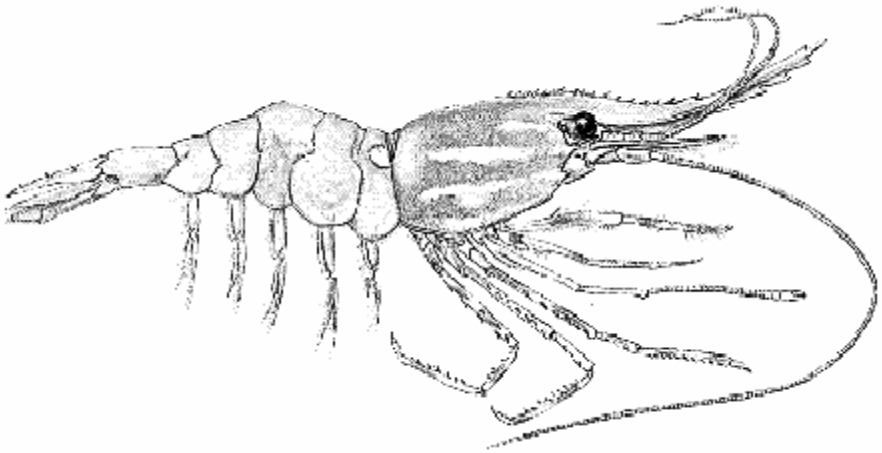
# PACIFIC REGION

# INTEGRATED FISHERIES MANAGEMENT PLAN

# PRAWN AND SHRIMP BY TRAP

# MAY 1, 2012 TO APRIL 30, 2013



***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.

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# 1. OVERVIEW

## 1.1. Introduction

This Integrated Fisheries Management Plan (IFMP) for Prawn and Shrimp by Trap covers the period May 1, 2012 to April 30, 2013.

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, 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 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 Sectoral Committee, the main consultation process for the fishery. Section 16 provides an annual review of the previous year of the fisheries based on the performance measures 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 discusses vessel safety. Appendix 7 includes information from the Canadian Food Inspection Agency regarding commercial vessel sanitation procedures. Appendix 8 provides a diagram of prawn life stages. Appendix 9 provides maps of Pacific Fishery Management Areas.

## 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 British Columbia (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 250 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 rated "Best Choices" by the Monterey Bay Aquarium Seafood Watch.

The recreational and First Nations fisheries are more recently developed. Recreational interest has peaked with increased prawn abundances in the south coast since the 1990s and with changes in salmon and halibut fisheries. First Nations' interest in prawns for food, social and ceremonial 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 main assessment and management tool 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 250 licence eligibilities. Of these, 13 are "grandfathered" (i.e., non-transferable and the eligibility expires when the licence eligibility holder leaves the fishery) and 53 are designated communal commercial licences for First Nations participation in the commercial fishery. Vessel sizes in the commercial fishery range from 3.9 m to 20.68 m. Most are single-licensed vessels. In-season "stacking" of a second licence eligibility on a vessel is permitted with a reduced complement of traps. 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.

A British Columbia Tidal Waters Sport Fishing Licence is required for the recreational harvest of all species of fish, including shellfish. Tidal Waters Sport Fishing Licences can be purchased at many tackle stores and marinas or online by using the internet at:

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

There were more than 296,549 licensed tidal water anglers in BC in 2011. Most (85%) were Canadian residents (Fisheries & Oceans Canada Tidal Waters Sportfishing Database and National Recreational On-line System). Most out-of-province anglers come from Alberta and Washington State. However, the Tidal Waters licence includes access to numerous species, so the number of recreational harvesters taking advantage of the bag limit for prawns or shrimp is unknown. In 2010, 677,253 angler days (33% of the total angler days) were spent harvesting shellfish, most (96%) by BC residents. Crabs, prawns and shrimp, clams and oysters are the main species of shellfish harvested (Fisheries & Oceans Canada 2010; surveys are conducted every 5 years).

First Nations' harvest for food, social and ceremonial purposes may occur where authorized by an aboriginal communal licence or, under treaty, a harvest document. Fifty-four communal licences and 3 harvest documents may be issued annually in the Pacific Region including harvest for a number of shellfish species. The communal licence or harvest document may contain

provisions for the designation of individuals by the First Nation or First Nation organization but the number harvesting prawns or shrimp by trap is otherwise unknown. Nine First Nations organizations reported prawn landings in annual reports between 2003 and 2008.

## 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 grounds inside of Vancouver Island (>60%), with the remainder from the west coast of Vancouver Island (<10%) and north and central coasts (25%). The presence of prawns in areas offshore (Pacific Fishery Management Areas (PFMA) 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, to date these surveys have not found any concentrations of prawns of particular note. A small directed trap fishery for Humpback Shrimp occurs in Prince Rupert Harbour (PFMA 4-10 and 4-11) and, occasionally, Masset Inlet (PFMA 1-6). A small directed trap fishery for Coonstripe Shrimp takes place in Sooke Harbour and Basin (PFMA 20-6 and 20-7).

The recreational fishery takes place in near-shore areas in depths of 40 to 100 m mainly within proximity to population centres, mostly concentrated in the south coast of BC. The highest recreational prawn effort is in Saanich Inlet, Stuart Channel, and Alberni Inlet. The waters around Howe Sound, Campbell River / Quadra Island, Powell River and Sechelt, Nanaimo, Barkley Sound, and Gold River / Tahsis are also areas important to recreational harvesters. Most of the recreational prawn catch comes from the south coast in the Strait of Georgia (66%) and the west coast of Vancouver Island (20%)(Fisheries & Oceans Canada 2010).

First Nations' communal licences and harvest documents identify the location where First Nations may fish for food, social and ceremonial harvest. First Nations' harvest areas generally front reserves.

Permanent area closures are listed in Appendix 1. These restrict commercial fishing only and have no impact on the First Nations' food, social and ceremonial fishery, or on the recreational fishery. Recreational closures are listed in Appendix 2 and in the British Columbia Tidal Waters Sport Fishing Guide available on the internet at:

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

## 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, daily fishing time restrictions and a daily single haul limit. Over 90% of the catch is prawns. Small commercial fisheries occur in the fall for Humpback Shrimp in Prince Rupert Harbour (six vessels) and Masset Inlet and for Coonstripe Shrimp in Sooke Harbour and Basin (one vessel in 2010, no vessels in 2011).

The commercial fishery has been managed since 1979 using an escapement-based model, referred to as the Spawner Index Model (Boutillier and Bond 2001). This is a standardized catch

per unit effort (CPUE) model based on ensuring a minimum number of female spawners available at time of egg hatch, which normally occurs around the end of March. The fishery has been managed coastwide to a more conservative spawner index level (10% higher) since 2000. Seasonal closures are implemented as fishing effort reaches 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 increased growth of the prawns prior to harvest, improving catch weight and value, and generally lasts about 58 days in recent years.

The directed Humpback and Coonstripe Shrimp fisheries take place in the fall to the end of December.

### 1.5.2. Recreational

The recreational fishery is an open entry fishery with a daily bag limit, two-day possession limit, gear limits and gear marking requirements. The main target species is prawns. There is no size limit. Humpback Shrimp and Coonstripe (or Dock) Shrimp may also be caught in localized areas.

The recreational fishery is open for most of the coast throughout the year. There are ten coastal areas in the south coast with recreational effort (Section 1.4) as well as commercial effort. In these areas, local winter recreational closures may be implemented on a year by year basis when female abundance is low if fishing effort exceeds the monthly spawner index. Once implemented, the area remains closed to recreational fishing to the end of the spawning cycle. The closure protects the remaining egg bearing females from recreational fishing mortality through to the end of the larval hatching period. The recreational fishery remains open in all other areas and re-opens coastwide April 1.

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 (the ‘9 point plan’) include higher spawner index targets, a one-week closure in May, and “pulse fishing” (2 weeks closed, 2 weeks open) beginning in September. The plan was agreed to by the commercial and recreational sectors and local First Nations in an effort to increase prawn abundance to benefit all sectors and reduce the need for localized winter recreational closures.

### 1.5.3. First Nations

First Nations’ fishing for food, social and ceremonial (FSC) purposes are the first priority after conservation and are open coast-wide throughout the year. First Nations fishing effort for an FSC domestic purpose has not been limited by catch quantity, except in those Nations where the Council or fisheries program has established their own catch limits for band members, or where allocated under treaty. 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 FSC is permitted.

Spawner index management to leave female spawners at levels 10% or greater in excess of the minimum monthly index and the increased commercial size limit are measures that have been supportive of year round FSC harvest opportunities.

### 1.5.4. Aquaculture

There are currently limited culture projects for prawns or shrimp. One land-based hatchery facility is licensed to culture prawns and a land-based closed containment aquaculture facility is licensed for White-legged Shrimp (*Litopenaeus vannamei*), a tropical species. The current level of culture activity is not known but suspected to be low or not 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 may be established under the *Oceans Act* (1996, c. 31). National marine conservation areas may be established under the *Canada National Marine Conservations Areas Act* (2002, c. 18).

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 contains policies for adopting an ecosystem based approach to fisheries management, including: A Fishery Decision-Making Framework Incorporating the Precautionary Approach, Policy for Managing the Impacts of Fishing on Sensitive Benthic Areas, and Policy on New Fisheries for Forage Species. Along with existing economic and shared stewardship policies, these will help Fisheries & Oceans Canada (DFO) meet objectives for long-term sustainability, economic prosperity, and improved governance. See the internet at:

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

More recent information on Canada's Approach to Fisheries Modernization includes: Draft Policy Framework on Managing Bycatch and Discards, Precautionary Approach Framework Building Plan Guidelines and the Benthic Ecological Risk Analysis Framework.

More information is available at the internet at:

www.dfo-mpo.gc.ca/fm-gp/future-avenir/index-eng.htm

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

The Prawn Sectoral Committee (Section 15) is the primary body guiding management decision-making processes for these fisheries. The Prawn Sectoral Committee meets three times per year for a post-season review (September), pre-season planning (November) and in April.

### 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 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 3 month pelagic phase prior to settlement.

Spot Prawns live to four years of age. 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. 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

Aboriginal Traditional Knowledge is not generally available.

### 2.4. Stock Assessment

Spot Prawn stocks are managed and assessed based on an escapement-based model (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 have generally shown an increasing trend from the development of the fishery up to 2009 (Section 3.1). A large decrease in catch was observed in 2010. Based on preliminary data, the 2011 catch is higher than 2010 but less than the record high catch in 2009. The primary indicator of stock status for 2012 will be the sample results obtained at the start of the 2012 commercial prawn season.

Saanich Inlet, Stuart Channel, and Alberni Inlet are being managed to a higher spawner index as part of an adaptive management program (Section 1.5.2). Potential benefits may be realized in the long term if higher escapement results in increased Spot Prawn abundance.

### 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:

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

### 2.7. Research

Several research projects are underway that include: improving understanding of Spot Prawn population dynamics, addressing juvenile rockfish by-catch issues, and gear standardization studies. Recent 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

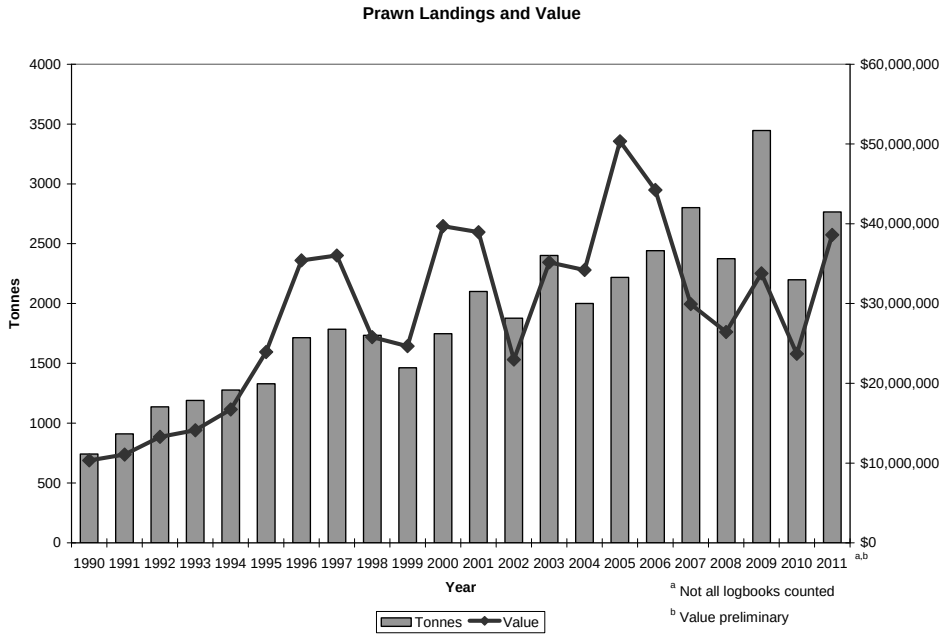
The intent of this section is to provide a socio-economic context of the prawn by trap fisheries in BC. An overview of commercial, recreational, and Aboriginal sectors of the fishery is provided.

