a series of rhumb lines drawn from a point having coordinate values of 53º18'40.4" North latitude and 130º52'46.5" West longitude, to a point having coordinate values of 53º22'12.1" North latitude and 130º47'01.7" West longitude, then to a point having coordinate values of 53º22'20.2" North latitude and 130º43'12.5" West longitude, then to a point having coordinate values of 53º17'22.8" North latitude and 130º38'18.2" West longitude, then to a point having coordinate values of 53º15'01.7" North latitude and 130º36'35.5" West longitude, then to a point having coordinate values of 53º10'55.2" North latitude and 130º20'19.3" West longitude, then to a point having coordinate values of 53º04'30.2" North latitude and 130º25'53.6" West longitude, then to a point having coordinate values of 53º04'58.0" North latitude and 130º32'16.9" West longitude then to a point having coordinate values of 53º07'22.2" North latitude and 130º37'37.6" West longitude, then to a point having coordinate values of 53º08'36.6" North latitude and 130º39'29.5" West longitude, then to a point having coordinate values of 53º08'41.8" North latitude and 130º45'40.0" West longitude, then to a point having coordinate values of 53º13'51.2" North latitude and 130º46’41.2" West longitude, then back to the point of Commencement.

Central Reef Zone A Closure (Core Protection Zone): Those waters of Subareas 106-2 and 107-1 bounded by a series of rhumb lines drawn from a point having coordinate values of 52º14'03.4" North latitude and 129º38'33.2" West longitude, to a point having coordinate values of 52º16'54.8" North latitude and 129º43'13.4" West longitude, then to a point having coordinate values of 52º21'57.1" North latitude and 129º43'56.5" West longitude, then to a point having coordinate values of 52º24'24.5" North latitude and 129º47'22.8" West longitude, then to a point having coordinate values of 52º29'05.9" North latitude and 129º50'59.4" West longitude, then to a point having coordinate values of 52º31'05.2" North latitude and 129º50'13.9" West longitude, then to a point having coordinate values of 52º31'06.7" North latitude and 129º47'40.9" West longitude, then to

a point having coordinate values of 52º27'42.0" North latitude and 129º40'25.1" West longitude, then to a point having coordinate values of 52º25'22.9" North latitude and 129º37'24.0" West longitude, then to a point having coordinate values of 52º19'47.0" North latitude and 129º32'43.2" West longitude, then to a point having coordinate values of 52º16'18.2" North latitude and 129º33'22.8" West longitude, then back to the point of Commencement.

Central Reef Zone B (Core Protection Zone): Those waters of Subareas 107-1 and 107-2 bounded by a series of rhumb lines drawn from a point having coordinate values of 51º54'43.1" North latitude and 129º41'22.2" West longitude, to a point having coordinate values of 52º01'22.5" North latitude and 129º35'48.4" West longitude, then to a point having coordinate values of 52º05'13.5" North latitude and 129º34'32.5" West longitude, then to a point having coordinate values of 52º08'48.5" North latitude and 129º31'44.1" West longitude then to a point having coordinate values of 52º08'51.3" North latitude and 129º29'18.0" West longitude, then to a point having coordinate values of 52º04'27.1" North latitude and 129º21'17.3" West longitude, then to a point having coordinate values of 51º59'40.8" North latitude and 129º15'23.9" West longitude, then to a point having coordinate values of 51º56'04.5" North latitude and 129º18'46.2" West longitude, then to a point having coordinate values of 51º52'55.7" North latitude and 129º36'49.8" West longitude, then back to the point of Commencement.

Southern Reef (Core Protection Zone): Those waters of Area 110 bounded by a series of rhumb lines drawn from a point having coordinate values of 51º17'59.2" North latitude and 128º57'31.9" West longitude, to a point having coordinate values of 51º19'30.8" North latitude and 128º58'22.7" West longitude, then to a point having coordinate values of 51º23'41.9" North latitude and 128º48'50.9" West longitude, then to a point having coordinate values of 51º19'17.5" North latitude and 128º42'33.6" West longitude, then to a point having coordinate values of 51º18'24.5" North latitude and 128º42'37.7" West longitude, then to a point having coordinate values of 51º15'56.0" North latitude and 128º47'04.2" West longitude, then to a point having coordinate values of 51º15'52.2" North latitude and 128º54'20.4" West longitude, then back to the point of Commencement.

Detailed descriptions (coordinates) of individual closure areas and maps are available on the internet at:

www.dfo-mpo.gc.ca/oceans/mpa-zpm/hecate-eng.html

4.2.10. Offshore Pacific Seamounts and Vents Fishery Closure

Those waters within Subareas 123-9, 124-1, 124-2, 125-6, 126-3, 126-4, 127-2, 127-4, and 130-1 described in Fishery Notice 1241 - Offshore Pacific Seamounts and Vents: Commercial and Recreational Bottom Contact Fisheries Closure - Portions of Areas 123 to 127, and 130.

4.3. Closure Notifications and Announcements

Protected areas and permanent closures are published in the BC Tidal Waters Sport Fishing Guide. New closure announcements are made by public fishery notice distributed

to all local community DFO offices, e-mailed to all recreational fishing outlets which have made arrangements for this service, and posted to the fishery notice system on the internet.

Recreational fishery notices and in-season changes are available on the internet at:

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

5. LICENSING

5.1. Licence Category

A Tidal Waters Sport Fishing Licence is required to fish and retain shellfish, including prawn and shrimp. These may be purchased for a 1, 3, 5 day, or annual period. Fees depend on licence duration, age (senior, adult, juvenile) and residency status. Licences for juveniles (ages 15 and under) are free. Fees are published in the BC Tidal Waters Sport Fishing Guide.

British Columbia Tidal Waters Sport Fishing Licences may be purchased online at:

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

6. MANAGEMENT MEASURES

6.1. Species

There are more than 85 species of shrimp found in the waters of Canada's Pacific coast. Of these, recreational fishing commonly catches three: Prawn, which is the common name for the largest shrimp on this coast; Humpback (King) Shrimp; and Coonstripe (Dock) Shrimp. Diagrams that may aid in identification are available on the internet at:

www.pac.dfo-mpo.gc.ca/fm-gp/commercial/shellfish-mollusques/shrimp-pcrevette/biol-eng.html

Prawns have a four year life cycle in BC, and so are larger than the other species which have a three year life cycle. Prawns and most shrimp begin life as a male, and then change to females at a later stage in the life cycle. More information is available in Appendix 9 and on the internet at the above noted site.

6.2. Size Limit

There is no minimum size for recreational caught prawn or shrimp species.

6.3. Catch and Possession Limit

The daily catch limit is 200 pieces of prawn and shrimp (combined) and the possession limit is 400 pieces.

6.4. Release of Berried and Undersized Prawn and Shrimp

"Berried" refers to prawns and shrimp that are carrying eggs held under their tails. All prawns carrying eggs externally on the underside of the tail shall be returned to the water

immediately and in the manner that causes the least harm. Prawns carrying eggs may not be kept and eggs may not be removed from the underside of prawns carrying eggs.

There are various means of releasing berried and undersized prawns and shrimp in order to increase their survival. Release at the fishing location and careful handling without dropping provides a greater chance of the prawn and shrimp returning to their preferred habitat. Release prawns and shrimp as soon as possible before hauling the next trap on-board to reduce the potential damage to their eyes from UV radiation or from air exposure. Release of berried prawns after or during moving to other locations is illegal and will needlessly increase their mortality.

Do prawns and shrimp survive when released? They don't have swim bladders so pressure change is not a problem. DFO has tagged and released prawns in the past and they have re-entered traps to be hauled again. Better than 50% survival is expected, depending on the circumstances.

6.5. Gear

6.5.1. Trap Limits and Groundlines

The maximum number of traps or ring nets that may be fished for prawn and shrimp by any individual is four traps or ring nets. There is no mesh size restriction.

All single traps must be marked with a buoy. If two traps are attached to a single bottom line (groundline), the groundline may be marked with only one buoy. If 3 or 4 traps are set together on a single bottom line (groundline), then a buoy is required at either end of the groundline. Only one harvester's traps may be set on a single groundline. Each individual may only fish those traps which he or she has set. You may not fish traps marked with any other person's name on the buoy but your own.

6.5.2. Buoy Marking

The name of the harvester of the gear must be clearly marked on the buoy in printed solid black capital letters, not less than 75 mm (3 in.) high. Only one name can appear on a buoy. It is recommended that the harvester include their telephone number so that they may be contacted if the gear floats away.

Buoys must be highly visible and of sufficient size for the tides and currents in the area so as not to submerge.

Amendment to the *BC Sport Fishing Regulations* is pending to require phone numbers (or Unique Fisher Identification #'s) on buoys and to eliminate line floating at the surface.

The SFAB is working on standardized buoys for the recreational fishery to differentiate prawn and crab fishing gear and to eliminate the use of household plastic containers or blocks of styrofoam as these can often deteriorate in sunlight or waves and sink. This contributes to garbage washing up on the shoreline and loss of trap(s) which will continue to "ghost fish" for years to come.

6.5.3. Biodegradable Escape Mechanism ("rot cord")

Amendment to the *BC Sport Fishing Regulations* is pending to require a biodegradable

escape mechanism, or ‘rot cord’, in all recreational prawn and crab traps to allow bycatch to escape in event traps are lost.

6.5.4. Lost Trap Gear

Fishery Officers and Canadian Coast Guard personnel may collect recreational fishing gear from the water if the floats are improperly marked, if the gear poses a navigation hazard, or if the area is closed to fishing. In some cases, single buoyed traps set on a low tide will float away on a high tide, or the float may be submerged and crushed by water pressure. The name of the harvester of the gear must be clearly marked on the buoy. It is recommended that the harvester include their telephone number so that they may be contacted if someone finds the gear that has floated away (Section 6.5.2).

6.5.5. Fishing Gear Conflicts

Recreational and commercial harvesters are advised to exercise care when setting gear near other gear in similar locations when these fisheries co-occur. Fouled gear should be untangled without cutting and returned to the water intact. If a line must be cut, it should be the line of the harvester who is hauling the gear.

Recreational harvesters are advised that commercial harvesters do not usually set their gear in a straight line from buoy to buoy, as they may be following a depth contour, or fishing different depths in order to find the prawns. So gear may be set in a zig zag, and occasionally even a circular pattern. Setting gear away from commercial sets or other recreational fishing gear will often improve your catch, as traps start to compete for the prawns if they are closer than about 20 m.

The presence of small and medium prawns only in an area may reflect harvesting effects. However, the absence of any prawns at all, indicates some other factor affecting abundance; behaviour, episodic predation or disease.

6.5.6. Gear Theft

Gear theft and the theft of catch from traps is a concern in some areas. This type of activity should be reported to the police in the area where the theft has occurred.

7. CONTROL AND MONITORING OF RECREATIONAL FISHING ACTIVITIES

7.1. Catch Reporting

The SFAB and the recreational fishing sector strongly support effective fishery monitoring and catch reporting programs in recreational fisheries. The SFAB has been working with DFO on initiatives to strengthen fishing monitoring and catch reporting in the recreational fishery for a number of years.

Recreational harvesters are required as a condition of the Tidal Waters Sport Fishing Licence to report information on their recreational fishing activity and catch to DFO representatives when requested to do so. Commonly, recreational harvesters may be requested by a fishery officer or designated DFO representative through an internet survey, at the dock, or through a creel survey to provide important catch and effort information.

The Internet Recreational Effort and Catch (iREC) Survey was initiated in 2012 to provide monthly estimates of effort for all methods of recreational fishing, including angling, trapping, beach collecting, and diving and to provide monthly estimates of catch for all sport caught species. The internet survey contacts participants by email in advance of the survey period and allows for the selected participants to record their information periodically or to complete the survey on a single visit to the website after the month ends. Participants selected for the iREC survey also have their personal online survey access code printed on their licence (new in 2018). Participants who do not fish during the month are included in the survey as well, as an important component of the catch and effort estimation. The survey period is normally one month but shorter periods may be used.

A recreational mail survey is also conducted nationally by DFO every five years.

More information on the internet recreational survey is available at:

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

8. GENERAL INFORMATION

8.1. Bacteria

As with any seafood, catch in some areas may be exposed at various times to bacteria. Keep catch clean, cool and covered on-board. Refrigerate if it will not be consumed immediately. Wash during preparation. Proper cooking kills bacteria.

8.2. Whale Encounters

If a marine mammal becomes entangled in fishing gear, immediately log your coordinates and contact the Marine Mammal Incident Hotline 1-800-465-4336 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.

8.3. Fishing Practices

The following practices help increase prawn survival, prevent loss of gear, and assist in the long-term sustainability of the fishery:

Longer Fishing Times

- Studies show that shorter fishing times tend to capture small prawns. Fishing traps overnight or if possible throughout the day allows small prawns to exit traps while still on the bottom.

Sorting of Catch

- Although there is no size restriction for recreationally caught prawns, returning small prawns back to the water can contribute to the sustainability of prawn stocks.
- Should you decide to release the small prawns you have caught, this should be done before hauling the next trap on-board your vessel. Incidental bycatch, such as small

finfish that may have made their way into the trap, must be released as soon as possible. It is advisable to release any catch that you do not want away from predatory birds which may be nearby.

Bait

- Although the use of fish offal, heads and backbones as bait is permitted, catching rockfish, greenling and other species that contribute to the recreational fishery and using them for bait is a violation. Rockfish in particular are very slow growing and require special management measures to prevent over-fishing of these species.