## 3.1. Commercial

The commercial prawn and shrimp by trap fishery is one of the most valuable fisheries in the Pacific Region. With a landed value of $23.7 million, it was the 5th most valuable wild capture fishery in 2010, after the sockeye salmon, geoduck and horse clam, halibut and crab fisheries (BC Ministry of Environment, BC Seafood Industry Year in Review 2011).

A high proportion of vessels fully engage in the fishery and catch distribution within the fleet is not highly skewed, as it is in other more marginal fisheries. Over half of the 250 license eligibilities participate only in the prawn fishery and only 21% hold two or more additional fishing categories (Nelson 2009a). Nelson (2010) estimates the total value of prawn licences held by the commercial sector at $118.26 million, with a typical licence valued at $547,500. The report further estimates an aggregate vessel value of $38.65 million for the prawn fleet. Most licence eligibility holders live around Vancouver Island or the Sunshine Coast and lower mainland, a few are from the north coast and interior of BC. First Nations participation is increasing in response to demand (Section 3.3).

Coastwide catch in 2011 was in excess of 2,765 tonnes (all logbooks not yet accounted). This reflected a high abundance of prawns (age 3+) in 2011. The preliminary estimate (average price from available fish slips applied to preliminary landings from logbooks) of landed value for 2011 is $38.6 million, indicating a significant increase from 2010 as a result of higher catch and price. Landed value peaked at $50.3 million in 2005. A history of landings (Fisheries & Oceans Canada commercial logbooks) and value (BC Seafood Industry Year in Review series) is provided in the following graph. Landed values have been adjusted for inflation and are measured in 2011 constant dollars.




Source: commercial logbooks and BC Seafood Year in Review

Landed value does not reflect the total contribution of the prawn fishery to the provincial economy; the processing of prawns landed in the province is another source of economic value.

The wholesale value of prawns processed in BC in 2010 was $37.8 million, representing a value-added of $14.1 million over the landed value (BC Seafood Industry Year in Review 2010). The 2008 processor employment survey found that seafood processing employed 4,175 individuals in that year. Of these, processing the wild shellfish harvest accounted for 13% of jobs (BC Ministry of Agriculture 2011). A 2008 report linking seafood landings and processing employment found that wild caught prawns account for slightly over 7% of wild shellfish processing employment (Fraser, 2008).

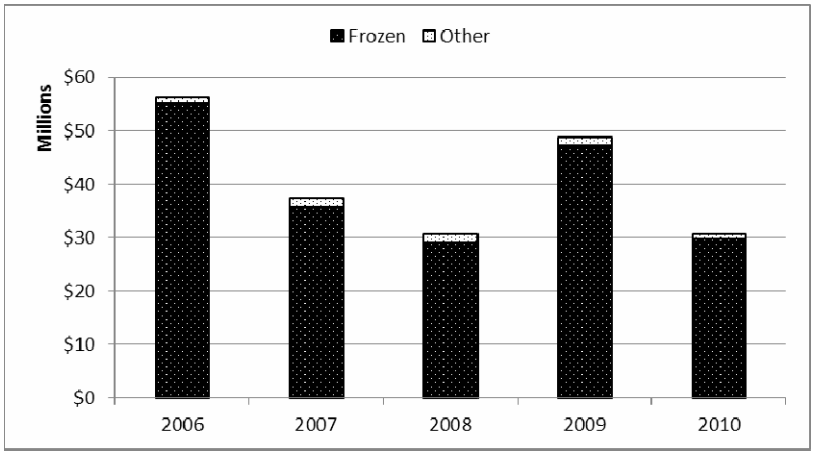
### 3.1.1. Viability and Market Trends

In 2009, 74% of commercial prawn and shrimp landings[1] were frozen and packaged at sea or on shore and exported to the Japanese market (Statistics Canada, 2012). 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 are recognized as a sustainable fishery by certain eco-groups, creating marketing opportunities (Nelson 2010).

BC benefits from a strong seafood exports sector, which is supplied by the domestic wild harvest, aquaculture, and raw imports. In 2010, the province's 183,000 tonnes of export shipments were valued at $957 million (BC Seafood Industry Year in Review 2010). As a result, BC's commercial fisheries are influenced by foreign price fluctuations, currency exchange rates, and market competition. Prawn and shrimp export prices peaked in 2005 and 2006; since then, export price and price paid to harvesters have declined by 31% and 39%, respectively. Following a sharp drop from 2006 to 2007, export price has increased gradually from 2008 to 2011 to 75% of the peak price (Statistics Canada, 2012).

Harmonized system (HS) codes which record and categorize exports do not disaggregate exports of prawns and shrimp, so they are reported together. In general, about 16% of landings (by weight) originate from the shrimp trawl fishery. The average annual value of prawn and shrimp exports from BC between 2006 and 2010 was $40.7 million in 2010 constant dollars. Ninety-seven percent of prawn and shrimp exported over that period were exported frozen. The remaining 3% were shipped fresh, chilled, prepared, or preserved (see graph below).

Value of Prawn & Shrimp Exports, in constant 2010 dollars




Source: Statistics Canada, 2012

[1] This number includes landings and exports of the shrimp trawl fishery, which are impossible to separate out of the export data.

Japan is a major market for BC prawns and shrimp, accounting for nearly 82% of exports from 2006 to 2010, at an annual average value of $33.3 million. The U.S.A., which accounts for 56% of BC's total seafood exports, is the second largest market for prawns and shrimp at an average $4.9 million[2] over that same period. Other markets include Taiwan, Hong Kong and China, and 17 other countries. Exports to Taiwan have grown the fastest over the past five years, with average annual growth of 230%. In 2010, shipments to Taiwan accounted for 7.58% of BC prawn and shrimp exports, valued at $2.3 million. Exports to Hong Kong and China grew by 8% and 78% annually over the same period[3]. Because of the drop in price since 2006, the value of exports to established markets (i.e., Japan and U.S.A.) has decreased over the past five years.

### 3.2. Recreational

Recreational fishing may occur to provide food for personal use, as a leisure activity, or as a combination of the two. The recreational community includes local residents, multi-species charter operators and lodges, and visiting anglers and boaters. In 2010, over 245,000 anglers fished in BC's tidal waters recreational fishery. Most (74%) were BC residents, with the remainder divided between Canadians from outside BC (12%) and visitors to Canada (14%) (Fisheries & Oceans Canada 2010). These activities provide a range of benefits to the participants as well as contribute directly and indirectly to economic activity.

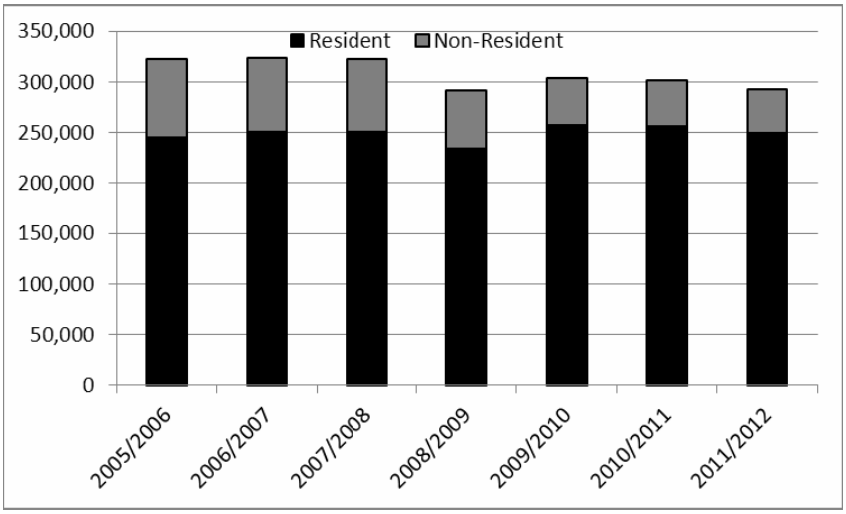
The national Survey of Recreational Fishing in Canada, conducted every five years, provides an estimate of individual expenditures and major purchases for recreational fishing. Typically, BC's tidal water recreational fishery has been the third largest recreational fishery in Canada in terms of direct expenditures and major purchases[4]. While resident anglers, who make up the majority of anglers in BC's tidal waters, had the largest expenditures, at $562.8 million in 2010, recreational fishing by non-residents adds money to the provincial economy. In 2010, non-resident direct expenditures (including fishing packages) and major purchases totalled $143 million. This number understates the overall contribution of non-resident tidal water anglers, however, as it only includes expenditures directly attributable to their fishing experience[5].

While opportunities for recreational fishing in BC's tidal waters attract international anglers[6], they are coming in smaller numbers (see graph below), while the number of resident anglers is relatively stable[7]. Recreational fishing continues to be important to the BC economy, but the rate of growth is slowing. In real terms, total direct expenditures and major purchases grew by nearly 15% from 2000 to 2005, but by only 1.82% from 2005 to 2010[8]. This slowdown is due mainly to

[2] Average export values are measured in constant 2010 dollars.
[3] Growth rates reported in this section are real growth rates based on export values adjusted to account for inflation, measured in 2010 constant dollars. 5-year average growth rates are calculated from 2006 to 2010.
[4] Based on the Survey of Recreational Fishing in Canada, multiple years.
[5] British Columbia's Fisheries and Aquaculture Sector (2007) reports that non-resident participants in recreational tidal water fishing also spend money on, for example, shopping, cultural events and attractions (such as museums and the theatre), and sightseeing at locations other than where they go fishing.
[6] For example, 47% of international anglers reported that had there not been tidal water fishing opportunities they would not have chosen British Columbia as their travel destination (Survey of Recreational Fishing in Canada, 2010).
[7] Note that while the graph shows that nearly 300,000 licences were sold in 2011/12, not all of these were annual licences. Many were licences for 1-5 days.
[8] Growth rates reported in this section are real growth rates based on expenditures adjusted to account for inflation, measured in 2010 constant dollars.

a drop in expenditures by international anglers of 47% between 2005 and 2010. Expenditures by resident anglers, on the other hand, increased by 18% over that same period.

BC Tidal Water Recreational Fishing Licences Sold, 2005 to 2012




Source: DFO. www.pac.dfo-mpo.gc.ca/fm-gp/rec/licence-permis/stat-eng.htm

Most of the direct expenditures and major purchases (60%) and package expenditures (72%) were attributable to salmon fishing[9] but interest in shellfish has increased, with 8.9% of resident anglers indicating prawns and shrimp as preferred species[10] (Fisheries & Oceans Canada 2005, 2010). The Survey of Recreational Fishing in Canada shows that fishing days spent on recreational shellfish harvesting increased by 13% from 2005 to 2010. In 2010, nearly 300,000 angler days were spent fishing for prawns and shrimp, nearly two thirds of these by resident anglers fishing in the Strait of Georgia[11] (Fisheries & Oceans Canada 2010). The Sport Fishing Advisory Board (SFAB) has identified prawns as a key species of interest to the recreational community, and in fact the recreational catch of prawns and shrimp increased by 75% between 2005 and 2010 (Fisheries & Oceans Canada 2010).