Appropriate Gear

- Ensure that traps are well marked with a large float or buoy so that they are plainly visible to the boating public.
- Avoid the use of household plastic containers or blocks of styrofoam as these can often deteriorate in sunlight or waves and sink. This contributes to garbage washing up on the shoreline and loss of trap(s) which will continue to "ghost fish" for years to come.
- Use strong groundline and buoy lines to prevent the loss of traps. To avoid entanglement with your engine propeller or that of a passing boat, or with another harvester's traps and lines, do not use floating lines such as common yellow polypropylene, or if using a line that floats add weight to it so that it sinks.

Appendix 3: 2018/19 Prawn and Shrimp by Trap First Nations Harvest Plan

TABLE OF CONTENTS

1. FIRST NATIONS HARVEST PLAN HIGHLIGHTS AND CHANGES FOR 2018/19

1.1. Fisheries and Oceans Canada (DFO) has consulted with First Nations since 2012 and sought First Nations input on management measures for the Food, Social and Ceremonial (FSC) fishery to address the harvesting capacity of commercial vessels and gear. Starting March 2016, for those First Nations that have an interest in using commercial vessels or gear for harvesting prawns for FSC purposes, DFO requests details about how this will occur. Please refer to Section 3 and contact the local DFO Resource Manager.

1.2. Nine Strait of Georgia and Howe Sound Glass Sponge Reef Conservation Areas were closed in 2016. DFO requests voluntarily avoidance of ten newly identified Glass Sponge Reefs in Howe Sound from all bottom contact fishing, including prawn and shrimp trap fishing, until further scientific analysis and consultations regarding protection measures can occur. These reefs are located in Subareas 28-2 and 28-4 by Lion's Bay, Anvil Island, Halkett Point on Gambier Island, Bowyer Island, Dorman Point on Bowen Island and the Defence Islands. Please refer to Section 5.7 and Appendix 11.

1.3. DFO looks forward to hearing from those First Nations who are interested in working towards adopting standard buoys to differentiate prawn and crab fishing gear and to eliminate the use of household plastic containers or blocks of styrofoam as these can often deteriorate in sunlight or waves and sink, contributing to garbage washing up on the shoreline and loss of trap(s) which continue to "ghost fish" for years to come.

2. OVERVIEW OF THE FISHERY

Fisheries & Oceans Canada's policy on the management of First Nations fishing identifies First Nations harvests for FSC purposes as the first priority after conservation. Fisheries & Oceans Canada seeks to provide for the effective management and regulation of the First Nation fishery through negotiation of mutually acceptable and time-limited agreements which outline provisions pertaining to the fisheries and co-management activities. The agreements include provisions by which First Nations manage fishing by their members for FSC purposes, in addition to outlining First Nation involvement in a range of co-management activities and economic development opportunities which may include, but not be limited to, habitat enhancement, FSC catch monitoring and enforcement, fish management and community research.

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

3. MANAGEMENT MEASURES FOR THE FIRST NATIONS FISHERY

First Nations prawn fishing effort for FSC or domestic purposes is currently not limited by catch quantity or size limits, except in those Nations where the Council or fisheries program has established their own catch limits for band members, or where allocated under Treaty.

First Nations interested in using commercial vessels or gear to harvest prawns for FSC purposes should provide fishing details to their local DFO resource manager (see Section 14 of the Integrated Fishery Management Plan [IFMP] for DFO contacts). The details should include when and where fishing will take place, which and how many boats will be used, the number of traps (and marking), how the fishery will be monitored and catch reported, and the amounts to be harvested. These details are requested so that there can be a common understanding of the size, scope and timing of the fishery. DFO will review the details, discuss it with the First Nation, and work towards an agreement. This information will allow DFO to issue a supplemental communal licence that authorizes the use of commercial vessels and gear in a First Nations' communal (FSC) fishery. First Nations not interested in using commercial vessels or gear to harvest prawns for FSC purposes will continue to have FSC prawn harvest opportunities using non-commercial vessels and gear under their regular communal licence. For the purposes of this management initiative, commercial gear is defined as power assisted gear commonly used in the commercial fishery including, but not limited to, hydraulic gurdies and trap haulers, powered drums, blocks or live rollers. Electric (12V) powered recreational trap pullers are not used in the commercial fishery and are not included under the commercial gear definition. DFO is implementing this approach while discussions with First Nations continue on longer-term management measures to ensure an orderly and manageable FSC prawn fishery and conservation and sustainability of the resource.

4. OPEN TIMES

First Nations fishing for FSC purposes are open coast-wide throughout the year, from April 1 to March 31, annually. In winter recreational fishing closure areas, First Nations are recommended to fish outside of the closures and to release all berried females. Information can be provided on areas of likely prawn abundance outside of the recreational fishery closures, so that effort can be redirected and FSC catch improved (see Section 14 of the Integrated Fishery Management Plan for DFO contacts).

5. PROTECTION OF STRAIT OF GEORGIA AND HOWE SOUND GLASS SPONGE REEFS

In June 2015, all commercial and recreational bottom contact fishing for prawn, shrimp, crab and groundfish (includes halibut) was prohibited in nine glass sponge reef areas in the Strait of Georgia to protect these areas in accordance with the Sensitive Benthic Areas Policy and its Ecological Risk Assessment Framework for Cold-water Corals and Sponge Dominated Communities.

Effective April 1, 2016, all bottom contact fishing for prawn, shrimp, crab and groundfish (includes halibut) for FSC purposes was closed in the nine glass sponge reef areas in the Strait of Georgia and Howe Sound. An overview map of locations of the fishing closures is provided in Appendix 11.

Detailed descriptions (coordinates) of individual closure areas and maps are available on the internet at:

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

5.1. Parksville Glass Sponge Reef Closure

Those portions of Subareas 14-2 and 14-3 that lie inside a line that begins at 49°21.680'N and 124°19.762'W, then southeasterly to 49°21.514'N and 124°18.893'W, then to 49°21.191'N and 124°17.723'W, then to 49°21.064'N and 124°17.724'W, then to 49°20.725'N and 124°18.380'W, then to 49°21.432'N and 124°19.811'W, then to the beginning point. (Glass Sponge Reef Conservation Area)

5.2. East of Hornby Island (Achilles Bank) Glass Sponge Reef Closure

That portion of Subarea 14-6 that lies inside a line that begins at 49°33.490'N and 124°29.230'W, then southerly to 49°32.701'N and 124°28.760'W, then to 49°31.657'N and 124°29.434'W, then to 49°31.663'N and 124°29.896'W, then to 49°32.651'N and 124°29.752'W, then to 49°33.340'N and 124°29.935'W, then to 49°33.498'N and 124°29.773'W, then to the beginning point. (Glass Sponge Reef Conservation Area)

5.3. Gabriola Island Glass Sponge Reef Closure

That portion of Subarea 17-11 that lies inside a line that begins at 49°13.672'N and 123°47.577'W, then southerly to 49°13.235'N and 123°47.429'W, then to 49°13.185'N and 123°47.882'W, then to 49°13.391'N and 123°48.119'W, then to 49°13.623'N an d123°48.166'W, then to the beginning point. (Glass Sponge Reef Conservation Area)

5.4. Outer Gulf Islands Glass Sponge Reef Closures

Outer Gulf Islands #1: That portion of Subarea 18-1 that lies inside the following lines: begins at 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. (Glass Sponge Reef Conservation Area)

Outer Gulf Islands #2: That portion of Subarea 18-1 that lies inside the following lines: begins at 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. (Glass Sponge Reef Conservation Area)

Outer Gulf Islands #3: That portion of Subarea 18-1 that lies inside the following lines: begins at 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. (Glass Sponge Reef Conservation Area)

Outer Gulf Islands #4: That portion of Subarea 29-4 that lies inside the following lines: 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. (Glass Sponge Reef Conservation Area)

5.5. Howe Sound – Defence Islands Glass Sponge Reef Closure

That portion of Subarea 28-4 that lies inside the following lines: begins at 49°34.102'N and 123°17.070'W, then southerly to 49°33.730'N 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. (Glass Sponge Reef Conservation Area)

5.6. Howe Sound – Queen Charlotte Channel Glass Sponge Reef Closures

Queen Charlotte Channel #1: That portion of Subarea 28-2 that lies inside the following lines: begins at 9°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 and 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. (Glass Sponge Reef Conservation Area)

Queen Charlotte Channel #2: Those portions of Subareas 28-2 and 29-3 that lie inside the following lines: begins at 49°20.288'N and 123°17.693'W, then southeasterly to 49°20.2249'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. (Glass Sponge Reef Conservation Area)

Queen Charlotte Channel #3: Those portions of Subareas 28-2 and 29-3 that lie inside the following lines: begins 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. (Glass Sponge Reef Conservation Area)

Queen Charlotte Channel #4: That portion of Subarea 29-3 that lies inside the following lines: begins at 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, then 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. (Glass Sponge Reef Conservation Area)

5.7. Howe Sound – Glass Sponge Reefs Advisories

DFO is asking for voluntarily avoidance of the following areas from all bottom contact fishing, including prawn and shrimp trap fishing, until further scientific analysis and consultations regarding protection measures can occur. An overview map is provided in Appendix 11.

East Defence Island (#1): That portion of Subarea 28-4 that lies inside a line that begins at 49° 34.716' N and 123° 16.430' W then northeast to 49° 34.717' N and 123° 16.384' W, then southeast to 49° 34.633' N and 123° 16.372' W, then northwest to 49° 34.641' N and 123° 16.425' W, then to the beginning point.

East Defence Island (#2): That portion of Subarea 28-4 that lies inside a line that begins at 49° 34.770' N and 123° 16.312' W, then true east to 49° 34.770' N and 123° 16.261' W, then southeast to 49° 34.647' N and 123° 16.214' W, then northwest to 49° 34.648' N and 123° 16.311' W, then to the beginning point.

Anvil Island: That portion of Subarea 28-4 that lies inside a line that begins at 49° 32.790' N and 123° 17.343' W, then southeast to 49° 32.788' N and 123° 16.955' W, then southwest to 49° 32.572' N and 123° 16.978' W, then northwest to 49° 32.574' N and 123° 17.345' W, then to the beginning point.

Lost Reef: That portion of Subarea 28-2 that lies inside a line that begins at 49° 29.801' N and 123° 18.059' W, then northeast to 49° 29.857' N and 123° 17.957' W, then southeast to 49° 29.651' N and 123° 17.737' W, then southwest to 49° 29.633' N and 123° 17.885' W, then to the beginning point.

Brunswick Point: That portion of Subarea 28-2 that lies inside a line that begins at 49° 28.384' N and 123° 15.181' W, then northeast to 49° 28.479' N and 123° 14.987' W, then southeast to 49° 28.417' N and 123° 14.870' W, then southwest to 49° 28.315' N and 123° 15.038' W, then to the beginning point.

Lions Bay: That portion of Subarea 28-2 that lies inside a line that begins at 49° 27.483' N and 123° 15.611' W, then northeast to 49° 27.499' N and 123° 15.420' W, then southeast to 49° 27.239' N and 123° 15.347' W, then southwest to 49° 27.227' N and 123° 15.536' W, then to the beginning point.

Kelvin Grove: That portion of Subarea 28-2 that lies inside a line that begins at 49° 27.268' N and 123° 15.047' W, then northeast to 49° 27.290' N and 123° 14.639' W, then southwest to 49° 27.036' N and 123° 14.715' W, then southwest to 49° 27.032' N and 123° 15.037' W, then to the beginning point.

Halkett Point: That portion of Subarea 28-2 that lies inside a line that begins at 49° 26.771' N and 123° 18.823' W, then northeast to 49° 26.912' N and 123° 18.660' W, then southeast to 49° 26.879' N and 123° 18.594' W, then southwest to 49° 26.722' N and 123° 18.700' W, then to the beginning point.

Bowyer Island: That portion of Subarea 28-2 that lies inside a line that begins at 49° 24.403' N and 123° 16.282' W, then northeast to 49° 24.737' N and 123° 16.113' W, then southeast to 49° 24.676' N and 123° 15.911' W, then southwest to 49° 24.274' N and 123° 16.106' W, then to the beginning point.

Dorman Point: That portion of Subarea 28-2 that lies inside a line that begins at 49° 22.485’ N and 123° 19.259' W, then southeast to 49° 22.472' N and 123° 19.191' W, then southwest to 49° 22.391' N and 123° 19.268' W, then northwest to 49° 22.416' N and 123° 19.321' W, then to the beginning point.

5.8. Sechelt Bank Glass Sponge Reef Closure

That portion of Subarea 29-2 that lies inside a line that begins at 49°25.948'N 123°48.889'W, then easterly to 49°25.899'N 123°47.266'W, then to 49°25.373'N 123°46.494'W, then to 49°24.734'N 123°47.083'W, then to 49°24.910'N 123°47.951'W, then to 49°24.253'N 123°48.283'W, then to 49°24.845'N 123°49.914'W, then to the beginning point. (Glass Sponge Reef Conservation Area)

5.9. Halibut Bank Glass Sponge Reef Closure

That portion of Subarea 29-2 that lie inside a line that begins at 49°21.768'N and 123°41.501'W, then southerly to 49°21.174'N and 123°40.045'W, then to 49°20.961'N and 123°40.139'W, then to 49°20.803'N and 123°39.860'W, then to 49°20.565'N and 123°40.182'W, then to 49°21.610'N and 123°41.843'W, then to 49°21.673'N and 123°42.643'W, then to 49°21.895'N and 123°43.908'W, then to 49°22.174'N and 123°44.748'W, then to 49°22.555'N and 123°44.456'W, then to 49°22.188'N and 123°42.167'W, then to the beginning point. (Glass Sponge Reef Conservation Area)

5.10. Foreslope Hills Glass Sponge Reef Closure

That portion of Subarea 29-3 that lies inside a line that begins at 49°09.634'N and 123°23.048'W, then southeasterly to 49°09.389'N and 123°22.622'W, then to 49°09.187'N and 123°22.587'W, then to 49°09.211'N and 123°23.567'W, then to 49°09.646'N and 123°23.543'W, then to the beginning point. (Glass Sponge Reef Conservation Area)

6. HECATE STRAIT AND QUEEN CHARLOTTE SOUND GLASS SPONGE REEFS MARINE PROTECTED AREA

The Hecate Strait and Queen Charlotte Sound Glass Sponge Reefs Marine Protected Area is located between Haida Gwaii and the mainland of BC in Hecate Strait and Queen Charlotte Sound. The reefs are made up of large colonies of glass sponges and are estimated to be 9,000 years old. They are located at depths of 140 m to 240 m below the surface. The Marine Protected Area is comprised of individual areas known as the Northern Reef, the two Central Reefs, and the Southern Reef. Together these areas cover approximately 2,410 km^2.