National and provincial summary information from the Survey of Recreational Fishing in Canada 2005 (2010 is in preparation) is available on the internet at:

www.dfo-mpo.gc.ca/stats/rec/can/2005/index-eng.htm

### 3.3. First Nations

First Nations are interested in economic opportunities. There are 53 communal commercial prawn and shrimp by trap licence eligibilities to provide economic opportunity to First Nations through participation in the commercial fishery (Section 3.1). The Allocation Transfer Program (ATP) retires existing commercial licence eligibilities from fish harvesters on a voluntary basis and re-issues these to eligible First Nation organizations as communal commercial licences. The Pacific Integrated Commercial Fisheries Initiative (PICFI), announced in 2007, is aimed at

[9] Based on analysis of the 2005 data.
[10] Survey respondents were asked to list any and all preferred species, so the 7.5% reporting that prawns and shrimp are a preferred species does not mean they don't also fish recreationally for other finfish or shellfish species.
[11] Note that data do not show what portion of the day was spent fishing for prawns and shrimp and that on any of these days anglers may also have targeted other species.

achieving environmentally sustainable and economically viable commercial fisheries, where conservation is the first priority and First Nations' aspirations to be more involved are supported. PICFI builds on fisheries reform work begun in response to the 2004 reports of the First Nations Panel on Fisheries and the Joint Task Group on Post-treaty Fisheries, as well as subsequent discussions in a wide variety of forums that have confirmed the need for PICFI. The Government of Canada committed $175 million over five years to implement the initiative.

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

www.pac.dfo-mpo.gc.ca/tapd/default_e.htm

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

www.pac.dfo-mpo.gc.ca/ops/fm/PICFI/default_e.htm

# 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. Fall spawner index sampling

The Larocque court decision affected licences issued by DFO for fishery management or stock assessment purposes where catch may have been sold to offset survey costs. This resulted in the cancellation of some surveys in 2006/07. A cost-sharing arrangement was made in 2007 between DFO and the Pacific Prawn Fishermen's Association (PPFA) to conduct the sampling. However, 2011 was the last year of interim funding provided by DFO to support this arrangement. DFO is seeking funding to conduct sampling in 2012. This has implications to ensuring a minimum number of spawners available at time of egg hatch and management of winter recreational fishing opportunities in ten coastal areas in the south coast (Section 1.5.2).

### 4.1.2. Spawner index management targets

The commercial fishery has been managed coastwide to a more conservative spawner index level (10% higher) since 2000. The conservative level was adopted for the recreational fishery in 2003. Although prawn stocks are healthy, sampling conducted in the fall and the resultant winter closure history show that the fall spawner abundances have fallen below the minimum monthly index in some areas in some years. To reduce the probability of falling below the minimum monthly index, an adjustment to the spawner index closure level was made in three areas for 2010 while the commercial and recreational sectors worked out an alternate strategy. This provides a larger buffer to fishery managers to protect spawner abundance.

The commercial and recreational sectors have focused their attention on addressing the recreational sector's concern for winter area closures (Section 4.2.2).

### 4.1.3. Commercial vessels and gear directed on FSC harvests

In recent years, DFO has observed a much greater harvest of prawns for FSC purposes than in the past and observed an increasing number of commercial vessels harvesting prawns for FSC purposes with commercial gear. DFO is becoming increasingly concerned about the impact such

harvest will have on the conservation and sustainability of the resource. In the past, effort was small enough that there was no need to have gear or catch limits for FSC harvest.

Last year, licence conditions were introduced on commercial vessels during the commercial opening to prohibit recreational or FSC catch to be onboard during the commercial season. In 2013, DFO is considering introducing licence conditions for the FSC fishery, such as trap limits, to address the concern about commercial vessels and gear being used to harvest prawns for FSC purposes. DFO welcomes First Nations views on this issue by encouraging First Nations to contact the Lead Fishery Manager for Prawn and Shrimp by Trap or a Resource Manager for their area (Section 14).

## 4.2. Social, Cultural and Economic

### 4.2.1. Commercial

The commercial sector has recognized some market issues but has had difficulty dealing with them when catch levels are strong, and individual financial results are satisfactory (Nelson 2009).

The Transportation Safety Board (TSB), in investigations of the sinking of the F/V Fritzi-Ann and F/V Morning Sunrise, expressed concern about the DFO maximum vessel length policy. The TSB felt that the policy put constraints on vessel replacements and influenced fish harvesters' decisions to make vessel bow alterations and stern extensions to meet maximum length constraints that may negatively impact on their vessel's stability. In December 2006, DFO requested advice of the industry caucus on a mechanism that would allow vessel length changes and reduce the practise of bow alterations and stern extensions. In November 2007, the Prawn Sectoral Committee agreed to establish a subcommittee to develop recommendations to DFO on reviewing existing licence conditions, including rules of application such as vessel length restrictions. DFO's review is pending. Fishing Vessel Safety considerations are provided in Appendix 6.

### 4.2.2. Recreational

Although some information on recreational prawn harvesting is gathered in dockside creel surveys, these surveys were designed primarily to gather salmon and finfish catch information. Annual estimates by the national survey of recreational fishing are only made every five years. There is limited information with which to compile annual estimates of effort and catch, which makes management difficult, particularly in areas where issues arise between sectors. Catch monitoring programs for all sport caught fish are being developed in collaboration with recreational fishery organizations. Prawns are a priority within the shellfish species to be included in these programs.

Local winter closures in fall surveyed areas (Section 1.5.2 and 4.1.2) have been a concern to many resident recreational harvesters, particularly in years of high prawn abundance. The SFAB would like to increase winter access by raising the commercial fishery spawner index closure level until fall spawner abundance is sufficient for the areas to remain open to recreational harvest. More information and further review of impacts is required before the request can be considered. DFO continues to support a collaborative approach to changes to the management strategy in high-use areas.

### 4.2.3. First Nations

DFO has become concerned about the increasing use of commercial vessels and gear in the FSC fishery and the impact this will have on conservation and sustainability of the resource (Section 4.1.3). DFO is seeking First Nations views on this issue by encouraging First Nations to contact the Lead Fishery Manager for Prawn and Shrimp by Trap or a Resource Manager for their area (Section 14).

Progress has been made on the Prawn Sectoral Committee process to be more open and inviting of First Nations' comments and input. The main issue at this time appears to be First Nations' commonly voiced interest in being more involved in management planning within their claimed traditional territories. This is acknowledged and being addressed by the Aboriginal Aquatic Resource and Oceans Management (AAROM) program, and local consultations are encouraged. Information from local consultations will be brought to the Sectoral Committee's attention. First Nations interested in bilateral discussion with DFO should contact the Resource Manager for their area (Section 14). DFO continues to work collaboratively with the A-Tlegay Fisheries Society to address concerns raised by the Campbell River Indian Band in Heydon Bay and Loughborough Inlet related to some recreational and commercial harvesters seemingly taking advantage of the isolated locale and using poor fishing practices.

The level of First Nations' harvest of prawns and shrimp for food, social and ceremonial purposes is unknown. However, DFO has observed a much greater harvest of prawns for FSC purposes than in the past and has observed an increasing number of commercial vessels harvesting prawns for FSC purposes with commercial gear (Section 4.1.3). This presents challenges for management of the fishery. 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. Prawns are a priority within the shellfish species to be included in these programs.

A number of First Nations are interested in economic opportunities to get involved in the commercial fishery. This is being addressed through the ATP and PICFI (Section 3.3).

More information on the AAROM program is available at:

www.dfo-mpo.gc.ca/fm-gp/aboriginal-autochtones/aarom-pagrao/index-eng.htm

## 4.3. Compliance

DFO has become concerned about the increasing use of commercial vessels and gear in the FSC fishery 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).

During 2011, DFO has consulted with stakeholders regarding proposed changes to the *BC Sport Fishing Regulations* which regulate aspects of recreational fishing for prawns and crab. There are four proposed changes: eliminating line floating at the surface; having unique floats for crab and prawn gear; mandatory requirement to have phone numbers (or Unique Fisher Identification #'s) on floats; and rot cord for round stainless steel crab traps. The proposed changes have been described in detail in the discussion document "*Proposed Changes to Recreational Crab and*

*Prawn Regulations and Conditions of Licence*" which is available from DFO Prawn Fisheries Managers (Section 14).

## 4.4. Ecosystem

### 4.4.1. Depleted Species Concerns

Until recently, by-catch of 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 by-catch. Non-target species are easily sorted and quickly returned to the water with presumed low mortality. However, juvenile rockfish (*Sebastes* spp.) that enter trap tunnels and 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 newly established Rockfish Conservation Areas (RCAs) with the collection of additional by-catch information. The sampling program estimates total rockfish by-catch in the commercial fishery since 2002 (Rutherford et al. 2009).

Several rockfish species are listed as Special Concern under the *SARA*. Recent assessments by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) have focused on rockfish. Although a *SARA*-listing as Special Concern does not result in any prohibitions, legal listing of additional rockfish species under the *SARA* may have further implications if existing mitigations are deemed insufficient.

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

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

Maps of RCAs are available at:

www.pac.dfo-mpo.gc.ca/fm-gp/rec/restricted-restreint/rca-acs-eng.htm

### 4.4.2. Oceans and Habitat Considerations

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

Pacific North Coast Integrated Management Area (PNCIMA): As part of Canada's Oceans Strategy, DFO has initiated an integrated management planning process for the Pacific North Coast Integrated Management Area (PNCIMA). The PNCIMA is bounded by the BC-Alaska border, the base of the shelf slope and the mainland, stretching south as far as Campbell River and the Brooks Peninsula. As such, it encompasses close to 40% (by commercial landings) of the BC prawn fishing area. The PNCIMA planning process marks a shift toward a broader

ecosystem approach to ocean management. This is consistent with the Government of Canada's overall direction. The PNCIMA planning process is bringing the area's regulators, First Nations, and stakeholders together to develop an integrated management plan for the region that will identify goals and objectives for achieving conservation, sustainable resource use, and economic development for oceans and coastal areas. These goals and objectives will provide guidance to the management of oceans activities. The integrated management plan will also identify valued ecological, socio-economic and cultural components of PNCIMA and outline a risk-based approach to identifying potential management priorities for these valued components. The plan will also help coordinate various ocean management processes, complementing and linking existing processes and tools, including IFMPs. The PNCIMA integrated management plan will be completed in December 2012.

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

Work is ongoing to consider MPA designations for other areas along the Pacific Coast, including the Race Rocks area off Rocky Point south of Victoria (currently designated as a Provincial Ecological Reserve), where prawn fishing does not occur, and the Hecate Strait / Queen Charlotte Sound Glass Sponge Reefs, an offshore area where commercial prawn fishing by three or fewer vessels may occur and an advisory is included in the Commercial Harvest Plan (Appendix 1). Changes to existing IFMPs with respect to fishing activities may be required upon designation of these MPAs. In addition, alignment of IFMPs and MPA Management Plans will be necessary.

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

More information on integrated management planning and Pacific MPAs under Canada's *Oceans Act* can be found at:

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

National Marine Conservation Areas (NMCAs): The Canada *National Marine Conservation Areas Act* provides for the establishment of National Marine Conservation Areas (NMCAs). The Gwaii Haanas National Marine Conservation Area Reserve and Haida Heritage Site (Gwaii Haanas Marine Area) was established in June 2010. Implementation of the Interim Mangement Management plan for the Gwaii Haanas Marine Area developed jointly by Parks Canada Agency, the Council of the Haida Nation and DFO was initiated in 2011. The Interim Management Plan includes an Interim Zoning Plan which identifies six protected areas where commercial and recreational fishing is not permitted (Appendix 1 and 2).

The long term management plan for Gwaii Haanas Marine Area will be developed in consultation with the commercial and recreational fishing sectors through DFO's established integrated fishery planning and advisory processes. Development of the management plan will

be completed within five years of establishment of the National Marine Conservation Area Reserve, as required by the *National Marine Conservation Areas Act*. It will include considerations for prawn fishing within its boundaries.

The Governments of Canada and British Columbia announced a proposed boundary for the proposed National Marine Conservation Area Reserve in the Southern Strait of Georgia in October, 2011. It encompasses a significant amount (11% of commercial landings) of the prawn fishing area on the south east coast of Vancouver Island. The two governments will now begin in-depth consultations with First Nations and local governments and a final boundary will be determined only after consultations are complete and the feasibility assessment is concluded. If the results of the feasibility assessment indicate that establishment of a national marine conservation area reserve is practical and feasible, an establishment agreement between the Governments of Canada and British Columbia will be negotiated and an Interim Management Plan developed. First Nations, commercial and recreational fishing sectors, stakeholders, communities and the public will have opportunities to provide input to the development of the interim management plan. More information on the proposed National Marine Conservation Area Reserve in the Southern Strait of Georgia is available on the internet at:

www.pc.gc.ca/progs/amnc-nmca/cnamnc-cnnmca/dgs-ssg/page4_e.asp

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

Prawn fishing activities will be evaluated against DFO's Policy for Managing the Impacts of Fishing on Sensitive Benthic Areas (Section 4.4.3).

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

www.pac.dfo-mpo.gc.ca/oceans/protection/oth-aut-eng.htm

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

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

Marine National Wildlife Areas: Under the *Canada Wildlife Act*, Environment Canada may establish marine National Wildlife Areas (NWAs). The Scott Islands marine National Wildlife Area, located on 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, including prawn fishing, within the proposed area. Environment Canada and DFO will develop a collaborative approach and agreement regarding management of fisheries in the area.

### 4.4.3. Gear Impacts

Prawn and shrimp by trap gear is bottom contact gear (ground lines and traps). The Ecological Risk Assessment Framework drafted under the Policy for Managing the Impacts of Fishing on Sensitive Benthic Areas will be used to determine the level of risk in these fisheries and whether mitigation measures are required. See the internet at:

www.dfo-mpo.gc.ca/fm-gp/peches-fisheries/fish-ren-peche/sff-cpd/benthi-back-fiche-eng.htm

Traps can impact biogenic structures (e.g., 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 been found entangled in trap ground lines and buoy lines. Sea turtles and basking sharks have also been entangled in trap lines but this has been a rare occurrence in Canada. As *SARA*-listed species, prohibitions make it illegal to kill, harm, harass or capture these species, and measures must be taken to avoid the 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). Modification of fishing gear has been successful in mitigating entanglement rates for cetaceans elsewhere (i.e., U.S.A. and Atlantic Canada) and recommendations to enact cost-effective modifications to gear may be considered in future. Sightings of these species are infrequent in Pacific Canadian waters but are useful to scientists in determining population sizes and distribution (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 development of the national objectives around sustainable fisheries.

## 5.3. Invertebrate Resource Management

Management goals and objectives have been defined for invertebrate fisheries in annual management plans produced by 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 food, social and ceremonial purposes;
- To develop sustainable fisheries through partnership and co-management arrangements with client groups and stakeholders to share in decision making, responsibilities, costs, and benefits;
- To develop fishing plans and co-operative research programs which will contribute to improving the knowledge base and understanding of the resource;
- To consider the goals of stakeholders with respect to social, cultural and economic value of the fishery;
- To consider health and safety in the development and implementation of management plans, fishery openings and closures;
- To consider opportunity for the development of the aquaculture industry;
- To provide opportunities for a recreational fishery.

## 5.4. 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 available at 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 Precautionary Approach;

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 Developing Fisheries;

To develop standards for fishery monitoring and catch reporting for all sectors, including commercial, recreational and First Nations.

### 5.4.2. Social, Cultural and Economic

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

**Commercial Fishery:** DFO's objective is to continue to work collaboratively with the commercial industry on sustainable resource use and long-term economic viability of the 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, Transportation Safety Board, and WorkSafeBC (Appendix 6). 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, to create an environment within the advisory process in which recreational fishing representatives are welcome to express their concerns and opinions at the table, and to establish working mechanisms in conjunction with the other fishing sectors to reduce conflict and mitigate issues.

The document "Recreational Fisheries in Canada, An Operational Policy Framework" may be requested from any fishery manager listed in this plan or is available on the internet at:

www.dfo-mpo.gc.ca/fm-gp/policies-politiques/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. The recreational fisheries Vision is available at:

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

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

www.pac.dfo-mpo.gc.ca/tapd/default_e.htm

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

#### 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. Dedicated funding is provided under a Joint Project Agreement with the Pacific Prawn Fishermen's Association (Section 8).

#### 5.4.4. Ecosystem

DFO's objective is to use the Ecological Risk Assessment Framework drafted under 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. Ecosystem objectives may also arise with initiatives under the *Oceans Act* (Section 4.4). In the interim, it is a shared objective with the commercial fishery to avoid sponge reefs and cloud sponges in areas identified in the Commercial Harvest Plan (Appendix 1), including the Hecate Strait / Queen Charlotte Sound Glass Sponge Reefs (Section 4.4). The SFAB has also agreed to avoidance of sponge reefs for recreational fishing in Saanich Inlet (Appendix 2).

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

## 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, 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 and seasonal area closures apply.

### 6.3. First Nations

To date, no limits have been placed on First Nations' harvest for food, social and ceremonial purposes. Prawns and shrimp may be allocated under treaty, but were unallocated under the Maa-nulth, Tsawassen and Nisga'a Treaties.

### 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).

For information on aquaculture or access to broodstock, contact the Aquaculture Management Division (Section 14 Contacts).

### 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. Existing policies with respect to scientific licences and the Larocque court decision apply.

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

### 6.6. Requests for Access

From time to time, DFO receives requests from First Nations to improve access to shellfish for FSC purposes. First Nations interested in bilateral discussion with DFO regarding FSC access issues should contact the resource manager for their area (Section 14 Contacts).

Requests for recreational access are directed to DFO through the SFAB process and the representatives to the Prawn Sectoral Committee (Section 15). The SFAB usually meets twice a year (in the late spring and mid winter) to discuss and advise DFO on recreational fishing plans, recreational fishery regulations, and any areas of concern to the recreational fishing community. Information on the SFAB is available at:

www.pac.dfo-mpo.gc.ca/fm-gp/rec/sfab-ccps-eng.htm

## 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;
- Licensing.

## 8. SHARED STEWARDSHIP ARRANGEMENTS

### 8.1. Commercial Fishery

A joint project agreement (JPA) is established annually between DFO and the Pacific Prawn Fishermen's Association (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 and $59.2K for in-season Fishery Officer activities throughout the coast, including special investigations, in 2011. Unused funds are returned to the PPFA annually. A review of DFO use of JPA funding is prepared in March. Following the Larocque court decision, DFO contributed additional support by science personnel and partial funding for post-season spawner index surveys again in 2011.

Vessel owners/licence eligibility holders are required to make arrangements with an industry service provider for the delivery of in-season information to DFO as required by conditions of licence regarding trap tags, vessel fishing 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 2012 is J.O. Thomas and Associates, Ltd. of Vancouver, British Columbia.

### 8.2. Fisheries & Oceans Canada

Two Science (Marine Ecosystem and Aquaculture Division) and six Fisheries Management personnel are directly involved in this fishery for some part of their activities. Contributions to the IFMP are provided by Fisheries Management in the areas and at regional headquarters, the Science Branch, the Shellfish Data Unit, Conservation & Protection, the Pacific Fishery Licence Unit, the Treaty and Aboriginal Program Directorate, and numerous administrative personnel. Generally, all personnel are multi-tasked.

## 9. COMPLIANCE PLAN

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

www.pac.dfo-mpo.gc.ca/ops/CP/Default.htm

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

On-grounds monitors will continue to provide an "observe, record and report" capability.

### 9.1. Priorities

Priorities for the commercial fishing season are related to enforcement of the single haul management program, coast-wide. This includes monitoring of early or late gear handling outside of daily fishing hour limits, and inadequate reporting of haul time in logbooks. Funding for the enforcement of the single haul management program is provided to DFO from industry within the terms of the JPA. These are "mobilization funds" for surveillance, vehicle and vessel

fuel and minor repairs, travel expenses and for extra duty time to set up case files, take the cases to court and to complete prosecutions.

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.

## 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. The number of spawner index tests undertaken in the fall and winter period will be reported.

### 10.2. Commercial Fishery

The delivery of the commercial fishery will be assessed by performance measures including the number of days fished, landed value compared to previous years, input from representatives at Prawn Sectoral Committee meetings and other DFO program measures and assessments.

First Nations presently holding communal commercial licence eligibilities will be invited to comment on their experience and satisfaction within the commercial prawn fishery.

### 10.3. Recreational Fishery

The evaluation will include a description of surveys to assess spawner index in important recreational fishing areas and any fall and winter closures resulting from those surveys.

Interactions with the recreational fishing representatives of the SFAB, their recommendations and action taken in response by DFO will be described.

### 10.4. First Nations Fishery

The evaluation will include training or stock survey programs established between DFO and First Nations and will be reported in the IFMP. The report may include the numbers and outcomes of meetings with First Nations on specific issues, and prawn and shrimp trap information contributing to or resulting from the treaty process.

### 10.5. High Use Areas' 9 Point Plan

The progress in implementing the '9 point plan' in Saanich Inlet, Stuart Channel, and Alberni Inlet will be described.

### 10.6. 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 with the single haul management program, for monitoring of

fishing activity outside of daily fishing hour 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.

### 10.7. 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 drafted under the Policy for Managing the Impacts of Fishing on Sensitive Benthic Areas will also be described.

## 11. REFERENCES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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.

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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. Canadian Science Advisory Secretariat Research Document 2004/015. 13p.

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., Fong, K., and Nguyen, H. 2010. Rockfish Bycatch in the British Columbia Commercial Prawn Trap Fishery. DFO Can. Sci. Advis. Sec. Res. Doc. 2009/109. iii + 25 p.

## 12. INTERNET SITES

Fisheries & Oceans Canada Pacific Region Prawn page, and links to the prawn and shrimp by trap fishing plan:

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

Pacific Region Area and Subarea maps:

www.pac.dfo-mpo.gc.ca/ops/fm/Areas/areamap_e.htm

Pacific Region, Fisheries Management, Commercial Openings and Closures notices:

www-ops2.pac.dfo-mpo.gc.ca/xnet/content/fns/index.cfm

Pacific Region, Fisheries Management, Recreational Openings and Closures notices:

www-ops2.pac.dfo-mpo.gc.ca/xnet/content/fns/index.cfm

Pacific Region, Recreational Fisheries information web site:

www.pac.dfo-mpo.gc.ca/recfish/default_e.htm

Centre for Scientific Advice - Pacific (formerly, Pacific Scientific Advice and Review Committee (PSARC)) research documents, proceedings and Invertebrate stock status reports, including prawn and shrimp:

www.pac.dfo-mpo.gc.ca/science/psarc-ceesp/index-eng.htm

Pacific Region, Science, Infectious diseases of shrimp and prawns:

www.pac.dfo-mpo.gc.ca/sci/shelldis/title_e.htm

## 13. GLOSSARY

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| 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 |

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| | 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/ops/fm/Areas/areamap_e.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 2000 to 4000 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. |

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| 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 Fishery Management Plan |
| inshore | Coastal waters landward of the "surfline". |
| invertebrate | An animal without a backbone. |
| landed value | Value of the product when landed by a licensed 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. |

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| 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 Shrimp, *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 adoption of a PA framework for fisheries management in Canada is available at: www.dfo-mpo.gc.ca/fm-gp/peches-fisheries/fish-ren-peche/sff-cpd/precaution-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. |
| PSARC | See CSAP. |
| PSC | Prawn Sectoral Committee, the primary advisory body to DFO on issues pertaining to the management of all prawn and shrimp trap fisheries, including First Nations, commercial and recreational prawn 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 | Sports 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. |

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| 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 | Devona Adams | (604) 666 3271 |
| Lead Fishery Manager, Prawn & Shrimp by Trap | 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 | Karen Kimura-Miller | (250) 627 3020 |
| Resource Manager - First Nations Fisheries | Diana Freethy | (250) 627 3425 |
| Resource Manager - Recreational Fisheries | Mark Reagan | (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, Nanaimo | Mike Kattilakoski | (250) 756 7315 |
| Resource Manager - Shellfish, Comox | David Fogtmann | (250) 339 3799 |
| Resource Manager - First Nations Fisheries (North Is.) | Rick Senger | (250) 286 5882 |
| Resource Manager - First Nations Fisheries (G. Basin) | Kevin Conley | (250) 756 7196 |
| Resource Manager - First Nations Fisheries (G. Basin) | Brenda Spence | (250) 756 7329 |
| Resource Manager - First Nations Fisheries (WCVI) | Paul Preston | (250) 720 4452 |
| 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 Management Biologist - Shellfish | Bridget Ennevor | (604) 666 6390 |
| Resource Manager - First Nations Fisheries | Terri Bonnet | (604) 666 8426 |
| Resource Manager - Recreational Fisheries | Debra Sneddon | (604) 666 6509 |