The Hecate Strait and Queen Charlotte Sound Glass Sponge Reefs Marine Protected Area has been established to conserve the biological diversity, structural habitat, and ecosystem function of the glass sponge reefs. The slow growth and fragility of these sponges make the reefs particularly vulnerable to damage and disturbance since recovery may take tens to several hundreds of years. Due to the highly sensitive nature and structure of the reefs, human activities in and around the reefs could pose a risk to the structural habitat, biological diversity and ecosystem function of the reefs.

The Marine Protected Area’s regulations establish the outer boundaries of the areas, consisting of the seabed, the subsoil to a depth of 20 meters and the water column above the seabed. An overview map of locations of the fishing closures is provided in Appendix 12.

Detailed descriptions (coordinates) of individual closure areas and maps are available on the internet at:

www.dfo-mpo.gc.ca/oceans/mpa-zpm/hecate-eng.html

6.1. Northern Reef Closure (Core Protection Zone)

Those waters of Subareas 105-2 and 106-1 bounded by a series of rhumb lines drawn from a point having coordinate values of 53º18'40.4" North latitude and 130º52'46.5" West longitude, to a point having coordinate values of 53º22'12.1" North latitude and 130º47'01.7" West longitude, then to a point having coordinate values of 53º22'20.2" North latitude and 130º43'12.5" West

longitude, then to a point having coordinate values of 53º17'22.8" North latitude and 130º38'18.2" West longitude, then to a point having coordinate values of 53º15'01.7" North latitude and 130º36'35.5" West longitude, then to a point having coordinate values of 53º10'55.2" North latitude and 130º20'19.3" West longitude, then to a point having coordinate values of 53º04'30.2" North latitude and 130º25'53.6" West longitude, then to a point having coordinate values of 53º04'58.0" North latitude and 130º32'16.9" West longitude then to a point having coordinate values of 53º07'22.2" North latitude and 130º37'37.6" West longitude, then to a point having coordinate values of 53º08'36.6" North latitude and 130º39'29.5" West longitude, then to a point having coordinate values of 53º08'41.8" North latitude and 130º45'40.0" West longitude, then to a point having coordinate values of 53º13'51.2" North latitude and 130º46’41.2" West longitude, then back to the point of Commencement.

6.2. Central Reef Zone A Closure (Core Protection Zone)

Those waters of Subareas 106-2 and 107-1 bounded by a series of rhumb lines drawn from a point having coordinate values of 52º14'03.4" North latitude and 129º38'33.2" West longitude, to a point having coordinate values of 52º16'54.8" North latitude and 129º43'13.4" West longitude, then to a point having coordinate values of 52º21'57.1" North latitude and 129º43'56.5" West longitude, then to a point having coordinate values of 52º24'24.5" North latitude and 129º47'22.8" West longitude, then to a point having coordinate values of 52º29'05.9" North latitude and 129º50'59.4" West longitude, then to a point having coordinate values of 52º31'05.2" North latitude and 129º50'13.9" West longitude, then to a point having coordinate values of 52º31'06.7" North latitude and 129º47'40.9" West longitude, then to a point having coordinate values of 52º27'42.0" North latitude and 129º40'25.1" West longitude, then to a point having coordinate values of 52º25'22.9" North latitude and 129º37'24.0" West longitude, then to a point having coordinate values of 52º19'47.0" North latitude and 129º32'43.2" West longitude, then to a point having coordinate values of 52º16'18.2" North latitude and 129º33'22.8" West longitude, then back to the point of Commencement.

6.3. Central Reef Zone B Closure (Core Protection Zone)

Those waters of Subareas 107-1 and 107-2 bounded by a series of rhumb lines drawn from a point having coordinate values of 51º54'43.1" North latitude and 129º41'22.2" West longitude, to a point having coordinate values of 52º01'22.5" North latitude and 129º35'48.4" West longitude, then to a point having coordinate values of 52º05'13.5" North latitude and 129º34'32.5" West longitude, then to a point having coordinate values of 52º08'48.5" North latitude and 129º31'44.1" West longitude then to a point having coordinate values of 52º08'51.3" North latitude and 129º29'18.0" West longitude, then to a point having coordinate values of 52º04'27.1" North latitude and 129º21'17.3" West longitude, then to a point having coordinate values of 51º59'40.8" North latitude and 129º15'23.9" West longitude, then to a point having coordinate values of 51º56'04.5" North latitude and 129º18'46.2" West longitude, then to a point having coordinate values of 51º52'55.7" North latitude and 129º36'49.8" West longitude, then back to the point of Commencement.

6.4. Southern Reef Closure (Core Protection Zone)

Those waters of Area 110_bounded by a series of rhumb lines drawn from a point having coordinate values of 51º17'59.2" North latitude and 128º57'31.9" West longitude, to a point

having coordinate values of 51º19'30.8" North latitude and 128º58'22.7" West longitude, then to a point having coordinate values of 51º23'41.9" North latitude and 128º48'50.9" West longitude, then to a point having coordinate values of 51º19'17.5" North latitude and 128º42'33.6" West longitude, then to a point having coordinate values of 51º18'24.5" North latitude and 128º42'37.7" West longitude, then to a point having coordinate values of 51º15'56.0" North latitude and 128º47'04.2" West longitude, then to a point having coordinate values of 51º15'52.2" North latitude and 128º54'20.4" West longitude, then back to the point of Commencement.

7. LICENSING

First Nations access to fish for FSC purposes is managed through a communal licence or, under treaty, a harvest document which can permit the harvest of prawn and shrimps. These licences are issued under the authority of the *Aboriginal Communal Fishing Licences Regulations*.

8. CONTROL AND MONITORING OF FIRST NATIONS FISHING ACTIVITIES

Communal licences and Fisheries Agreements may contain provisions for the designation of individuals by the First Nation, or First Nations organizations, to access the allocation provided under the communal licence / harvest document. Commercial fishing vessels must be designated for participation in FSC or domestic fishing. Provisions may also be included for monitoring and reporting on the First Nations fishery in co-operation with Fisheries & Oceans Canada.

First Nations communal licences and, under Treaty, harvest documents specify the locations permitted for use by First Nations for FSC (domestic) harvests.

The First Nations will provide the number of pounds of shellfish harvested by species to the Fisheries & Oceans Canada Resource Manager on a quarterly basis (every three months). The fishing plan for First Nations interested in using commercial vessels or gear to harvest prawns for FSC purposes should include how the fishery will be monitored and catch reported. DFO is putting an increased emphasis on catch reporting for proper management of the fishery.

8.1. Treaty Fisheries

Fisheries chapters in modern First Nation treaties articulate a treaty fishing right for domestic purposes that is protected under Section 35 of the Constitution Act, 1982. Commercial access may be provided either through the general commercial fishery or a Harvest Agreement, which is negotiated at the same time as the treaty and is referenced in the treaty, but is not protected under the *Constitution Act*.

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 BC.

More information on the Treaty and the Nisga'a annual fishing plan can be found at:

www.aadnc-aandc.gc.ca/eng/1100100031747/1100100031749

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 of 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:

www.aadnc-aandc.gc.ca/eng/1100100022734/1100100022757

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 Yuułu?ił?ath First Nation on the west coast of Vancouver Island.

More information on the Treaty can be found at:

www.maanulth.ca/downloads/treaty/2010_maa-nulth_final_agreement_english.pdf

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:

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

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

In addition to fishing opportunities for FSC purposes (or domestic purposes for treaty bands), five Nuu-chah-nulth First Nations located on the West Coast of Vancouver Island - Ahousaht, Ehattesaht, Hesquiaht, Mowachaht/Muchalaht, and Tla-o-qui-aht (the T'aaq-wiihak First Nations) - have Aboriginal rights to fish for any species of fish within their Fishing Territories and to sell that fish, with the exception of geoduck.

Appendix 4: Diagrams - Prawn Size Limits and Commercial Trap Requirements

FIGURE 1: PRAWN SIZE LIMIT

33 mm carapace length as measured from the posterior margin of the eye orbit (a) to the posterior mid-dorsal margin of the carapace (b).

For headed product only, 22 mm telson length (c) to (d).

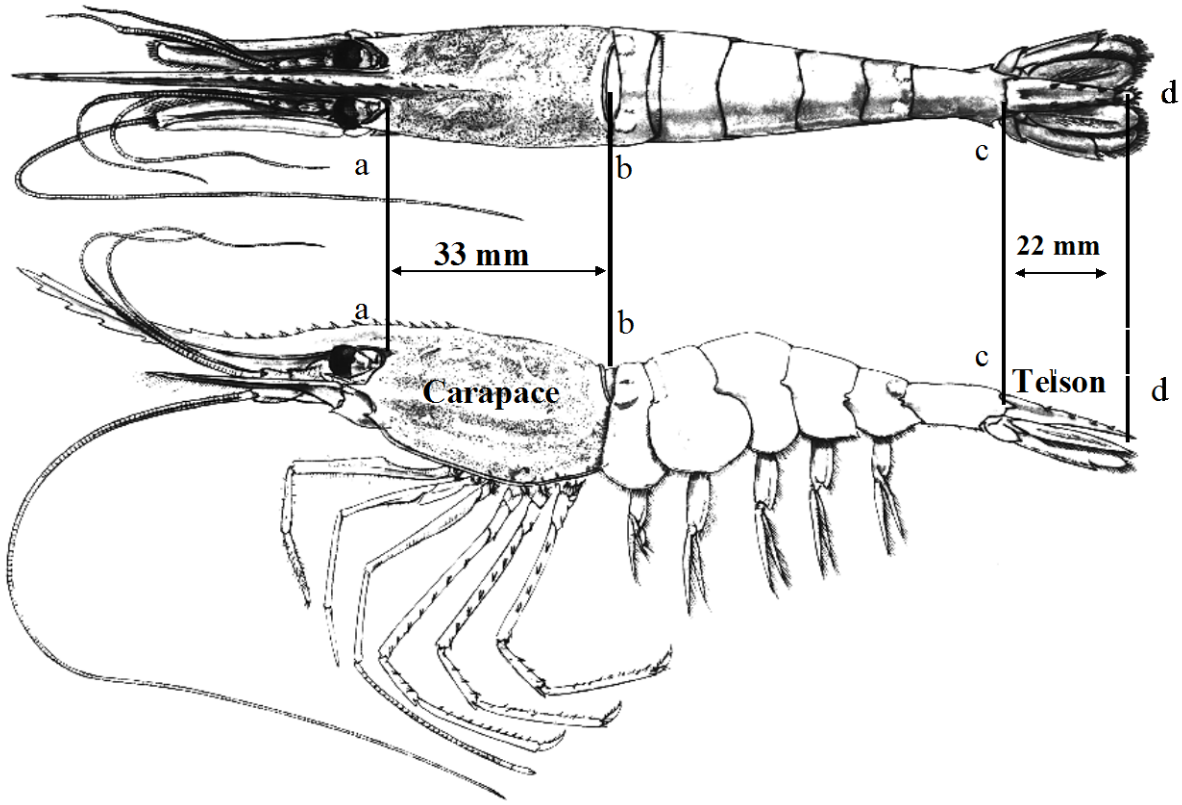
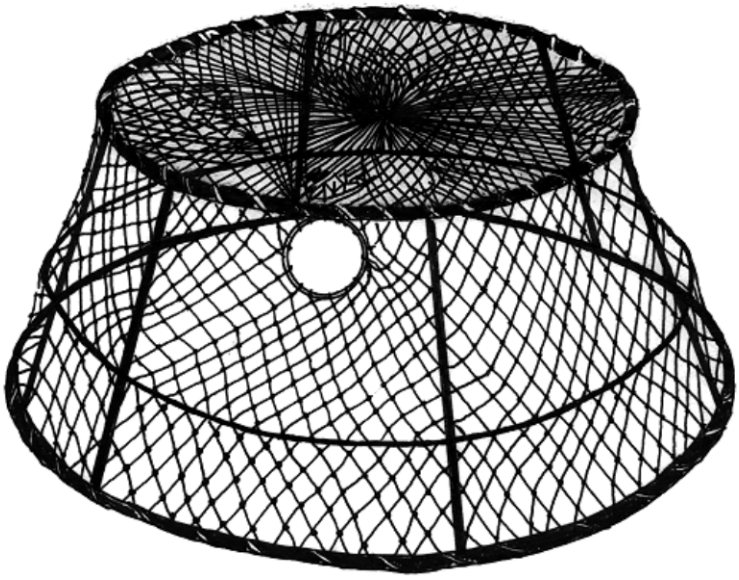