**Science**

| | | |
|---|---|---|
| Pacific Biological Station | Dennis Rutherford | (250) 756 7174 |
| Hammond Bay Road | Ken Fong | (250) 756 7368 |
| Nanaimo, B.C. V9T 6N7 | | |

**Conservation and Protection**

| | | |
|---|---|---|
| 4250 Commerce Circle | Stefan Beckmann | (250) 363 3252 |
| Victoria, B. C. | | |

**Licensing**

| | | |
|---|---|---|
| Pacific Fishery Licence Unit | | (604) 666 0566 |
| 401 Burrard Street | | |
| Vancouver, B.C. V6C 3S4 | | |
| Pacific Fishery Licence Unit | | (250) 627 3413 |
| 417 2nd Avenue West | | |
| Prince Rupert, B.C. V8J 1G8 | | |
| Pacific Fishery Licence Unit | | (250) 754 0400 |

60 Front Street
Nanaimo, B.C. V9R 5H7

**Aquaculture**

| | | |
|---|---|---|
| Shellfish Advisor, Aquaculture Division | Kerry Marcus | (250) 754 0210 |

**Canadian Food Inspection Agency**

| | | |
|---|---|---|
| Molluscan Shellfish Program Specialist | Deirdre Kelly | (604) 666 3578 |

**BC Ministry of Environment**

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

**WorkSafe BC**

| | | |
|---|---|---|
| Occupational Safety Officer, Courtenay | Pat Olsen | (250) 334 8777 |
| Occupational Safety Officer, Courtenay | Mark Lunny | (250) 334 8732 |
| Occupational Safety Officer, Victoria | David Clarabut | (250) 881 3469 |
| Occupational Safety Officer, Richmond | Bruce Logan | (604) 244 6477 |
| Occupational Safety Officer, Terrace | Shane Neifer | (250) 615 6640 |
| Focus Sector Manager for Fishing, Richmond | Mark Peebles | (604) 279 7563 |
| | toll free | 1 888 621 7233 (ext. 7563) |
| Projects related to commercial fishing contact: | Ellen Hanson | (604) 233-4008 |
| | toll free | 1 888 621 7233 (ext. 4008) |

**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 (866) 50 SHARK
Email: BaskingShark@dfo-mpo.gc.ca
On the internet at: www.pac.dfo-mpo.gc.ca/SharkSightings

## 15. CONSULTATION

A consultation process exists for the prawn and shrimp by trap fisheries and is a major part of the planning for these fisheries. The primary consultation body is the Prawn Sectoral Committee (PSC). This committee includes representatives from DFO, elected representatives of commercial licence eligibility holders, processors, Sport Fishing Advisory Board (SFAB) representatives for recreational fishing interests, First Nations, and the Province of B.C. The PSC meets 3 times annually to provide advice to DFO, usually in April, September (post-season review), and November (pre-season planning).

The PSC meeting calendar is available from Resource Managers (Section 14 Contacts) or from DFO's consultation internet site at:

www.pac.dfo-mpo.gc.ca/consultation/fisheries-peche/shell-inv/crev-trap/index-eng.htm

| Representative | Name | Phone |
|---|---|---|
| Fisheries & Oceans Canada | | |
| Chair, Lead Fishery Manager | Laurie Convey | (250) 756 7233 |
| North Coast Area | Karen Kimura-Miller | (250) 627 3020 |
| Fraser River Area | Bridget Ennevor | (604) 666 6390 |
| South Coast Area, WCVI | David Fogtmann | (250) 339 3799 |
| South Coast Area, ECVI & DFO Field Programs | Mike Kattilakoski | (250) 756 7315 |
| Science | Dennis Rutherford | (250) 756 7174 |
| Conservation & Protection | Stefan Beckmann | (250) 363 3252 |
| South Coast Area, Recreational Coordinator | Brad Beaith | (250) 756 7190 |
| | | |
| Ahousaht Fisheries Corporation | Marion Campbell | (250) 670 2338 |
| A-Tlegay Fisheries Society | Tony Roberts Jr. | (250) 287 8868 |
| BC Prawn Fishermen's Group | Pat Cullen | (250) 338 9319 |
| Huu-ay-aht First Nation | Larry Johnson | (250) 728 3414 |
| Lax Kw'alaams Band | Tressa Wesley | (250) 625 3293 |
| Lyackson First Nation / Qum'ul | Warren Johnny | (250) 210 1738 |
| Metlakatla Band | William Beynon | (250) 628 3234 |
| Mid Island Prawn Group | John Millicheap | (250) 752 6161 |
| Mid Island Prawn Group | Bob Alford (alternate) | (250) 244 1984 |
| Musqueam Fisheries | Dick Louis | (778) 997 5510 |
| Namgis First Nation | Roy Hinder<br>Brian Wadhams | (250) 974 2209 |
| Nisga'a Lisims Government | Blair Stewart | (250) 641 2865 |
| North Island Prawn Group | Kelly Loxton | (250) 203 0796 |
| North Island Prawn Group | Tom Orr (alternate) | (250) 652-4608 |
| Nuu-chah-nulth Tribal Council | Jim Lane | (250) 724 5757 |
| Pacific Prawn Fishermen's Association | Chris Sporer | (604) 523 1528 |
| Pacific Prawn Group | Paul Kershaw | (250) 752 1508 |
| Pacific Prawn Group | Rick Jerema (alternate) | (604) 883 2984 |
| Powell River Prawn Group | Chris Marshman | (604) 483 9713 |
| Powell River Prawn Group | Kim Mikkelsen (alternate) | (604) 223 0446 |
| Seaplus Marketing | Ian Leitch | (604) 273 6686 |
| Sport Fishing Advisory Board | Wayne Harling | (250) 753 1864 |
| Sport Fishing Advisory Board | Paul Rickard | (250) 748 9952 |
| Sport Fishing Advisory Board | Chuck Ashcroft | (250) 338 9935 |
| Vancouver Island Prawn Group | Kerry MacDonald | (250) 724-6721 |
| Vancouver Island Prawn Group | Doug Beguin (alternate) | (250) 248-5598 |

| Representative | Name | Phone |
|---|---|---|
| Tsartlip Nation | Chief Wayne Morris<br>Simon Smith Jr.<br>Karen Harry | (250) 652 5980 |
| Tsawout Nation and Senćoṯen Alliance | Dan Claxton<br>Susan Anderson-Behn | (250) 652 9101 |
| Tsawataineuk First Nation (Kingcome Inlet) | Midori Nicolson | (250) 949 2610 |
| Wiukiunxw Fisheries | Andrew Johnson | (250) 949 8625 |
| BC Ministry of Environment, Oceans and Marine Fisheries Division | Dennis Chalmers | (250) 387-0389 |
| Worksafe BC | Pat Olsen | (250) 334 8777 |

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

## 16. POST-SEASON REVIEW

### 16.1. Stock Assessment

#### 16.1.1. In-season Spawner Index Sample Analysis

During the 2011 commercial fishing season, the Marine Ecosystems and Aquaculture Division (MEAD) received 2,079 spawner index samples for processing. This spawner index sample data was processed and interpreted by MEAD and in-season advice on stock strength was provided to prawn fishery managers based on sample results.

#### 16.1.2. Post-season Spawner Index Surveys

Fall spawner index surveys were carried out in 10 selected areas of the coast. Surveys in 9 of the areas were jointly co-ordinated by the PPFA and DFO and conducted by commercial vessels. These areas included Saanich Inlet, Stuart Channel, Alberni Inlet/Barkley Sound, Campbell River, Powell River, Madeira Park, Salmon/Sechelt Inlets, Nanaimo and Gold River. DFO conducted the survey in Howe Sound. As part of the plan for high use areas, Saanich Inlet, Stuart Channel, and Alberni Inlet were sampled on two occasions (October and January). Funding for industry-conducted post-commercial season spawner index surveys was provided by DFO through interim Larocque funding and by the PPFA.

#### 16.1.3. Rockfish By-catch

The rockfish by-catch monitoring program continued for the 2011 season. The program has been in place since 2002. The data collection for this program is funded by industry. On-grounds monitors are responsible for collection of rockfish by-catch data as part of the in-season spawner index sampling.

The commercial prawn industry also funds by-catch research program(s) outside of DFO.

The annual number (point estimate) of juvenile rockfish incidentally caught between 2002 to 2008 has ranged from 13,867 (2005) to 19,996 (2002)(Rutherford et al. 2009). Estimates are published in DFO Can. Sci. Advis. Sec. Res. Doc. 2009/109 and available on the internet at:

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

### 16.1.4. Howe Sound Study Area

MEAD continued its semi-annual survey of Howe Sound prawn stocks, with surveys in February and November, 2011. 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 2011 commercial prawn fishing season was undertaken at the Prawn Sectoral Committee meeting in September 2011. The commercial season opening was delayed to allow additional time to complete the prawn spawning cycle in the north. The commercial season commenced May 5, 2011 and was 58 days long, which is the average (59 days) season length in recent years.

A summary of commercial catch, price, and landed value from 2001 to 2011 is provided in the following table. Section 3.1 provides a graph of annual landings and values adjusted for inflation to compare trends.

| Year | Catch (t) | Price ($/kg) | Landed Value |
|---|---|---|---|
| 2011 | 2,765[1] | $12.20-$17.06[2] | $40.2 M[2] |
| 2010 | 2,198 | $10.78 (average) | $23.8 M |
| 2009 | 3,446 | $11.79-$13.67 | $42.1 M |
| 2008 | 2,371 | $9.37-$17.64 | $26.3 M |
| 2007 | 2,802 | $7.70-$14.02 | $28.7 M |
| 2006 | 2,425 | $13.20-$17.60 | $41.1 M |
| 2005 | 2,100 | $17.60-$23.15 | $45.6 M |
| 2004 | 2,000 | $13.20 to $17.60 | $30.0 M |
| 2003 | 2,400 | $13.20 to $18.70 | $29.9 M |
| 2002 | 1,900 | $8.80 to $17.60 | $18.9 M |
| 2001 | 2,100 | $12.20 to $17.66 | $31.7 M |

[1] *Preliminary (all logbooks not yet accounted).*

[2] *Preliminary (average price per kg from available fish slips applied to preliminary landings).*

The commercial prawn fishery is one of the top valued wild fisheries in BC, along with the geoduck and horseclam, halibut and crab fisheries (British Columbia Seafood Industry Year in Review).

Thirty-five licences were provided for the 2011 prawn season under the PICFI to provide short-term opportunities to First Nations' enterprises while long-term business plans are being developed. Thirteen licences were provided under the ATP with 7 new licences in 2011 (Section 3.3). Communal commercial licences now comprise 20% of the total commercial licence eligibilities in the fishery.

This was the 17th fishing season since the adoption of trap limits in the fishery in 1995 and the 11th year in which an industry selected service provider (J.O. Thomas and Associates Ltd. (JOT)) delivered significant at-sea monitoring components of the fishery. JOT issued trap tags to 212 vessels, of which 178 were for single-licensed vessels and 34 stacked. Three licences were held in ATP inventory.

Eleven on-ground monitor assignments were deployed coast-wide. This included two 2-person assignments in Georgia Strait and the west coast of Vancouver Island (north and south of Estevan) for improved efficiency. 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 is invaluable.

The commercial fishery was managed aggressively in-season in 2011 with respect to sampling and conservatively with respect to management targets. Closures were decided and implemented expeditiously; spawner index goals were generally met or exceeded. On-ground monitors collected 1,959 spawner index samples, in comparison to 1,739, 1,808, 1,620, 1,602, and 1,604 samples in 2010, 2009, 2007, and 2006 respectively. These years represent the greatest number of samples and the greatest sampling intensity since the at-sea monitoring program commenced. More than 26 samples per day were collected coast-wide since 2005, compared to less than 15 per day in years previous to 2003. Given a high demand for spawner index data for in-season management in 2011, 34 samples per day were taken. 195 of the 212 active fishing vessels were sampled for spawner index. 512 days of on-grounds monitoring occurred for this year's 58-day fishery. Sampling commenced early in priority interest areas in Saanich Inlet, Stuart Channel, Alberni Canal, and Howe Sound. An additional 121 samples were collected by DFO personnel in-season, providing supplemental data for closure decisions.

On-ground monitors also provided vessel gear inspections of 90% of the 212 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. On-ground monitors continued to collect information about rockfish by-catch for the eighth year in this fishery.

The 2011/12 Joint Project Agreement (JPA) was the 11$^{th}$ year in which delivery of the commercial fishery was supported by industry funding arrangements between DFO and the PPFA.

There is a limited trap fishery for Humpback Shrimp in Prince Rupert Harbour open from September 1 to December 31, annually. Six vessels fished in this area in 2011 with preliminary landings of 19,404 kg (all logbooks not yet accounted). This was the 8$^{th}$ year in which fish harvesters had to arrange for in-season catch samples which are measured and sexed to improve biological knowledge of this stock. Masset Inlet in the Queen Charlotte Islands may be open from May 1 to December 31 annually, but commercial effort in this area is rare. Sooke Harbour and Basin is open for Coonstripe Shrimp trap fishing from November 1 to December 31 annually. This trap fishery uses original cedar lathe style traps. No vessels fished in 2011.

Octopus retention is permitted in the prawn and shrimp trap fishery, with Octopus catch information recorded on the vessel's fishing log. Octopus landings in 2011 were 140,373 kg (preliminary all logbooks not yet accounted). The Caucus and the PPFA encourages all prawn and shrimp trap harvesters to accurately record Octopus catch so that this privilege may be retained within the fishery.

### 16.3. Recreational Fishery

A survey of Recreational Fishing in Canada is conducted every 5 years and shows trends over the survey period but is not considered to provide official annual catch figures due to one year memory recall. The most recent survey was conducted for 2010. 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.

The most intensive recreational prawn fishing areas are: Saanich Inlet, Stuart Channel, and Alberni Canal. Recreational buoy surveys were initiated in 2004 to provide baseline information on relative levels of prawn fishing effort. Past sampling has demonstrated that there is an average of 1.75 traps for each buoy. Buoy count surveys were increased in effort and number in 2009 to 2011 to collect a baseline index of recreational effort between weekends and weekdays in different seasons. These results, along with a review of the available shellfish data collected from recreational anglers in dockside creel surveys, are anticipated to inform discussions towards designing recreational catch monitoring programs, including prawns, within the Strategic Framework for Fisheries Monitoring and Catch Reporting. This Framework is developing standards for all Pacific fisheries coast-wide.

| Area | Month & Year | # Recreational Prawn Buoys |
|---|---|---|
| Saanich Inlet | July 2011 | 256 |
| | July 2009 | 330 |
| | April 2008 | 177 |
| | April 2007 | 552 |
| | November 2007 | 127 |
| | April 2006 | 389 |
| | August 2006 | 301 |
| | July 2005 | 352 |
| | April 2004 | 300+ |
| Stuart Channel | July 2011 | 51 |
| | July 2010 | 64 |
| | July 2009 | 124 |
| | July 2008 | 57 |
| | April 2007 | 125 |
| | April 2006 | 48 |
| | August 2006 | 78 |
| | April 2005 | 147 |
| | August 2005 | 60 |
| Alberni Inlet | May 2010 (weekend) | 179 |
| | May 2009 | 111 |
| | July 2008 (weekend) | 127 |
| | April 2006 | 73 |
| | April 2004 | 119 |

Spawner index surveys in fall 2011 were undertaken in Saanich Inlet, Stuart Channel, Alberni Inlet and Trevor Channel in Barkley Sound, the waters between Quadra and Cortes Islands near Campbell River, Powell River, Malaspina Strait / lower Jervis and Sechelt / Salmon Inlets, Nanaimo, Howe Sound, and Tahsis / Muchalat Inlets near Gold River. This was the 12$^{th}$ year in which fall sampling occurred. Specific closure areas have varied considerably from year to year. Six areas had winter closures this season: Alberni Inlet (Subarea 23-1), Quadra Island (Subareas 13-12, 13-16 and 13-17), Lund (15-2 and 15-3), Malaspina Strait / lower Jervis (16-1, 16-2, 16-10, 16-11, and 16-16 to 16-18) and Salmon / Narrow Inlets (Subareas 16-7 and 16-8), Nanaimo (Subareas 17-13 and 17-15) and Tahsis and Muchalat Inlets (Subareas 25-1, 25-8 and 25-16) closed January 1 to March 31, 2012. Closures allow the remaining female prawns to complete egg incubation and release larvae with reduced fishing disturbance and handling mortality. These areas re-opened April 1, 2012. Saanich Inlet (Subareas 19-7 to 19-12), Stuart Channel (Subareas 17-5, 17-6 and 17-9) and most of Alberni Inlet (Subareas 23-2 and 23-3) remained open under the adaptive management regime. All other coastal areas remained open year-round.

The SFAB in 2010 supported maintaining a 125% commercial spawner index closure level in Subareas 16-1 and 16-2 for 2011. The SFAB is also interested in pursuing means to extend recreational fishing opportunities in winter (Section 4.2.2). The SFAB and local Committee in Tahsis are seeking a non-commercial prawn fishing zone at the head of Tahsis Inlet to resolve

conflicts between recreational and commercial gear. A similar request was made in 2006. Surveys of recreational effort have been conducted and DFO is attempting to find out more information on these events for follow up to resolve the conflicts. Conflicts in the highest recreational use area, Saanich Inlet, have been mostly resolved with concerted effort by local Fishery Officers and fishers. DFO's preference is to provide a mutually satisfactory harvest experience for all user groups through respect of other person's gear and fishing practices, rather than invoking closures as a means to separate fishing seasons. The recreational season in Tahsis Inlet was 9 months. The commercial season was 58 days. Closing the commercial fishery is not presently being considered by DFO.

The SFAB has asked DFO to seek funding to conduct sampling in 2012 and to consider fishing time periods or reduced catch limits, where possible, in areas where sampling can not be conducted (Section 4.1.1). The SFAB has also asked DFO to re-consider introducing an annual prawn catch limit for the recreational fishery in 2012.

### 16.4. First Nations Fishery

Tsartlip and Tsawout First Nation members, trained in spawner index collection, were employed in post-season surveys in Saanich Inlet and Stuart Channel. The assistance of the commercial fish harvesters and First Nations' members in these surveys is gratefully acknowledged. The A-Tlegay Fisheries Society is interested in developing biological sampling programs where needed to support FSC fisheries and in understanding how prawn stock assessment is conducted. Training in spawner index testing was held with the A-Tlegay in fall 2009 and May 2011.

Catch information is collected by some First Nations, by fisheries program personnel or by Band administration offices. DFO is working on initiatives to receive, store and manage shellfish FSC harvest information. Some catch data have been collected under Aboriginal Fisheries Strategy (AFS) agreements. Prawns constitute roughly 12% of the reported catch by weight of any shellfish species (2003-2008). Based on the available reports, 5.5 t of prawns or shrimp were caught in 2008. Some bands living on the shores of Stuart Channel have established catch limits in fishing permits issued to band members.

Prawn Sectoral Committee or Subcommittee meetings in 2011, and through which advice was provided to DFO, were attended by: A'Tlegay, Campbell River Band, Ditidaht First Nation, Island Marine Aquatic Working Group, Lax kw'alaams First Nation, Lyackson First Nation / Qum'ul Seafoods, Namgis First Nation, Metlakatla First Nation, Musqueam First Nation, Nuu-chah-nulth Tribal Council (Uu-a-thluk), Nuxalk First Nation, Stz'uminus First Nation, Tsawout First Nation and Wuikinuxv First Nation.

First Nations and DFO anticipate that the newly established Island and Marine Aquatic Working Group (IMAWG) will provide improved avenues for discussion on issues important to First Nations in the Strait of Georgia.

Areas previously identified as important by First Nations continued to be monitored with special attention in the 2011 commercial fishing season. 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.

First Nations participating in the 2011 commercial fishery (Section 16.2) under ATP licences were: the Homalco Indian Band (2), Huu-ay-aht First Nation, Kitimaat Village Council, Kitasoo Band Council, Nuu-chah-nulth Tribal Council (Ahousaht Fisheries Corporation and Tseshaht

First Nation), Metlakatla Band, Penelakut First Nation, Sliammon First Nation, Snuneymuxw First Nation, Tsawout First Nation, Tseycum First Nation and Tsleil Waututh First Nation. Enterprises participating in the 2011 commercial fishery (Section 16.2) under the PICFI were: Ahousaht First Nation; A-Tlegay Fisheries Society; Ehattesaht, Nuchatlaht and Toquaht First Nations; Heiltsuk, Kitasoo, Nuxalk and Oweekeno First Nations; Cowichan Tribes; Gwa'sala-'Nakwaxda'xw, Da'Naxda'xw, Mamalilikulla/Qwe'Qwa'Sot'em, Tlatlasikwala and Quatsino First Nations; Haida Nation; Haisla, Gitxaala, Metlakatla, Gitga'at, Kitselas and Kitsumkalum First Nations; Halalt, Chemainus, Lyackson, Penelakut and Lake Cowichan First Nations; Hupacasath and Tseshaht Indian Bands; Huu-ay-aht, Ditidaht, Ka:'yu:'k't'h'/Che:k:tles7et'h', Mowachaht/Muchalaht, Hesquiaht, Ucluelet and Uchucklesaht First Nations; Kwakiutl First Nation; Lax Kw'alaams First Nation; Sliammon, Musqueam and Tsleil-Waututh First Nations; Musgamagw Territorial Marine Management Society; Namgis First Nation; Sechelt First Nation; Snaw'naw'as (Nanoose), Beecher Bay, Malahat, T'sou-ke and Tsawout First Nations; Snuneymuxw and Pacheedaht First Nation; Tla-o-qui-aht Band Council.

Information on prawn stocks is provided to the Treaty and Aboriginal Program Directorate for support in treaty discussions. The Tla'amin (Sliammon) treaty was initialled by the Chief Negotiators on October 21, 2011. Next steps are for ratification by the individual parties; Tla'amin (anticipated June 2012), then BC and then Canada, with BC and Canada developing settlement legislation as part of the process.

## 16.5. High Use Areas' 9 Point Plan

Under an adaptive management strategy, the '9 point' plan (Section 1.5.2), recreational fishing opportunities have extended year round in parts of Stuart Channel since 2009 and Alberni Inlet in every year except 2011. Saanich Inlet has the highest recreational effort on the coast and has remained open in two of the years since the program was initiated. The recreational season has been standardized to run to December 31 of each year, increasing recreational opportunities. Results are showing that sufficient spawners, or higher, have been maintained at the end of the spawning cycle under the adaptive management strategy. Twice as many spawning females were seen in Alberni Inlet in 3 of 4 years, almost reached in 3 of 5 years in Stuart Channel, and once in Saanich Inlet. Benefits of the pulse fishing program have included removal of long-soaking, sunken, or stolen fishing gear.

A sub-committee of the Prawn Sectoral Committee includes recreational and commercial representatives and local First Nations from the areas. The Subcommittee met in January 2012 to review 2011 and make recommendations for 2012. The Subcommittee recommended continuation of the adaptive management strategy for 2012/13. However, sampling in 2012 is subject to funding following the Larocque court decision (Section 4.1.1).

One prawn 4-year life cycle (2007 to 2011) has completed under the program since half increments were implemented in 2006. Benefits to recruitment from increased spawning potential is, however, also dependent on natural factors and will not be seen in every year.

## 16.6. Compliance

Notwithstanding the collective efforts of Fishery Officers and of on-ground monitors, industry representatives continue to report "double hauling"; hauling traps more frequently than the limit of once per day. Reports of this activity are more common from remote areas. DFO and industry remain concerned for the potential erosion of this management control intended to reduce

handling mortality of undersize prawns. Implementing a vessel monitoring system in the fishery could enhance direction of enforcement effort.

### 16.6.1. Conservation and Protection

Enforcement was again provided with $59.2K of industry funding in 2011. 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.

DFO Conservation & Protection registered 1,701 Fishery Officer hours, 244 vessels and 12 vehicles checked, and 32 occurrences during the 2011 commercial fishing season. These occurrences resulted in 21 violations, including 9 failures to submit logbooks, 3 fishing during closed time/area, 3 failures to have a Fishers Registration Card, 2 retention of prohibited species, 2 failures to mark gear, 1 failure to release bycatch in the least harmful manner, and 1 failure to hail. There were no double hauling violations. Six of the above cases are being processed through Court.

On a positive note, fewer complaints have been received in Saanich Inlet between the recreational and commercial sector after attention to resolve individual conflicts.