FIGURE 2: WEB TRAP MESH REQUIREMENTS

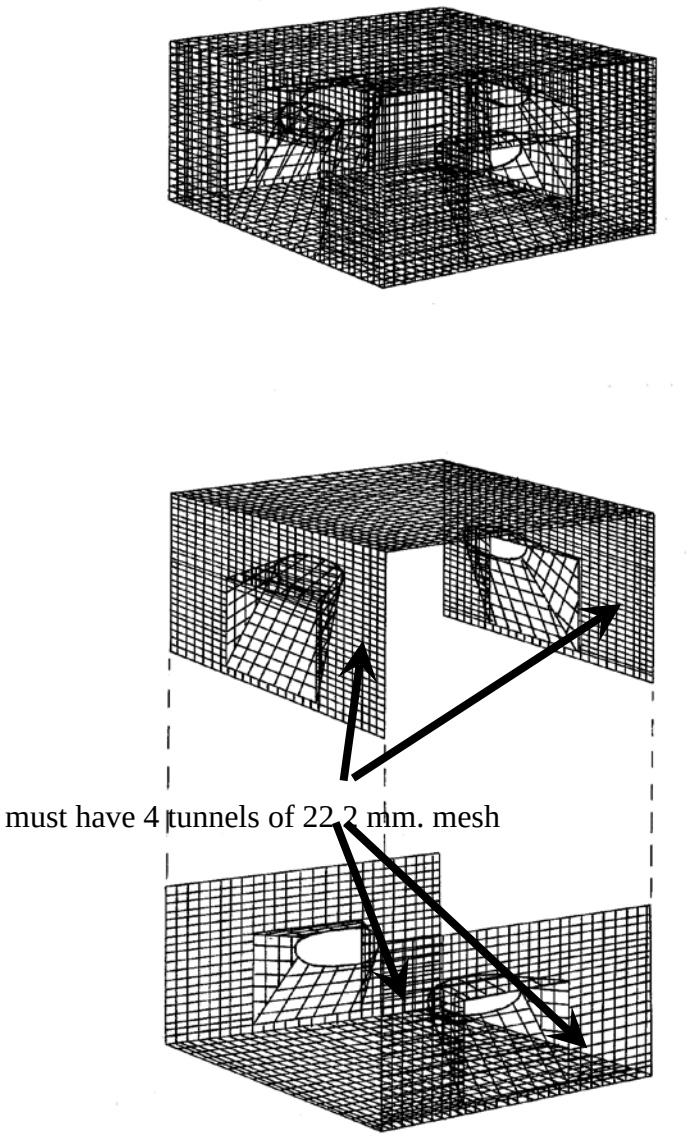
Web or Soft Mesh Traps: Maximum Volume 170 Litres



Web or Soft Mesh Traps are to be covered with a single layer of mesh. The mesh must measure a minimum of 38.1mm (1.5 inches). Mesh size is measured as described in the definition section of the *Pacific Fishery Regulations, 1993*. Mesh size means the total length of twine measured along two contiguous sides of a single mesh, including the distance across the knot joining those sides but not including any other knots. All mesh used in the trap including the tunnels must conform to this minimum size.

FIGURE 3: WIRE MESH TRAPS - OPTION 1 (4 TUNNELS)

Maximum Volume 100 Litres



Minimum 22.2 mm (7/8 Inch) Opening Mesh in at Least 4 Tunnels, 50 per cent of Side

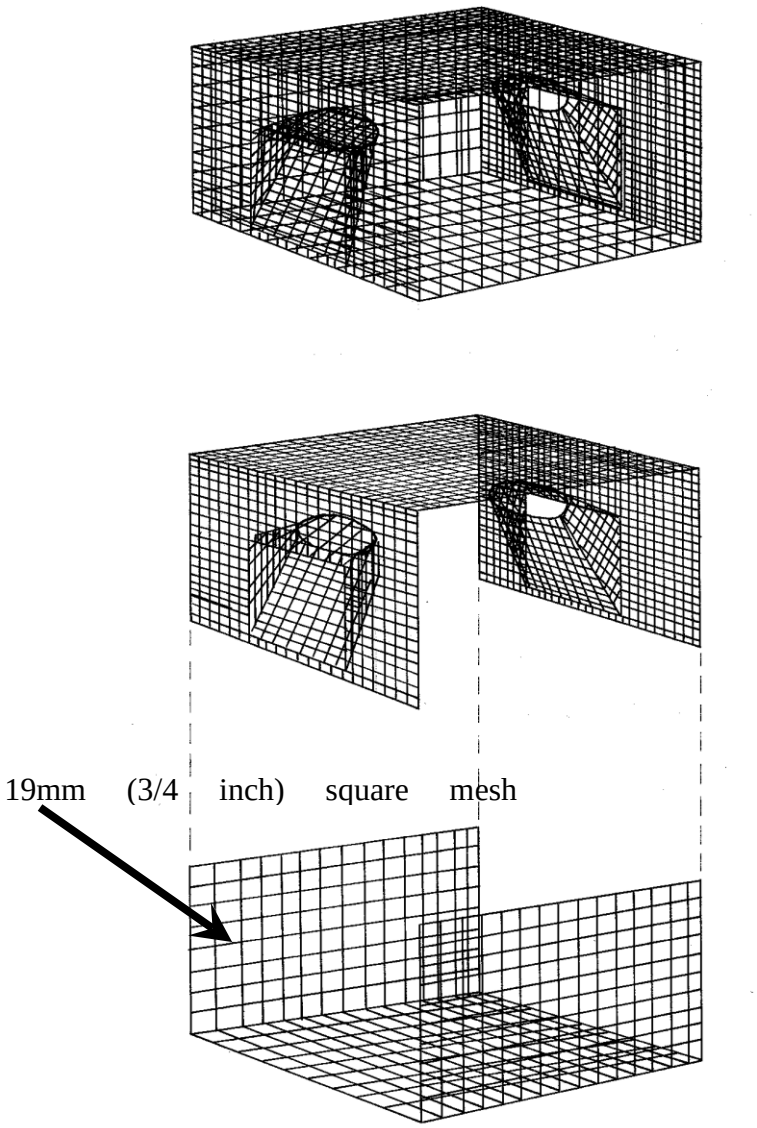
Wire or Hard Mesh Traps - These traps must have either:

Four opposing tunnels constructed of a rigid square mesh material having a minimum dimension (after dip coating) that will allow the passage of a 22.2mm (7/8 inch) square peg through the mesh without altering the shape of the mesh opening. The lower side of each tunnel must extend to the bottom edge of the trap and must be at least one half the length of the trap side, or:

Refer to Wire Mesh Trap Options 2 and 3 on the following pages.

FIGURE 4: WIRE MESH TRAPS - OPTION 2 (SMALL VOLUME)

Minimum 19 mm (3/4 inch) Opening Mesh on 2 Sides and Bottom
Maximum Volume 100 Litres

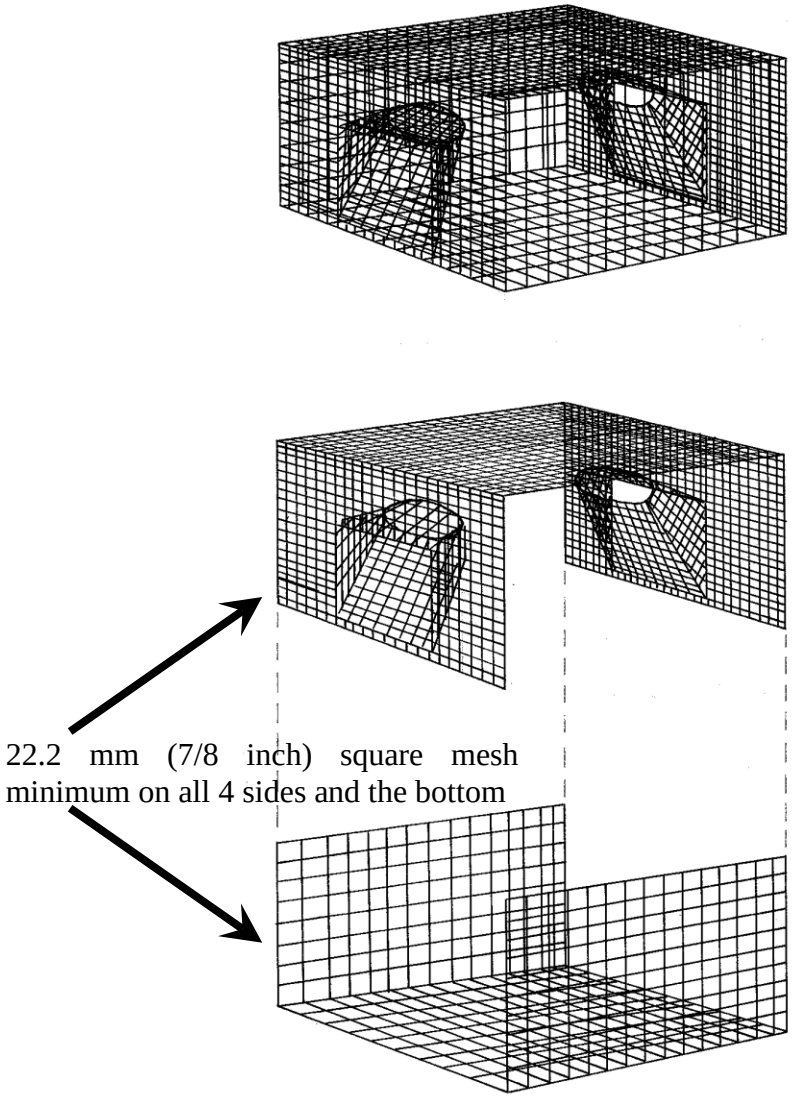


The bottom and two opposing sides must be constructed of a square mesh material that will allow the passage of a 19mm (3/4 inch) square peg through the mesh without altering the shape of the mesh opening, or

Also Refer to Wire Mesh Trap Options 1 and 3 on the adjacent pages.

FIGURE 5: WIRE MESH TRAPS - OPTION 3 (LARGE VOLUME)

Minimum 22.2 mm. (7/8 inch) Opening Mesh on 4 Sides and Bottom
Maximum Volume 170 Litres.



The bottom and all 4 sides must be constructed of a square mesh material that will allow the passage of a 22.2 mm (7/8 inch) square peg through the mesh without altering the shape of the mesh opening; or

Refer to Wire Mesh Options 1 and 2 on the preceding pages.

TABLE 1: STACKING CONE NESTING TRAP, MAXIMUM DIMENSIONS

Height in inches:

Average trap diameter in inches (calculated as the top ring diameter + the bottom ring diameter / 2)	9	10	11	12	13	14	15
26	78	87	96	104	113	122	131
27	84	94	103	113	122	131	141
28	91	101	111	121	131	141	151
29	97	108	119	130	141	152	162
30	104	116	127	139	151	162	174
31	111	124	136	148	161	173	186
32	119	132	145	158	171	185	198
33	126	140	154	168	182	196	210
34	134	149	164	179	193	208	223
35	142	158	173	189	205	221	237
36	150	167	184	200	217	234	250
37	159	176	194	212	229	247	264
38	167	186	205	223	242	260	279
39	176	196	215	235	255	274	294
40	185	206	227	247	268	288	309

Max. legal volume = 170 L. Shaded areas are volumes in excess of the limit.

Appendix 5: Prawn and Shrimp Trap Harvest Log Example

SHRIMP TRAP LOG

V.R.N. ☐☐☐☐☐☐ Vessel _____ Skipper _____ Year 2 0 0 ☐ Page No. _____

Catch Weights: (check one)
☐ Pounds (LB)
☐ Kilograms (KG)

Record By String

TRAP DESCRIPTIONS
A 3-Ring Frame, Cone Nesting
B 2-Ring Frame, Cone Nesting
C Circular, Non-nesting
D Collapsable Oval, Round or Rectangular
E Plastic Buckets, Round or Rectangular
F Wire Mesh, Square or Rectangular
G 4-Ring Frame, Cone Nesting
H Other (describe) _____

MUST FILL OUT TRAP INFORMATION ON FIRST PAGE OF EACH MONTHLY SUBMISSION AND EACH TIME TRAP INFORMATION CHANGES Trap information same as previous page? (check for yes) ☐

TRAP TYPE (s) (select letter)	Bottom Diameter (")	Top Diameter (")	Height (")	Length (")	Width (")	No. of Tunnels	No. of each trap type	Code
☐	☐☐	☐☐	☐☐	☐☐	☐☐	☐	☐☐☐	☐☐
☐	☐☐	☐☐	☐☐	☐☐	☐☐	☐	☐☐☐	☐☐
☐	☐☐	☐☐	☐☐	☐☐	☐☐	☐	☐☐☐	☐☐

For TAILED Prawns, **multiply weight by 2** & enter in **Whole Prawn Weight** ☐ KG ☐ LB

	TIME HAULED			SOAK TIME	LOCATION		STATISTICAL		DEPTH		NO. OF TRAPS	Whole Prawn Weight	FREEZER BOATS ONLY - RECORD SIZES BY **WEIGHT**					Dock Shrimp	Humpback Shrimp	Octopus				Remarks
	month	day	Time (24hr) hh:mm	(Hours)	Latitude/Longitude dd° mm.mmm	ddd° mm.mmm	area	sub-area	Fathoms min.	max.			Medium 34-42/KG	Large 25-33/KG	X-Large 19-24/KG	Jumbo 15-18/KG	S-Jumbo < 15/KG	(coonstripe)	(king)	Released #	Wt.	Kept #	Wt.	
					Latitude	Longitude																		
1			:																					1
2			:																					2
3			:																					3

Header Information

Catch Weights - indicate Pounds or Kilograms
Do NOT mix pounds and kilograms on the same page

Trap Information - Each time harvest logs are submitted, the first page **MUST** include the detailed trap information, including:
Trap type - choose appropriate letter
Trap size - all measurements in inches (")
No. of tunnels
No. of traps
For additional pages, use check box if trap information is unchanged
If trap information changes, fill in new header trap details

Detailed Fishing Information

Time Hauled - give month, day, hour and minutes (24 hour clock)
Soak time - record in hours
Location - record Latitude / Longitude for start location of each string

Detailed Fishing Information cont'

Statistical - Pacific Fishery Management Area and sub-area must be provided for each string
Depth - record in fathoms; min. = minimum depth of set max. = maximum depth of the set
No. of traps - record the number of traps fished for the corresponding catch data

Whole Prawn Weight - record as whole weights only
For tailed prawns, **multiply weight by 2** and enter under Whole Prawn Weight
DO NOT fill in the whole weight if your product has already been recorded in the freezer weight section. Only product in addition to your freezer weight should be recorded here.
***Record of sizes by weight** - For use by Freezer Boats
USE AS A GUIDELINE THE SPECIFIED COUNTS PER KILOGRAM FOR EACH SIZE CLASS EG 15-18 PIECES PER KG

Dock Shrimp - record as whole weights (also known as coonstripe shrimp)
Humpback Shrimp - record as whole weights (also known as king shrimp)
Octopus - for each string of gear record the **total number and total weight** of octopus released and kept
Indicate Pounds or Kilograms for Octopus weights
Remarks - make note of any problems, unusual catch, unusual weather, berried females, etc.

Fisheries and Oceans Canada

Pêches et Océans Canada

MARINE MAMMAL INTERACTION FORM

Sighting Date: _____

Sighting Time: _____

Location: _____

_____

Latitude: _____ _____

Deg *Min*

Longitude: _____ _____

Deg *Min*

Observer Information

Name: _____

Address: _____

_____

Phone: _____

Email: _____

Vessel: _____

Target Species: _____

Gear type: _____

Logbook # (identifier) _____

Identifier

Logbook: _____

FOS: _____

Other: _____

Gear damage *(please circle)*

Gear lost: Yes or No

Cause: Known or Unknown

Comments: _____

_____

Species (check one)

Dolphin / Porpoise

☐Species code: _____

☐Unidentified

Whale

☐Species code: _____

☐Unidentified

Seal / Sea Lion

☐Species code: _____

☐Unidentified

Incident type:

☐Dead animal
☐Entanglement
☐Collision
☐Harassment
☐Sighting
☐Live Stranding
☐Shooting
☐Sick or Injured
☐Depredation
☐other:

Animal Condition

☐Appears Healthy
☐Sick or Injured
☐Dead
☐Unknown

ID Confidence

☐Certain
☐Probable
☐Possible
☐Uncertain

Number of Animals

Min # _____

Max # _____

Best # _____

Support Material

☐Photos
☐Video
☐Sample
☐Other

Body Length

☐<1m (<3 ft)
☐1-1.5m (3-5 ft)
☐1.5-2m (5-7 ft)
☐2-3m (7-10 ft)
☐3-8m (10-25 ft)
☐8-16m (25-50 ft)
☐16-26m (50-80 ft)
☐>26m (>80 ft)
☐Other: _____(m/ft)

Description: *(shape, colour, markings, behaviour)*

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Comments: *(timeline, actions, people involved, etc)*

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Appendix 7: Fishing Vessel Safety

TABLE OF CONTENTS

1. OVERVIEW – FISHING SAFETY

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

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

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

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

Education and training programs

Marine emergency duties training

Fish Safe – Stability Education Program & 1 Day Stability Workshop

Fish Safe – SVOP/Safe on the Wheel Course

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

First Aid training

Radio Operators Course

Fishing Masters Certificate training

Small Vessel Operators Certificate training

Publications:

- TC Publication TP 10038 *Small Fishing Vessel Safety Manual* (can be obtained at TC Offices from their website at: http://www.tc.gc.ca/eng/marinesafety/tp-tp10038-menu-548.htm
- Amendments to the *Small Fishing Vessel Inspection Regulations* (can be obtained from: http://www.gazette.gc.ca/rp-pr/p2/2016/2016-07-13/html/sor-dors163-eng.php)
- Gearing Up for Safety – WorkSafeBC
- Safe At Sea DVD Series – Fish Safe
- Stability Handbook – Safe at Sea and Safest Catch – DVD Series
- Safest Catch Log Book
- Safety Quick

Further information is available on the internet at:

www.tc.gc.ca/eng/marinesafety/menu.htm

www.fishsafebc.com

www.worksafebc.com

2. IMPORTANT PRIORITIES FOR VESSEL SAFETY

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

2.1 Fishing Vessel Stability

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

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

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

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

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

A fishing vessel that is not required to undergo a stability assessment shall have adequate stability to safely carry out the vessel's intended operations. Guidelines are still being developed to help small fishing vessel owners and operators meet their regulatory requirements. Additionally, TC 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 TC office if you need to determine whether your vessel requires one, or to receive guidance on obtaining competent assessor.

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

The TSB has investigated several fishing vessel accidents since 2002 and found a variety of factors that effected the vessel's stability were identified as contributing factors in vessels capsizing, such as with: M02W0102 - *Fritzi-Ann*, M05W0110 - *Morning Sunrise*, M07M0088 - *Big Sisters*, M08W0189 - *Love and Anarchy*, M09L0074 – *Le Marsouin I*, M10M0014 - *Craig and Justin*, M12W0054 – *Jessie G*, M12W0062 - *Pacific Siren*, M14P0121 – *Five Star* and M15P0286 - *Caledonian.*

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

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

In 2013, Fish Safe developed a code of best practices for the food and bait herring fishery and the prawn fishery: 'Food and Bait – Best Practice Reminders'; 'Prawn Industry - Best Industry Recommended Practices.' Please contact Ryan Ford at Fish Safe for a copy of the program materials they developed to address safety and vessel stability in these fisheries.

Ryan Ford – Cell phone: (604) 739-0540 - Email: ryan@fishsafebc.com.

2.2 Emergency Drill Requirements

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

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

Between 2011 and 2015 the TSB investigated 17 fishing vessel accidents which resulted in 17 fatalities. The 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° C, but the greatest effects occur below 15° C. BC waters are usually below 15° C. Normal body temperature is around 37° C; cold water rapidly draws heat away from the body. The effects of cold water on the body occur in four stages: cold shock, swimming failure, hypothermia and post-rescue collapse. Know what to do to prevent you or your crew from falling into the water and what to do if that occurs. More information is available in the WorkSafe Bulletin 'Cold Water Immersion' (available from the WorkSafeBC website at www.worksafebc.com) where the need to don personal flotation devices (PFDs) while working in or near the water during fishing operations is clearly emphasized.

Resulting from the TSB investigations into the *Diane Louise* - M14P0110 and the *Caledonian* – M15P0286 fishing vessel accidents, the Board recommended that both TC and WorksafeBC

require that persons wear a suitable PFDs at all times when on the deck of a commercial fishing vessel, or when on board a commercial fishing vessel without a deck or deck structure, and ensure that programs are developed to confirm compliance.

2.4 Other Issues

2.4.1 Weather

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

http://www.weatheroffice.gc.ca/marine/index_e.html

2.4.2 Emergency Radio Procedures

Vessel owners and masters should ensure that all crew are able to activate the Search and Rescue (SAR) system early rather than later by contacting the CCG. It is strongly recommended that all fish harvesters carry a registered 406 MHz Emergency Position Indicating Radio Beacon (EPIRB). These beacons should be registered with the National Search and Rescue secretariat. When activated, an EPIRB transmits a distress call that is picked up or relayed by satellites and transmitted via land earth stations to the Joint Rescue Co-ordination Centre (JRCC), which will task and co-ordinate rescue resources.

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

Since August 1, 2003 all commercial vessels greater than eight 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 Canadian Coast Guard website at:

http://www.ccg-gcc.gc.ca/eng/CCG/Home

or go directly to the Industry Canada web page:

www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf01032.html

A DSC radio that is connected to a GPS unit will also automatically include your vessel's current position in the distress message.

More detailed information on MCTS and DSC can be obtained by contacting a local Coast Guard MCTS centre (located in Victoria **or** Prince Rupert or from the Coast Guard website:

www.ccg-gcc.gc.ca/Pacific).

2.4.3 Collision Regulations

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

a) every ship twenty metres or more in length;

b) every ship engaged in towing or pushing any vessel or object, other than fishing gear;

c) where the combined length of the ship and any vessel or object towed or pushed by the ship is forty five metres or more in length; or

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

Exceptions include:

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

b) a pleasure yacht less than 30 metres in length; and

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

More detailed information on VTS can be obtained by calling (250) 363-8904 or from the Coast Guard website at:

http://www.ccg-gcc.gc.ca/eng/CCG/Home

2.4.4 Buddy System

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

might indicate your vessel is in distress. Be sure to cancel the sail plan upon completion of the voyage.

3. WORKSAFEBC

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

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

www.worksafebc.com

For further information, contact an Occupational Safety Officer:

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

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

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

4. FISH SAFE BC

Fish Safe encourages vessel masters and crew to take ownership of fishing vessel safety. Through this industry driven and funded program Fish Safe provides fishing relevant tools and programs to assist fishers in this goal. The Fish Safe Stability Education Program and 1 Day Stability Workshop are available to all fishers who want to improve their understanding of stability and find practical application to their vessel's operation. The SVOP/Safe on the Wheel Course is designed to equip crew with the skills they need to safely navigate during their wheel

watch. The Safest Catch Program, along with fisher-trained Safety Advisors, is designed to give fishers the tools they need to create a vessel specific safety management system.

Fish Safe is managed by Ryan Ford, Program Coordinator John Krgovich, interim Program Assistant Yana Ingelsman, Bookkeeper Rhoda Huey and an experienced team of Fisher Safety Advisors. All activities and program development is directed by the Fish Safe Advisory Committee (membership is open to all interested in improving safety on board). The advisory committee meets quarterly to discuss safety issues and give direction to Fish Safe in the development of education and tools for fish harvesters.

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

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

In 2014 the TSB released three investigation reports:

- the collision between trawl fishing vessel *Viking Storm* and US long line fishing vessel *Maverick* and the subsequent fatality;
- the person over board off the prawn fishing vessel *Diane Louise* and the subsequent fatality; and
- the capsizing of the crab fishing vessel *Five Star* and subsequent fatality.

In 2016 the TSB released one investigation report:

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

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

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

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

The other two recommendations address the most basic step that fishers can take: wearing a PFD. Here in BC, roughly 70% of all fishing-related fatalities in the past decade came while not wearing a PFD. Yet many fishers still don't wear them. Regulations currently require that PFDs be worn only if fishers identify a risk, however; you never know when you could end up in the water. So the TSB is recommending to TC and WorksafeBC to require persons to wear suitable 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 that programs are developed to confirm compliance.

For more information about the TSB, visit the website at:

www.tsb.gc.ca

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

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

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

http://www.tsb.gc.ca/eng/medias-media/photos/index.asp

Reporting an Occurrence:

www.tsb.gc.ca/eng/incidents-occurrence/marine/

After a reportable occurrence happens; you can fill out the TSB 1808 form or call the TSB at the contact information below.

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

Appendix 8: Canadian Food Inspection Agency – Prawn/Shrimp Sanitary Guidelines

Canadian Food Inspection Agency | Agence canadienne d'inspection des aliments

PRAWN / SHRIMP SANITARY GUIDELINES

Potential contamination of fish products may occur if adequate controls over sanitation and hygiene are not followed during the fishing and handling, both on board the vessel and during holding and transporting to the processing plant. In the past, prawn/shrimp have been found to be contaminated with *E. coli* and, more recently, there have been reports of suspected norovirus contamination.

Adherence to the following guidelines will reduce potential contamination of fish products.

1. Water Supplies, and Fishing Locations

The seawater used to fill live tank systems must be taken from open and clear offshore waters away from harbours, coves, and vessel mooring locations. Intake pipes should be located on the opposite side of the vessel to any vessel waste discharge, and as deep as possible to avoid taking in surface water. Open live tank systems that run with continuous fresh seawater circulation must be shut off when entering harbours or unloading docks.

Do not fish near locations of known sewage outfalls, discharge pipes or other contamination sources.

2. Sanitation Controls for the Vessel and Equipment

After each delivery, the entire live tank holding and chilling system must be thoroughly cleaned and then sanitized with a bleach solution consisting of approximately a capful of bleach per gallon of approved source of potable freshwater (follow manufactures directions). At least a 20 minute contact time is needed for the solution to properly sanitize the lines. If systems cannot be drained completely overnight, the bleach solution should remain in the lines and be flushed out thoroughly in the morning before taking on fresh seawater for the day's fishing. This is especially crucial for parts of the chilling system located in warm engine compartments where the water inside the system could warm up and cause bacteria to grow.

In addition to the live tank system, all other pieces of equipment, utensils, and surfaces used in the handling of prawns/shrimp must be thoroughly cleaned & sanitized using the following 5 step method:

i) rinse with cold water to remove excess debris & pieces of prawn, etc.,
ii) scrub all surfaces thoroughly with detergent and scrub brush,
iii) rinse with cold water to remove all traces of detergent,
iv) sanitize with mild bleach solution (see above) and allow to air dry,
v) rinse with cold water prior to beginning the next day's production.

3. Personal Hygiene Controls

Fishers and all handlers of prawns/shrimp must exercise good personal habits which includes thoroughly washing hands with soap and water prior to any handling of prawns/shrimp or equipment. Fishers and handlers must not work on the vessel or handle product if they are ill.