### 16.6.2. On Grounds Monitors

In 2011, JOT on-ground monitors boarded 195 vessels for biological sampling. In so doing, they also provided an Observe, Record and Report (ORR) function including 190 gear and catch inspections specifically for trap web size, trap tags and product size. In all, 92% of the fleet was checked for general compliance on board during the season.

## 16.7. Ecosystem

In 2011, on-ground monitors continued to collect information about rockfish by-catch for the eighth year. Recovery Potential Assessments for Yellowmouth Rockfish (*Sebastes reedi*) and Quillback Rockfish (*Sebastes maliger*) along the Pacific Coast of Canada were presented to the Canadian Science Advisory Secretariat in 2011. The encounter rate in the prawn fishery is low and recommendations for measures for promoting recovery focused on the directed rockfish fisheries.

An “Assessment of the environmental impact of the treatment of sea lice with the pesticide SLICE at aquaculture facilities in British Columbia” was presented to the CSAS in October, 2011. A component of the study investigated the biological effects on Spot Prawns, a non-target species, exposed to the sea lice controlling agent emamectin benzoate.

Building on the Policy for Managing the Impacts of Fishing on Sensitive Benthic Areas, DFO released a draft Ecological Risk Analysis Framework (ERAF) in January 2012 to assist in identifying and measuring the ecological risks and impacts of fishing on sensitive benthic areas. This tool and the policy on which it is based have been developed in recognition of the importance of sensitive benthic areas to overall aquatic ecosystem health. The ERAF will be applied to coral and sponge areas designated as ‘significant’ based on advice provided by the CSAS in March 2010 (CSAS 2010/041), supplemented with additional scientific information where required. A risk analysis of prawn fishing in and around sponge reefs identified in the southern Strait of Georgia is anticipated under the framework and in support of the Coral and Sponge Conservation Strategy (Section 4.4.2).

In February 2011, the Government of Canada adopted the Food and Agriculture Organization's (FAO's) International Guidelines for Bycatch Management and Reduction of Discards. These voluntary guidelines call on member states to adopt effective bycatch and discard management measures to minimize the capture of fish that are not going to be used and the mortality of discards; and to improve reporting on and accounting of the entire catch, including bycatch and discards. In Canada, a policy framework consistent with the FAO guidelines is being developed by DFO to support the effective management of bycatch and discards that builds on the success of existing measures. The draft policy released in January 2012 is a key component of a strengthened Sustainable Fisheries Framework (Section 1.6) consistent with the ecosystem approach to fisheries management. Non-target species in the prawn fishery are easily sorted and quickly returned to the water with presumed low mortality (Rutherford et al. 2009), however, further work to account for all discards is anticipated under the new policy.

In October, 2011, the Governments of Canada and British Columbia announced a proposed boundary for the proposed National Marine Conservation Area Reserve in the Southern Strait of Georgia from Cadboro Bay and Haro Strait, off Victoria, north to Gabriola Island and to the Canada-USA border on the east (Section 4.4). The commercial fishing sector has expressed concern to DFO for the lack of current and available information from Parks Canada Agency on this initiative.

**Appendix 1: 2012/13 Prawn and Shrimp by Trap Commercial Harvest Plan**

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## 1. COMMERCIAL HARVEST PLAN CHANGES FOR 2012

1.1. The 2012 commercial season opens no earlier than noon, May 3, 2012. This is a delayed opening to allow additional time for the spawning cycle (release of eggs) to complete in the north (Section 2.1).

1.2. In-season spawner index closure levels will remain at 2010 levels while discussions continue in 2012 to work out a longer-term strategy for fall surveyed areas (Section 3).

1.3. Buoys or PVC pipe 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 fake buoys to stake grounds is not permitted (Section 4.5.8).

1.4. The use of solid sided traps will be phased out completely by 2016. Solid sided traps have been replaced by improved trap designs that better sort undersize prawns while on the sea floor (Section 4.5.10.3).

1.5. Licence eligibility holders and vessel masters are advised that the use of a "vessel monitoring system" of real-time vessel location to support the prawn spawner index testing program will become mandatory in 2013. The Prawn Industry Caucus will advise the Department on the development of the program to be adopted. Vessel monitoring system(s), or VMS, are being tested on volunteer vessels (Section 7.1).

## 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 3. This will include all 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, and will remain open until further notice or until 19:00 hours, December 31, 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 a Pacific Fishery Licence Unit (PFLU) office. Amended Conditions of Licence are issued if arrangements have been made to provide observer coverage and sampling as described in Section 5.1. Improved standardized biological sampling information is being collected.

### 2.3. Masset Inlet

The Masset Inlet humpback shrimp fishery will open on request no earlier than 12:00 hours, noon, May 3 and will remain open until further notice or until 19:00 hours,

December 31, 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) is planned to open at 12:00 hours, noon, November 1 for a coonstripe shrimp trap fishery and will remain open until further notice or until 19:00 hours, December 31, 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 regular commercial fishery. In-season commercial fishery closures of local areas will be announced as spawner indices in those areas approach management targets; baseline + 10% in most coastal areas, baseline + 25% in Howe Sound and Indian Arm (Subareas 28-1 to 28-7, 28-9, 28-11 to 28-14), Powell River (15-1, 15-2, 15-2, 15-3), Malaspina Strait / lower Jervis (Subareas 16-1, 16-2, 16-10, 16-16 to 16-18) and Nanaimo (north) (Subareas 17-10 to 17-13, 17-15, 17-16, 17-18), and baseline + 50% in Saanich Inlet (Subareas 19-7 to 10-12), Stuart Channel (Subareas 17-5, 17-6 and 17-9), and Alberni Canal (23-1 to 23-3).

Coast-wide closure of the commercial fishery occurs when the remaining open fishing grounds are considered by Fisheries & Oceans Canada (DFO) fishery managers to be too limited in extent to support continued fishing by the remainder of the fleet. Based on recent performance, the commercial fishery is expected to be approximately 58 days long in 2012.

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 is a weekly in-season conference call at which time DFO fishery managers, Science (Marine Ecosystem and Aquaculture Division) personnel and a representative of the company co-ordinating on-grounds monitors review the available spawner index sample results. Comments that have been received from the on-grounds monitors, 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 about areas for closure. Subareas close in-season as required on the basis of the following:

a.) Spawner index values;
b.) 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 on-grounds monitors;
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 seven to 10 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 to inform the decision for final closure of the prawn fishing season.

Areas remain closed until the prawn spawning cycle completes and the opening date is announced 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 3 (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 52º23.071' N and 131º20.427' W, east to a point at 52º23.079' N and 131º22.790' W, then following the southern shoreline of Kat Island east to a point at 52º23.104' N and 131º22.193' W, then east to a point at 52º23.303' N and 131º22.277' W, then following the western shoreline of Burnaby Island south to a point at 52º20.982' N and 131º20.427' W, then west to a point at 52º20.733' N and 131º21.063' W, then north following the eastern shoreline of Moresby Island back to the point of commencement. (National Marine Conservation Area).

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 52º11.828' N and 131º15.662' W east to 52º12.269' N and 131º14.579' 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 52º14.523' N and 131º22.24' W southeast to 52º14.245' N and 131º21.481' 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 52º24.947' N and 131º32.13' W southeast to 52º24.233' N and 131º32.021' 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 51º56.509' N and 131º01.547' W, southwest to a point at 51º55.499' N and 131º02.468' W, then southeast to a point at 51º52.493' N and 130º57.907' W, then south to a point at 51º51.655' N and 130º57.780' W, then southeast to a point at 51º50.395' N and 130º56.561' W, then northeast to a point at 51º51.054' N and 130º54.702' W, then north to a point at 51º53.826' N and 130º55.640' W, then northwest to a point at 51º58.517' N and 130º59.468' W, then west to a point at 51º58.727' N and 131º00.620' W then west following the southern shoreline of Kungit Island back to the point of commencement. (National Marine Conservation Area).

3.3.2.6. 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 (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 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 15 Octopus Closures

3.3.8.1. 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)

3.3.8.2. 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)

3.3.8.3. 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)

3.3.8.4. 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)

3.3.8.5. 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)

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

### 3.3.9. Area 16 Octopus Closure

3.3.9.1. 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)

### 3.3.10. Area 18 Closures

3.3.10.1. 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)

### 3.3.11. Area 19 Sponge Reef Advisory

3.3.11.1. 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.

### 3.3.12. Area 19 Saanich Inlet VENUS Advisory

3.3.12.1. Subarea 19-8, Pat Bay: Fish harvesters are advised to avoid setting gear within in that portion of Pat Bay in Saanich Inlet bounded by 48°39.18' N and 123°29.35' W, 48°39.18' N and 123°29.02' W, 48°38.97' N and 123°29.02' W, 48°38.97' N and 123°29.35' W in order to avoid entanglement with sea bed oceanographic instruments deployed by the University of Victoria VENUS project. Please note that there is also a power and data cable from this location running to shore in Pat Bay, as described in a notice to mariners. For additional information see:

www.venus.uvic.ca/

### 3.3.13. Area 19 Octopus Closures

3.3.13.1. 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)

3.3.13.2. 10 Mile Point: Those waters of Subareas 19-4 and 19-5 within 0.4 nautical miles of Cadboro Point navigation light. (Marine Reserve)

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

3.3.13.4. Saanich Inlet: Subareas 19-7 to 19-12 inclusive. (First Nations access for food, social and ceremonial purposes; recreational fishing permitted)

### 3.3.14. Area 20 Closure

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

### 3.3.15. Area 20 Mooring Buoy Advisory

3.3.15.1. 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: juhaszt@pac.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.

### 3.3.16. Area 20 Octopus Closures

3.3.16.1. 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)

3.3.16.2. 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)

### 3.3.17. Area 21 Octopus Closure

3.3.17.1. 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)

### 3.3.18. Area 23 Closure

3.3.18.1. Pacific Rim National Park, Broken Group Islands: Closed, those waters of the Broken Group Islands in Barkley Sound within park boundaries as shown, since 1989, on Canadian Hydrographic Service Chart 3671. This area was closed by regulation to all fisheries for shellfish other than crab. All commercial resource extraction is prohibited by the Park Act. (Park)

### 3.3.19. Area 23 Octopus Closures

3.3.19.1. 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)

3.3.19.2. Bamfield Marine Station Research Area Closure: Those waters of Pacific Fishery Management 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)

### 3.3.20. Area 23 Neptune Project Advisory

3.3.20.1. 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

www.neptunecanada.ca/

### 3.3.21. Area 25 Sponge Reef Advisory

3.3.21.1. 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.

### 3.3.22. Area 26 Octopus Closures

3.3.22.1. 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)

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

Kyuquot Bay: A portion of 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)

### 3.3.23. Area 28 Closures

3.3.23.1. 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)

3.3.23.2. 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)

3.3.23.3. 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)

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

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

### 3.3.24. Area 29 Sponge Reef Advisory

3.3.24.1. Georgia Strait (Subarea 29-4): Fish harvesters are advised that concern has been expressed for the impact of commercial fishing gear on sponge reefs in the lower Gulf at a location 12 kilometres offshore of Sturgeon Bank at approximately 49°09.5' N and 123°23.0' W in 160 to 220 meters of water.

### 3.3.25. Areas 105, 106, 107, 110 Sponge Reef Advisory

3.3.25.1. Four unique sponge reef ecosystems in Hecate Strait (in Subareas 105-2 and 106-1, Subareas 106-2 and 107-1, and Subarea 107-2) and Queen Charlotte Sound (in Area 110) are being considered as an Area of Interest for establishment of a Marine Protected Area (MPA). Maps are available from the North Coast Area Resource Management Biologist (see Contacts in Section 14 of the 2012/13 Prawn & Shrimp by Trap Integrated Fishery Management Plan).