Harbour water or non-potable water from alongside the dock where the vessel is tied up must never be used for cleaning purposes. Likewise, do not draw water from the ocean in close vicinity to towns, villages, industrial plants, fish plants and freezer/factory ships. Water drawn in proximity to such sources has a higher risk of being contaminated.

4. Other

Protect product from exposure to elevated temperatures while onboard the fishing vessel.

5. Prawn/Shrimp Fishers and Federally Registered Processors

To meet the *Federal Fish Inspection Regulations* all prawns/shrimp (live or frozen) **must be processed in a federally registered establishment before they can be exported out of BC or Canada.** Legal action may be taken if it is determined prawns/shrimp have been exported without being processed at a federally registered facility.

The federally registered prawn/shrimp processor must describe the controls required from harvest to transportation, holding and processing in their Quality Management Plan (QMP).

Processors may use a Supplier Quality Agreement (SQA), or other agreement, between the processor and the fisher, to outline the handling practices of the product and the cleaning and sanitation practices on the vessel.

Additionally the processor must include controls for the mixing and dipping of preservative solution and an inventory control of boxes provided to the fisher for freezing product.

Processors will verify the SQA or other agreement is working and is effective. Methods of verification could include reviewing written records from the vessel for requirements outlined in the SQA, physically inspecting catch vessels to confirm compliance to the SQA and product testing at the beginning of the season and at regular intervals during the season.

For more information contact your federally registered processor or local Canadian Food Inspection Agency Office:

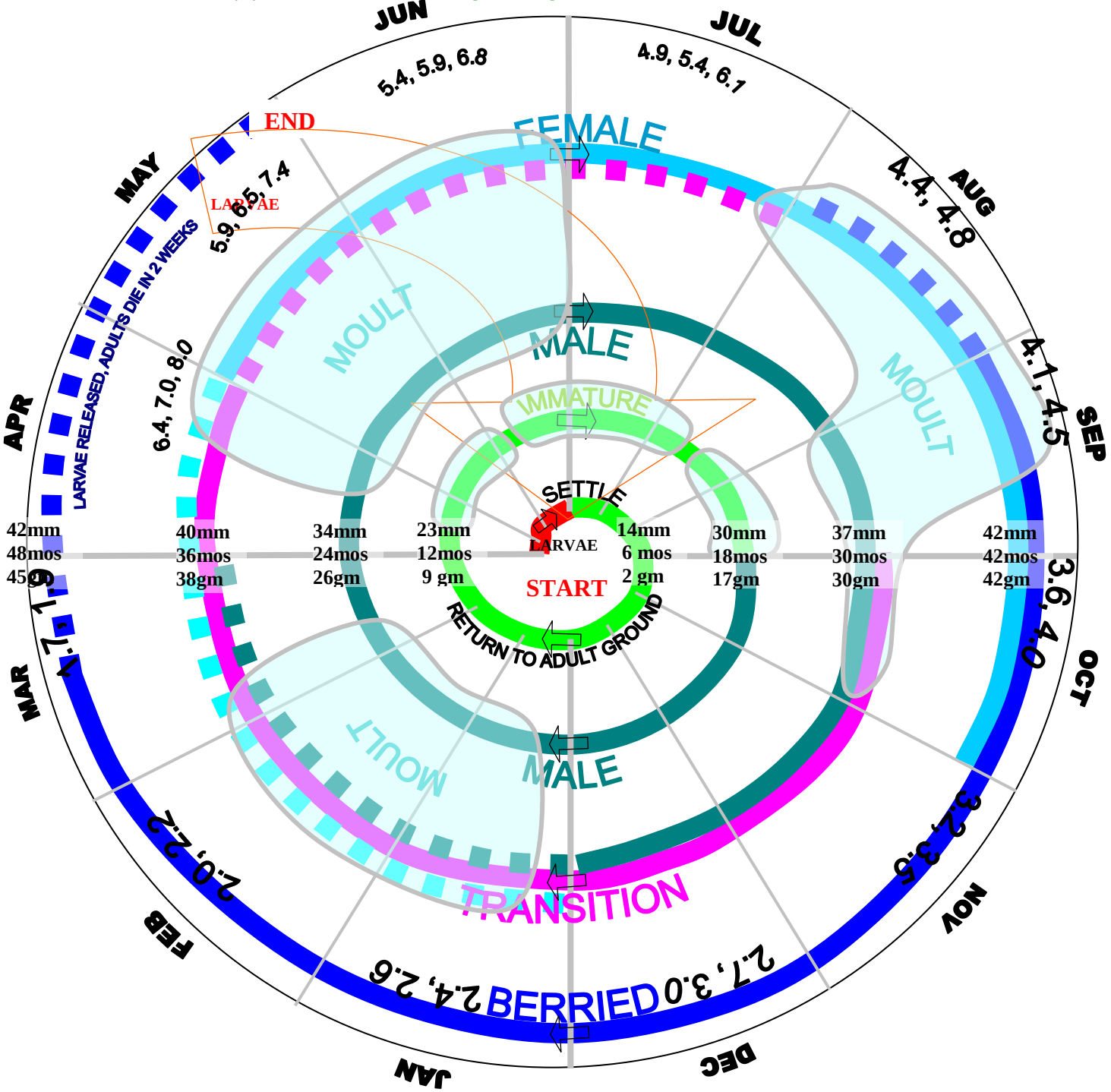
CFIA - Burnaby
150-3001 Wayburne Dr.
Burnaby B.C.
V5G 4W3
(604) 666-9904

CFIA - Victoria
103 – 4475 Viewmont Ave.
Victoria, B.C
V8Z 6L8
(250) 363-3618

CFIA - Parksville
457 E. Stanford Ave.
Parksville, B.C.
V6P 1V7
(250) 248-4772

v7

PRAWN LIFE CYCLE



1. LIFE CYCLE NOTES

The diagram is based on the 12 months of the year, and the four year life cycle of the prawns. It provides information about what life stages may be present, their size, and for the last year of the life cycle, the spawner index to which the fisheries are managed.

The diagram was first created in March 2003. It is still under review and correction with respect to size at age, and timing of moult occurrences. In particular, the size increases from 30 months ot 42 months appear insufficient, and the shape of the timing of the moult period occuring in the late summer needs some clarification.

Solid spiral lines indicate that most prawns are in that stage at that time and portion of their life cycle. Hatched lines indicate that some prawns may be in the leading or trailing portions of a life cycle stage. All prawns begin life as males, spawn at about 2.5 years of age, then undergo a change at 2.5 to three years of age to become females, spawn again as adult females, extrude and carry eggs at 3.5 to four years, hatch out the larvae and then die. Few if any prawns survive past the fourth year.

The light spiral line near the centre of the diagram indicates immature prawns from larval settlement to 18 months. This continues out to a dark spiral line indicating male prawns from 18 months to 30 to 36 months. The next portion of the spiral line indicates transition prawns which are in the process of changing from male to female life forms, from 30 to 37 months. The last light portion of the spiral line indicates adult female prawns from 37 to 43 months, before they extrude and carry eggs under their tails. The last portion of the line indicates female prawns carrying eggs under their tails, from 41 to 48 months. This is the end of the life line.

The numbers on the horizontal line through the middle of the diagram indicate an average length and weight by months of age. For example, a 30 month prawn is approximately 30 gm. weight and 37 mm. carapace length. Carapace length is the distance measured from the back of the eye socket to the middle of the back of the shell that covers the head and thorax, in front of the tail. Following on this example, a prawn at 30 month age is likely to be either a late stage male or an early stage transition, and at a time of life when they are likely to moult.

The figure also includes a series of numbers which follow the spiral for the last year of the prawn's life cycle. These are spawner index values. The spawner index is the average number of females or transitional prawns which will become females and complete their life cycle in the final year, caught by a standardized trap fished for 24 hours. From April to July there are three index numbers listed. From August to March there are only two. In all cases, the first number of the series is the original "base line" spawner index which was established more than 20 years ago. In all cases, the second number is a value 10 % greater than the original base line number. This is the index number that is presently used to manage prawn fisheries throughout the coast. It is higher than the baseline to provide an additional margin of safety, for example, by providing a buffer for possible delays in invoking closures in fisheries on prawns, whether they closures of the commercial fishery in-season or recreational fishery when needed. The third number is an index value 25 % higher than the base line. This index number only appears for the period of the

commercial fishery from April through July. It is the management target for closures in areas where there are a large number of recreational fishers following the commercial fishing season.

2. EXAMPLE OF USE OF THE DIAGRAM

Consider November when there are fall index suveys in important recreational fishing areas. From the outside working in, the diagram indicates you may expect to find berried female prawns of 42 mm average carapace length and 42 gm average weight. There are also small transition prawns which have recently come out of a moult and large male prawns which have not yet moulted into the transitional stage. Both of these are of like size, 37 mm CL and 30 gm. weight. Note that these 2.5+ year old prawns are in excess of the commercial legal size limit. There will also be smaller 1.5+ year old male prawns of average size 30 mm and 17 gm weight. Finally, although not often seen in traps due to their size, there will be 14 mm 2 gm immature 0.5+ year old prawns. As well, these prawns may be in shallower water, still moving down slope to the preferred adult habitat at greater depths.

At this same time, note the spawner index management levels, which are the two numbers on the outer edge of the spiral. Fishery managers prefer to see values in the fall index surveys in excess of an average of 3.5 females per trap. Note that at this time of year, almost all adult female prawns will be carrying eggs, so are easy to identify and count. Also note that although large transition prawns are present, they do not count towards the index as they will not complete their life cycle in this spawning season. These transitional prawns will count in the spawner index measurement, beginning in April as by that time they will complete their life cycle by the following winter. With respect to the index number, if the sampling returns an index between 3.2 and 3.5, managers will be concerned and will consider if closures may be necessary, based on fishing intensity and the indexes seen in adjacent areas in a common geographic water body. If the index number is less than 3.2, managers will take action, usually a closure. In this case, adjacent areas in a common water body may also be closed if it is considered to be potentially beneficial to ensure increased larval production from those areas to offset reduced larval production from the area with the low index.

3. INFORMATION SOURCES

The length and weight numbers in this diagram are from a table presented by C.S. Wright and P. Panek, which is referenced back to Butler, Boutillier and Bond, Mikkelsen, and Ricker. Of these, Butler's publication was visited for additional information. Note that Butler's length/weight descriptions are generally lower than provided in the Wright and Panek table, and lower than represented on the diagram, suggesting that a range of values should be presented on the diagram. The length/weight values need to be checked against recent measurements made in field programs. For example, in southern Gulf of Georgia in March 2003, male lengths were 30 to 32 mm and transitions were 35 to 37 mm.

Further, there will be variations based on geography. For more northern areas, the whole diagram may have to be rotated or lengths of development periods altered to represent growing conditions in those waters. As well, size and weight characteristics may change. One enduring question, is

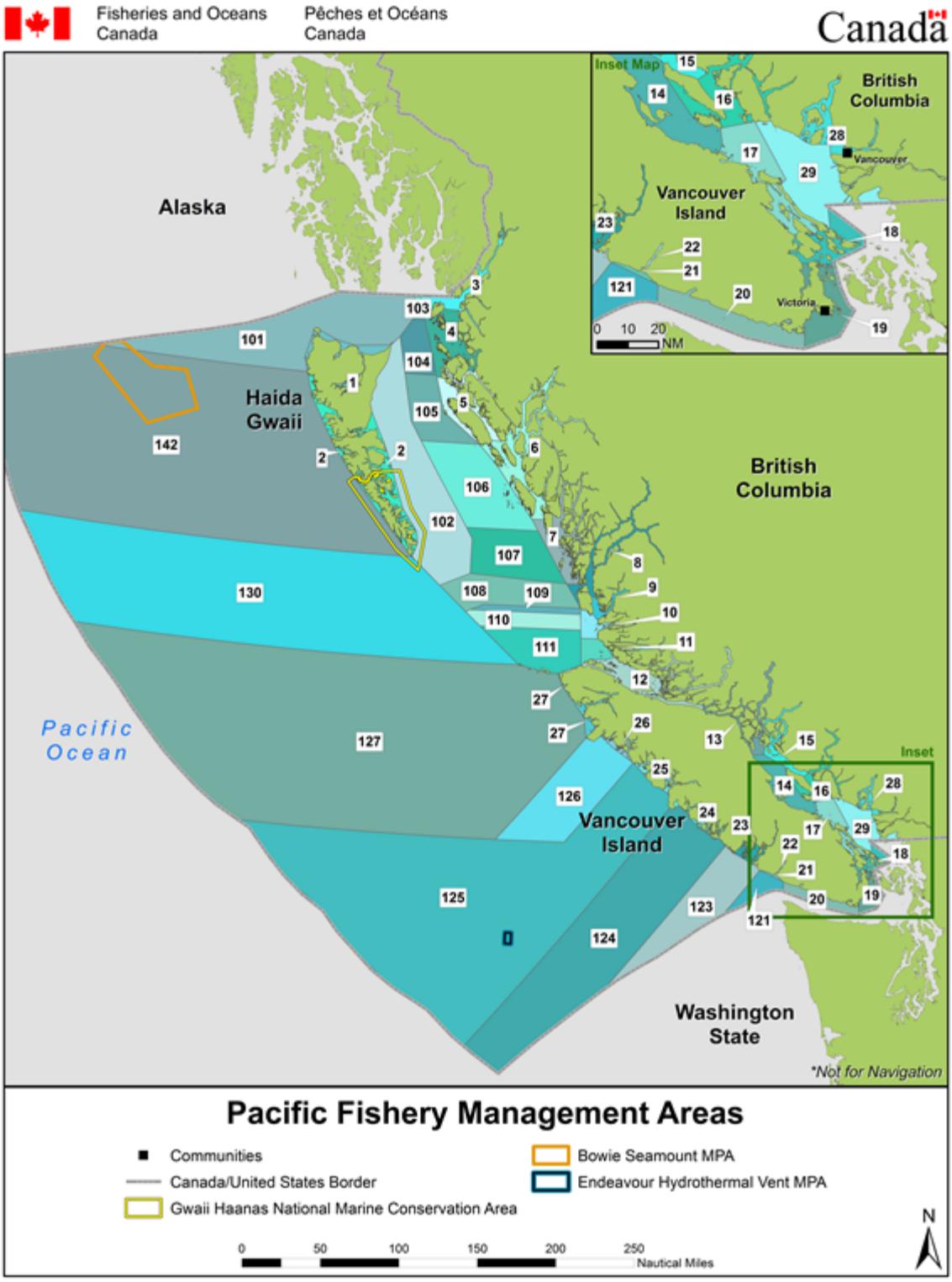
how those northern prawns can be so much larger than their southern cousins. Genetics, food supply or a five year life cycle?

Finally, the diagram began in response to a question from a prawn fishery observer, asking what could be expected when sampling was undertaken in March, 2003. The diagram used information from that sampling in Georgia Strait, as well as earlier work in February 2003 and December 2002 from Saanich Inlet, to identify a winter moult period and to confirm portions of the size ranges.

Butler, T., 1980.

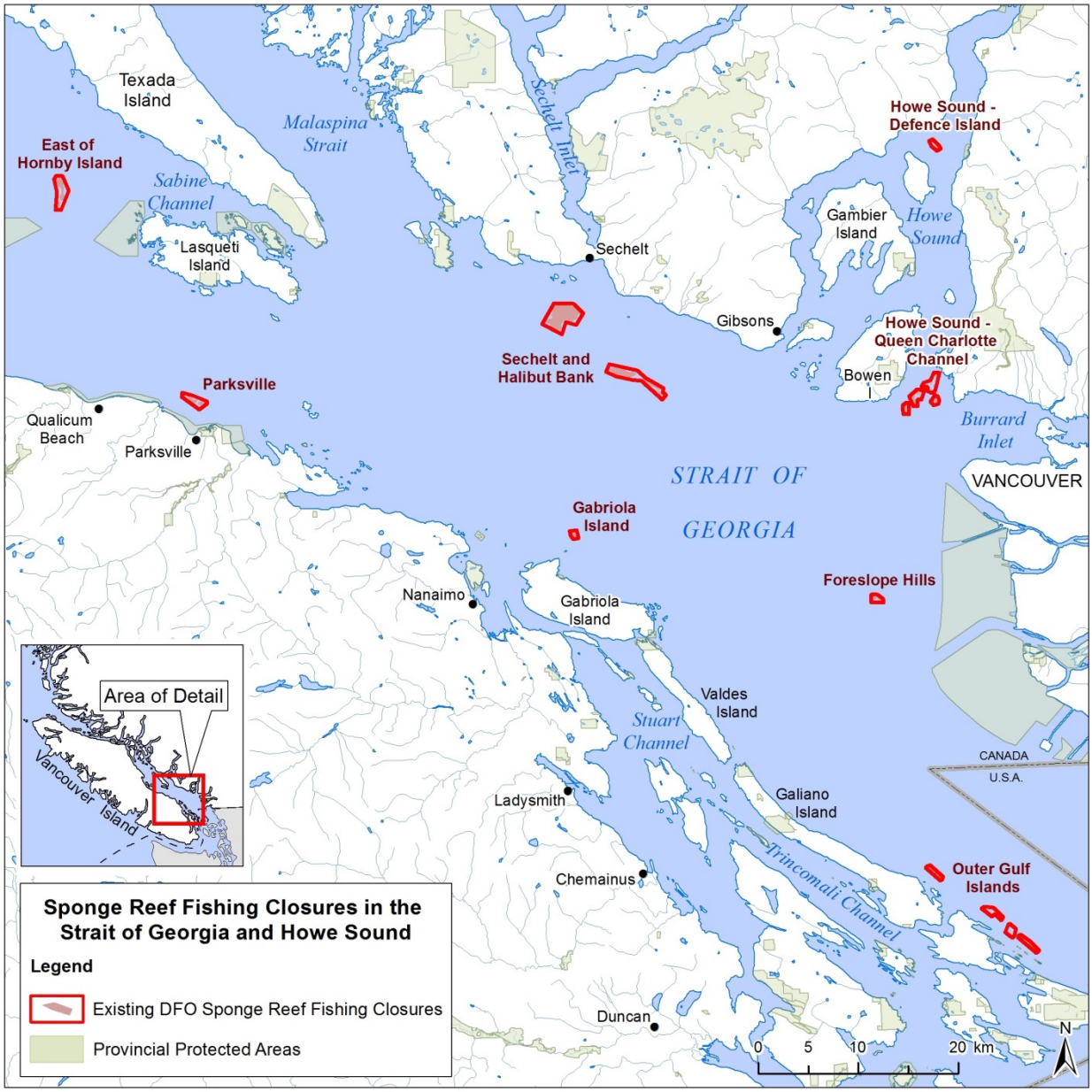
Maximum male carapace length = 48.1 mm.
Maximum female carapace length = 61.1 mm.
One year after hatching = 12 mos = 21.1 mm, 6.5 gm.
Second autumn = 18 mos = 27.0 mm, 13 gm, prawns mature as males.
Most function as males for another year (=30 mos).
The remainder begin sex change at 24 mos.
30 months; mixed group of males and slightly larger females.
30 months males = 32.9 mm, 23 gm.
36 months; all prawns are female or undergoing sex change, transitions.
Spawning over at end of October.
Ovigerous period lasts 5 to 5.5 mos.
48 months; 38 mm, >35 gm.
Large females 43 to 50 mm C/L are either fast growing or in fifth year.

Appendix 10: Map of Fishing Areas (Pacific Fishery Management Areas)



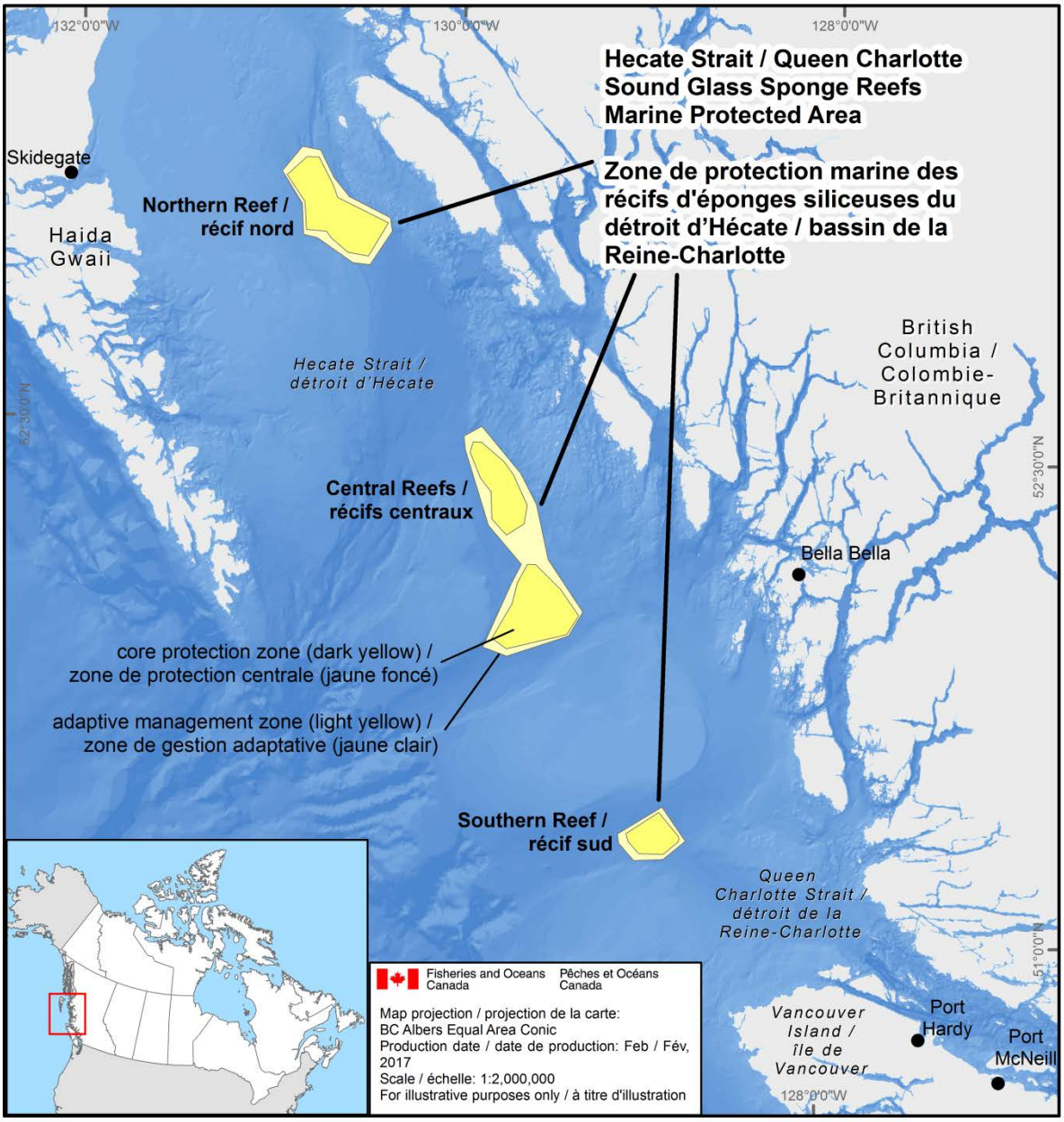
Inshore fishery areas include Pacific Fishery Management Areas 1 to 29.
Offshore areas include Pacific Fishery Management Areas 101 to 111, 121 to 127, 130 and 142.

Appendix 11: Strait of Georgia and Howe Sound Glass Sponge Reef Conservation Areas




Voluntary Avoidance Sponge Reef Areas in Howe Sound
Legend
Voluntary Avoidance Sponge Reef Areas
Sponge Reef Areas Requiring Ground-truthing
Existing DFO Sponge Reef Fishing Closures
Provincial Protected Areas
N
McNab Creek
Ellesmere Creek
Furry Creek
East Defence Islands
Porteau Cove Park
HOWE
Anvil Island
Anvil Island
Port Mellon
Christie Islet
Lost Reef
Gambier Island
Brunswick Point
Alberta Bay
Lions Bay
Lions Bay
Kelvin Grove
Halkett Bay Park
Halkett Point
Mariners Rest
New Brighton
Carmelo Point
Bowyer I
SOUND
Langdale
Bowyer Island
Plumper Cove Marine Park
Cypress Park
Gibsons
Keats Island
Collingwood Channel
Dorman Point
Horseshoe Bay
Bowen Island
Bowen Island Ecological Reserve
September Morn Beach
Queen Charlotte Channel
Area of Detail
Vancouver Island
0
2
4
8 km

Appendix 12: Hecate Strait and Queen Charlotte Sound Glass Sponge Reefs Marine Protected Area



Appendix 13: Fishery Monitoring & Catch Reporting Risk Assessment Tool

Fishery Monitoring & Catch Reporting Risk Assessment Tool

Column Comments

1 PART A: FISHERY DESCRIPTION & LICENCING INFORMATION

1.1 Licencing

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

1.2 Description

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

1.3 Size of Fishery

Column	Comments
Mean Catch (pcs/lbs)	Describe the size of the fishery in a method that provides context for the size of the fishery in relation to other users. - Record the average catch in appropriate units, over a representative time span for the fishery (the time period may differ between species). e.g., 40,000 lbs/yr, 2010-2014
Mean Effort (boat-days, fishers, etc)	Describe the size of the fishery in a method that provides context for the size of the fishery in relation to other users. - Record the average effort (number of boats, number of fishers, etc.) over a representative time span for the fishery. e.g., 2000 boat-days per year, 2012-2014

% TAC	Describe the size of the fishery in a method that provides context for the size of the fishery in relation to other users. -Record the range of percentages that the fishery takes of the total exploitation rate (e.g., 50-75%), or provide the mean total exploitation rate over a specified time period (e.g., 25%, 2005-2010)

2 PART B: ECOSYSTEM RISKS

2.1 Main Species

Could the mortality caused by fishery threaten the main fish species or stock that is being assessed? "Main" can also be referred to as "target".

Column	Comments
Main Species or Stock Status	Does the fishery target a species/stock that is thought to be of concern in some way (e.g., Is it healthy and abundant? Is it listed under the *Species at Risk Act* (SARA)? Has it been assessed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) or Wild Salmon Policy (WSP)? Has it been identified as a concern according to the Salmon Outlook or its Integrated Fisheries Management Plan status or another assessment grouping? Or is the species or stock status presumed to be low but data deficient? Is there a co-migrating stock amongst the main species that is sensitive in some way?), and if so, what is the consequence of the impact? How likely is it that the fishery will have a negative impact of such consequence? Consequence: E.g. 0= This question isn't applicable. 1= There are minor concerns with how the fishery will impact the health of the main fish population being analyzed (but it is not listed or presumed to be weak). 2= The fishery may impact a species/stock that is of medium concern (e.g. listed as "of special concern" or "amber status"). 3= The fishery may impact a species/stock of high concern (e.g. listed as, "threatened" or "endangered" or "red status"). Likelihood: E.g. 0 = This question isn't applicable 1= The fishery has a low likelihood of causing the consequence listed above. 2= The fishery has a medium likelihood of causing the consequence listed above. 3= The fishery has a high likelihood of causing the consequence above. NOTE: If unknown, the consequence value cannot be zero but can be 1, 2, or 3 depending on presumed consequence of impact.
Vulnerability of Main Species or Stock	Can the fishery cause long-term harm to the main species/stock via impacts on life-history? Consider the life history characteristics (i.e., growth rate of animal, rate of reproduction, etc.) of the species/stock. Consequence: E.g. 0= This question isn't applicable. 1= The fishery may have small impacts on the life-history of the species. 2= The fishery may have medium impacts on the life-history of the species. 3= The fishery may have high impacts on the life-history of the species. NOTE: If Unknown, value cannot be zero but can be 1, 2, or 3 depending on presumed consequence of impact. Likelihood: E.g., 0= This question isn't applicable. 1= The fishery has a low likelihood of causing the consequence listed above. 2= The fishery has a medium likelihood of causing the consequence listed above. 3= The fishery has a high likelihood of causing the consequence above.
Species or Stock Behavioral Changes	Are there disruptions to the behaviour of the main species/stock resulting from fishing activities (e.g., noise, displacement and/or interruption to breeding, migration changes due to gillnets, etc.)? Consequence: E.g. 0= no disruptions (e.g. marine land-based angling, for instance from a rock where one line won't

	impact behaviour of a school of fish) 1= yes but minor (e.g. boat based angling causes noise that may cause fish to dive deeper, etc.) 2= yes, medium impact (e.g. gillnets in Fraser temporarily impact migration patterns) 3= yes, major impact. NOTE: If Unknown, value cannot be zero but can be 1, 2, or 3 depending on presumed consequence of impact. Likelihood: E.g., 0= This question is not applicable. 1= The fishery has a low likelihood of causing the consequence listed above. 2= The fishery has a medium likelihood of causing the consequence listed above. 3= The fishery has a high likelihood of causing the consequence above.

2.2 By-Catch

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

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

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

2.3 Community & Habitat

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

Column	Comments
Key Predator or Prey	Does the fishery impact an important predator (e.g. resident orca) or prey (e.g. forage fish such as herring, sardine, eulachon, etc.)? Will removals in the fishery have a demonstrated impact on the survival of other species in the community? Consequence: e.g., 0= No (e.g. sea cucumber) 1= Minor impact. For instance, a fishery might discard a small amount of a plentiful forage fish (e.g. hake fishery impact on herring). Or discarded species has minor ecosystem role (e.g. sea urchins are food

	source for sea otters, but many alternatives) 2= Medium impact. For instance, fishery targets forage fish at low level, or discarded forage fish is large but not putting population at risk. Or entanglement of marine mammals in fishing gear can occur. 3= High/worrisome impact. For instance, the fishery has an impact on forage fish of low abundance (e.g. shrimp trawl impact on eulachon). Or the impact is on SARA listed species (e.g. chinook fishery limits resident killer whale diet). NOTE: If unknown, value cannot be zero but can be 1, 2, or 3 depending on presumed consequence of impact. Likelihood: E.g., 0= The fishery will not impact an important predator or prey. 1= The fishery has a low likelihood of causing the consequence listed above. 2= The fishery has a medium likelihood of causing the consequence listed above. 3= The fishery has a high likelihood of causing the consequence above. NOTE: If unknown, value cannot be zero but can be 1, 2, or 3 depending on presumed consequence of impact.
Direct Habitat Impacts	Are there direct NEGATIVE changes to structure or composition of the habitat or is there destruction as a result of fishing activity? (e.g. impacts on identified sensitive areas, impacts on spawning habitat due to disturbing redds, ghost gear, overlap with marine protected areas, national marine conservation areas, marine parks, other protected areas, etc.) Consequence: e.g. 0= No impact (e.g. marine land-based angling) 1= Minor impact (e.g. clam digging by small digging crew) 2= Moderate impact (e.g. bottom contact gear such as crab traps) 3= Major impact (e.g. trawl impact on glass sponge coral) NOTE: If unknown, value cannot be zero but can be 1, 2, or 3 depending on presumed consequence of impact. Likelihood: E.g., 0= The fishery will not impact habitat. 1= The fishery has a low likelihood of causing the consequence listed above. 2= The fishery has a medium likelihood of causing the consequence listed above. 3= The fishery has a high likelihood of causing the consequence above. It can be 1, 2, or 3 depending on presumed consequence of impact.
Indirect Habitat Impacts	Are there indirect NEGATIVE changes to habitat feature/function due to indirect impacts of fishing activity? (e.g. sedimentation, displacement of marine mammal, pollution, noise from vessel traffic, accumulation of lead from lost fishing gear, etc.) Consequence: E.g. 0= no 1= yes but minor (e.g. marine boat-based angling noise) 2= yes, medium impact (e.g.) 3= yes, major impact (e.g.) NOTE: If unknown, value cannot be zero but can be 1, 2, or 3 depending on presumed consequence of impact. Likelihood: E.g., 0= The fishery will not impact habitat. 1= The fishery has a low likelihood of causing the consequence listed above. 2= The fishery has a medium likelihood of causing the consequence listed above. 3= The fishery has a high likelihood of causing the consequence above.

3 PART C: RESOURCE MANAGEMENT ISSUES

Column	Comments
Fishery Type	Is the fishery SHARE-BASED, DERBY, or OTHER? DERBY (i.e., Effort-based) SHARE (e.g., Quota, IVQ, ITQ) OTHER (e.g., other allocation type) N/A (Does not always apply to Recreational or FSC fisheries, unless there is a defined share)
Potential to Over-Harvest	Under current management conditions, does the fishery under consideration (not all of the impacting fisheries) have the potential/capacity to overharvest the fish species or stock that is being assessed and put it at risk biologically? For instance, does the fishery have the capacity (e.g., sufficient boats, nets, etc.) to catch more than its Total Allowable Catch (TAC) if quota overruns or unreported fishing occurs? Can the fishery be managed (e.g., through up-to-date catch accounting) to avoid overharvest? Is the expected level of impact that removals will have on species/stock size and productivity expected to be low, medium or high? NOTE: We are not considering cumulative impacts of multiple fisheries at this time.
Compliance & Enforcement	Are there routinely compliance or enforcement concerns (e.g. low reporting, using barbed hooks, using wrong sized mesh, selling recreational or FSC fish, etc.) that may impact the monitoring of the fishery? Are there incentives for non-compliance? (Y/N) This variable is not scored so please explain concerns in the comment box if they exist.
International or Treaty Requirements	Are there any international/treaty information requirements, such as Pacific Salmon Treaty (PST), Marine Stewardship Certification (MSC), traceability, First Nations Treaties, etc. that would require a higher level of monitoring? (Y/N) This variable is not scored but please explain relevant treaties and associated requirements for monitoring in the comment box.
Info to Manage Other Sectors or Fisheries	Is information required in-season to plan for other fisheries, such as FSC, recreational, commercial? (Y/N) This variable is not scored but please explain in-season reporting requirements in the comment box.
Public Relations	Is there a need for higher monitoring due to public requirements for more detailed explanation about the impacts of the fishery? (Y/N) For instance, there are examples of fisheries where a low level of monitoring is probably appropriate due to ecosystem risk, but DFO implements higher levels of monitoring because the public needs it (example is Area 6 seine). This variable is not scored but please provide information about public's concern for monitoring in the Comment field.

4 PART D: PRELIMINARY RISK SCORING (CALCULATED)

Column	Comments
Risk to Main Species	Auto-calculated from MAIN SPECIES CATEGORY RISK SCORES PROTECTED: user may NOT over-ride.
Risk to By-Catch	Auto-calculated from BY-CATCH CATEGORY RISK SCORES PROTECTED: user may NOT over-ride.

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

5 PART E: FINAL RISK SCORING (ASSIGNED)

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

6 PART F: RISK ASSESSMENT NOTES

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

Risk Assessment Tool – Working Draft

Prawn and shrimp for Recreational by trap, ringnet

Part A: Fishery Description & Licensing Information

Licensing

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

Description

GEAR TYPE	trap, ringnet
FISH SPECIES for ANALYSIS	Prawn and shrimp
TIMING of ANALYSIS	Year- Round

Size of Fishery

MEAN CATCH (pcs/lbs)	326 t (2010)
MEAN EFFORT (boat-days, fishers, etc)	14.5% of angler days
% TAC	N/A

Part B: Ecosystem Risks

Main Species

MAIN SPECIES or STOCK STATUS	2
VULNERABILITY OF MAIN SPECIES or STOCK	2
SPECIES or STOCK BEHAVIOURAL CHANGES	1

By-Catch

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

Community & Habitat

KEY PREDATOR or PREY	1
DIRECT HABITAT IMPACTS	4
INDIRECT HABITAT IMPACTS	1

Part C: Resource Management Issues

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

Part D: Preliminary Risk Scoring (calculated)

RISK to MAIN SPECIES (D)	2
RISK to BY-CATCH (D)	3
RISK to COMMUNITY and HABITAT (D)	4
OVERALL FISHERY RISK (D)	4
TARGET MONITORING LEVEL (Low, Generic, Enhanced) (D)	Generic

Part E: Final Risk Scoring (assigned)

RISK to MAIN SPECIES (E)	2
RISK to BY-CATCH (E)	2
RISK to COMMUNITY and HABITAT (E)	4
OVERALL FISHERY RISK (E)	4
TARGET MONITORING LEVEL (Low, Generic, Enhanced) (E)	Generic

Risk Assessment Notes

CURRENT MONITORING LEVEL (Low, Generic, Enhanced)	Low
INFORMATION GAPS	- require spatial information with respect to areas fished - uncertainty with respect to efficacy of iREC
COMMENTS	- local depletion remains a concern
REFERENCE	Prawn and Shrimp BY Trap IFMP

Risk Assessment Tool – Working Draft

Prawn and shrimp for FSC by trap, ringnet (non-commercial gear)

Part A: Fishery Description & Licensing Information

Licensing

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

Description

GEAR TYPE	trap, ringnet (non-commercial gear)
FISH SPECIES for ANALYSIS	Prawn and shrimp
TIMING of ANALYSIS	Year- Round

Size of Fishery

MEAN CATCH (pcs/lbs)	Unknown
MEAN EFFORT (boat-days, fishers, etc)	at least 14 First Nations
% TAC	N/A

Part B: Ecosystem Risks

Main Species

MAIN SPECIES or STOCK STATUS	2
VULNERABILITY OF MAIN SPECIES or STOCK	2
SPECIES or STOCK BEHAVIOURAL CHANGES	1

By-Catch

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

Community & Habitat

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

Part C: Resource Management Issues

FISHERY TYPE	N/A
POTENTIAL to OVER-HARVEST	Low
COMPLIANCE and ENFORCEMENT	Yes
INTERNATIONAL or TREATY REQUIREMENTS	Yes
INFO to MANAGE OTHER SECTORS or FISHERIES	Yes

PUBLIC RELATIONS	No

Part D: Preliminary Risk Scoring (calculated)

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

Part E: Final Risk Scoring (assigned)

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

Risk Assessment Notes

CURRENT MONITORING LEVEL (Low, Generic, Enhanced)	Low
INFORMATION GAPS	- lack of catch and effort information in general
COMMENTS	- local depletion remains a concern
REFERENCE	-Prawn and Shrimp by Trap IFMP

Risk Assessment Tool – Working Draft

Prawn and shrimp for FSC by trap, ringnet (commercial vessel or gear use)

Part A: Fishery Description & Licensing Information

Licensing

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

Description

GEAR TYPE	trap, ringnet (commercial vessel or gear use)
FISH SPECIES for ANALYSIS	Prawn and shrimp
TIMING of ANALYSIS	Year- Round

Size of Fishery

MEAN CATCH (pcs/lbs)	Unknown
MEAN EFFORT (boat-days, fishers, etc)	at least 26 First Nations
% TAC	N/A

Part B: Ecosystem Risks

Main Species

MAIN SPECIES or STOCK STATUS	2
VULNERABILITY OF MAIN SPECIES or STOCK	6
SPECIES or STOCK BEHAVIOURAL CHANGES	1

By-Catch

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

Community & Habitat

KEY PREDATOR or PREY	1
DIRECT HABITAT IMPACTS	4
INDIRECT HABITAT IMPACTS	1

Part C: Resource Management Issues

FISHERY TYPE	N/A
POTENTIAL to OVER-HARVEST	High
COMPLIANCE and ENFORCEMENT	Yes
INTERNATIONAL or TREATY REQUIREMENTS	Yes

INFO to MANAGE OTHER SECTORS or FISHERIES	Yes
PUBLIC RELATIONS	No

Part D: Preliminary Risk Scoring (calculated)

RISK to MAIN SPECIES (D)	6
RISK to BY-CATCH (D)	3
RISK to COMMUNITY and HABITAT (D)	4
OVERALL FISHERY RISK (D)	6
TARGET MONITORING LEVEL (Low, Generic, Enhanced) (D)	Enhanced

Part E: Final Risk Scoring (assigned)

RISK to MAIN SPECIES (E)	6
RISK to BY-CATCH (E)	2
RISK to COMMUNITY and HABITAT (E)	4
OVERALL FISHERY RISK (E)	6
TARGET MONITORING LEVEL (Low, Generic, Enhanced) (E)	Enhanced

Risk Assessment Notes

CURRENT MONITORING LEVEL (Low, Generic, Enhanced)	Low
INFORMATION GAPS	- lack of catch information in general - questions remain re: marine mammal entanglements
COMMENTS	- local depletion remains a concern - enhanced risk score is driven by lack of seasonal closures and uncertainty with respect to effort
REFERENCE	Prawn and Shrimp by Trap IFMP