### 3.3.26. Areas 101 and 142 Closure

3.3.26.1. 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)

## 3.4. 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. For maps and up to date information on RCAs, refer to links on the Pacific Region internet site:

www.pac.dfo-mpo.gc.ca/recfish/Restricted_Areas/rca_e.htm

## 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

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

www-ops2.pac.dfo-mpo.gc.ca/xnet/content/fns/index.cfm?pg=search_options&lang=en&id=commercial

Information about closures is also available from any manager listed in this plan, or from any local DFO office. DFO enforcement vessels and industry service company 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) 627-3477 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:

| | | | |
|---|---|---|---|
| Tofino MCTS (south coast) | Tuesdays | 2115 UTC | 14:15 DST |
| Victoria MCTS (south coast) | Tuesdays | 1510 UTC | 08:10 DST |
| Comox MCTS (south coast) | Tuesdays | 1520 UTC | 08:20 DST |
| Prince Rupert MCTS (north coast) | Tuesdays | 1905 UTC | 09:05 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 shrimp *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 *Octopus 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 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 for 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 berried female prawns must be released from the date of season opening to June 30. Catch must be sorted as it comes on board and the females released **on a trap by trap basis**. **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

A single licence may fish a maximum of 300 traps on six 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 company 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 company.

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 stacking trap allotments. Where two trap limits are combined and fished from a single vessel, a maximum of 500 traps on 10 groundlines will be permitted on the receiving vessel. The second W / FW licence will be issued with a trap allocation of zero for the licence year.

The capsizing of prawn vessels carrying 500 traps has been investigated by the Marine Transportation Safety Board. Vessel masters are advised to carefully consider stability when transporting gear. 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.

Trap allocation transfer from a vessel may only occur on the first occasion of licence renewal. For example, a licence may be issued for 300 traps. A subsequent gear allocation transfer may occur allowing this vessel to fish 500 traps, but the traps may only be transferred from a licence that has not yet renewed for the present season. A licence that has already renewed for the present season cannot subsequently transfer its trap limit to another vessel. Further, a licence that has already transferred its trap limit and is allocated zero traps may not acquire additional traps. Trap allocation transfers can only be requested and authorized at a Pacific Fisheries Licencing Unit licensing office. Trap allocations revert to the original licences at the end of the licence year.

### 4.5.2. Trap and Groundline Limits in Special Management Areas

Trap limits are reduced in the following Special Management Areas (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 and stacked (two combined) licences are 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 with a stacked trap allocation.

### 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. Holding cages may be hung on separate buoys, and marked in the same manner as fishing gear, and handled more than once daily if there are no traps on the line.

### 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 company will be required each year.

Trap tags are only available from the industry service company. 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 the Prawn Sectoral Committee (PSC) 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 single W licence with an allotment of 300 traps. PRNS is required to identify gear for those vessels fishing stacked (combined) W licences with a total allotment of 500 traps. The VRN number 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 number.

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 number.

Buoys or PVC pipe labelled, as described above, with PRN or PRNS and the Vessel Registration Number 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 fake buoys to stake ground is not permitted.

### 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 commercial fishing vessel registration number (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. VRN number 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

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 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 (increased volume permitted for this trap type, see Section 4.5.11).

4.5.10.3. Solid Sided Traps

Solid sided traps have been replaced by improved trap designs that better sort undersize prawns while on the ocean bottom. The use of solid sided traps will be phased out completely over 5 years and will no longer be permitted for use by 2016.

Solid sided traps must be harnessed so that they are lifted from the end in order to allow the undersize prawns to escape through the mesh or escape slots. These traps are required to have either/or:

All tunnel entrances are to be constructed with mesh in such a manner so that a 19 millimetre (3/4 inch) diameter round peg will readily pass through the mesh opening without stretching or altering the shape of the mesh opening. Plastic webbing is available. If web mesh is used, we recommend 4.45 centimetres (1 3/4 inch) mesh size, cut in four pieces and sewn to maintain the square openings. The tunnels must extend to within one inch of the outside edge of the trap. If only one tunnel is used, the opposite end must be covered with mesh that allows a 19 millimetre (3/4 inch) diameter round peg to readily pass through the mesh opening without stretching or altering the shape of the mesh opening.

If the tunnels and web mesh are not modified as described above, the trap must have four slots a minimum of 16 millimetres (5/8 inch) wide for the entire length of the trap at the top and bottom edge of each side. (This is not recommended. Trap sides tend to bow out and lose legal size prawns).

### 4.5.11. 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. No solid sided trap or bucket trap with a volume greater than 50 litres is permitted except as described below for the Sooke coonstripe trap fishery. 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).

### 4.5.12. 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.

### 4.5.13. 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 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 of the location of the gear.

### 4.5.14. Recreational Fishing Gear Conflicts

Commercial harvesters are required to exercise care when setting gear near recreational 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 harvesters will lead to further closure requests from that sector. 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.

### 4.5.15. Extra and Replacement Sets of Trap Tags

#### 4.5.15.1. 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.

#### 4.5.15.2. Full Replacement Sets

In-season full replacement tag sets are available from the industry service company. 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. 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.

### 4.7. Multi-licensed Vessels

Where a Shrimp and Prawn 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. Masset Inlet and Prince Rupert Harbour Humpback Fisheries

A directed fishery for humpback shrimp (*Pandalus hypsinotus*) occurs in Subareas 1-6 (Masset Inlet), and in 4-10 and 4-11 (Prince Rupert Harbour). 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, and hail 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 supports 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 trap fishery have been required to make arrangements for the collection of samples by trained 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 make arrangements for extra observer sampling, request a letter from the industry service company indicating that arrangements have been

made, and provide that letter to the Prince Rupert Licensing Unit office with the request for amended Conditions of Licence 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 shrimp (dock shrimp, *Pandalus danae)* occurs in Subareas 20-6 and 20-7. There is no minimum mesh size requirement for traps used in this fishery. 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.

Industry representatives have expressed interest 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 observer staff are invited to contact DFO prior to the fishery opening.

## 6. LICENSING

### 6.1. 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 eligibilities are party based; a First Nations group is the licence eligibility holder and the eligibility must be designated annually to a commercially registered fishing vessel that meets length restrictions.

### 6.2. Licence Fees

Currently the annual licence fee for a category W licence is $320.00. There is no annual licence fee for communal commercial licences.

### 6.3. Licence Application and Issuance

Applications must be completed and submitted to a Pacific Fishery Licence Unit by December 31 of each year along with the required fee. The vessel owner must sign the application form. If the vessel owner is a company, the Pacific Fishery Licence Unit must have on record either a Confirmation of Signing Authorities or an Amendment to

Confirmation of Signing Authorities form advising the signing authorities for the company.

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.
c.) That you have a letter to DFO from an approved service company indicating that arrangements have been made for trap tags, reporting vessel fishing location (hails) to DFO, inspection of the vessel and gear during the fishing season and the sampling of spawner index information on the fishing grounds. The Service Company approved by DFO for the 2012 Prawn and Shrimp by Trap fishery is J.O. Thomas and Associates, Ltd.

### 6.4. 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.

### 6.5. Stacking Trap Allocations

Temporary trap allocation stacking is permitted, on an annual basis. Where 2 x 300 trap allocations are stacked onto a vessel, the total trap allocation that may be fished is reduced to 500 traps. Application for stacking of trap allocations will only be accepted at the same time that application and payment for licence renewal is submitted. This applies to both vessels.

### 6.6. 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.

### 6.7. 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.

www.agf.gov.bc.ca/fisheries/licences/main.htm

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 according to *Pacific Fishery Regulations,* Part II, Section 24.

## 7. CONTROL AND MONITORING OF COMMERCIAL FISHING ACTIVITIES

### 7.1. Notification Procedures

Vessel masters shall arrange for fishing vessel location information to be provided by the industry service company to DFO by means of an Internet reporting system established for this purpose.

The vessel master shall have the service company notify DFO prior to commencement of fishing in a Subarea and every four weeks thereafter while fishing in that location, 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 masters behalf.
e.) The date for which the report is effective.
f.) Management Subareas (as defined in the *Pacific Fishery Management Area Regulations*) fished.
g.) Time and date that fishing will commence.
h.) The hail verification number issued by the service company to the vessel master.

Fishing may not commence until a hail has been made and a verification number received. Vessel masters are encouraged to be specific about the Subareas in which they intend to fish. This information is necessary for in-season assessment of effort and for the deployment of industry service company observers. Fish harvesters are encouraged to maintain communications with their service company's local observer vessels when they are fishing. This will reduce search and travel costs, improve opportunities for sampling, and avoid unnecessary closures by DFO due to lack of information. **DFO will close fishing areas if observers cannot locate vessels and there is insufficient sampling.**

A vessel monitoring system that provides real-time vessel location to the industry service company for the purposes of collecting spawner index samples is being trialed by volunteer vessels. Licence eligibility holders and vessel masters are advised that the use of a vessel monitoring system of real-time vessel location to support the prawn spawner index testing program will become mandatory in 2013.

Prior notification shall also be provided by the vessel master on each occasion when moving to a new statistical Subarea and every four weeks thereafter while in those areas.

The vessel master should also provide notification when they will be out of the fishery for more than seven days, or if they have finished fishing for the remainder of the season.

## 7.2. Information Reports from Sea (Prawn Spawner Index Sampling)

Vessel masters shall arrange to have information about fishing operations and spawner index sampling provided by the industry service company to DFO.

During the course of the season, each vessel shall provide a fishing report from sea and provide data from spawner index samples collected by the industry service company 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.

## 7.3. Catch Reporting

### 7.3.1. Harvest Log Data

A new logbook format that includes octopus information was introduced in 2004. Only new format logbooks may be used.

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 Marine Ecosystem and Aquaculture Division's Shellfish Data Unit.

To fulfil stock assessment objectives it is imperative that much finer resolution of fishing location now 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 outside Service Companies who, for a fee, will provide the logbook coding and keypunch 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 Company, 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 on a Windows compatible mini CD or other Shellfish Data Unit approved media. Mini CD's will remain the property of DFO. The electronic copy must be either:

a) An ASCII text file in the data format specified by DFO Shellfish Harvest Log Program.
b) A database table of specific design created by Microsoft Access XP (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 Licence. 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 vessel owner of record reported with the Pacific Fishery Licence Unit 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 vessel owner of record, and only upon written request.

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

In the event that a licence is issued but not fished, the vessel owner is responsible for submitting a Nil Report for the season. The Nil Report must be submitted prior to the 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 fish 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 Licence. Delay of completion or submission of logs is a violation of the Conditions of Licence.**

7.3.1.3. Confidentiality of Harvest Data

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

*Act* prevents DFO from giving out information, the disclosure of which could reasonably be expected to prejudice the competitive position of the fish harvester.

### 7.3.2. Fish Slip Requirements

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

Fisheries and Oceans Canada
Regional Data Unit
200 - 401 Burrard St.
Vancouver, B.C. V6C 3S4
Phone: (604) 666-3784

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

## 8. GENERAL INFORMATION

### 8.1. Rockfish and Assistance to At-Sea Observers

The commercial prawn trap fishery has been allowed to continue fishing in the Rockfish Conservation Areas with the understanding that additional by-catch information will be collected. 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 skipper or crew is requested to put all rockfish from the sample string into a holding bucket for later identification and counts by the observer. Skippers 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 Association, those types of traps and bait combinations which appear to capture the greatest numbers of rockfish.

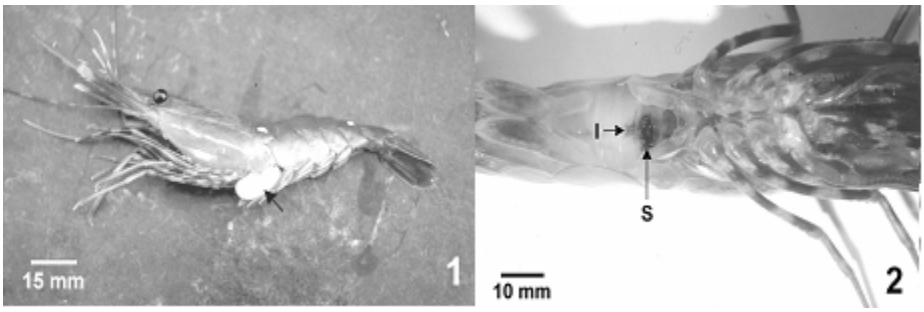
Maps of RCAs are available at:

www.pac.dfo-mpo.gc.ca/fm-gp/rec/restricted-restreint/rca-acs-eng.htm

### 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

Or on the Internet at:

www.pac.dfo-mpo.gc.ca/science/species-especes/shellfish-coquillages/diseases-maladies/toc-eng.htm#shr

## 8.3. On-Board Freezing

Prawns 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 transfer of catch to a second vessel for freezing is not permitted. If transferred to another vessel, the receiving vessel requires a provincial Fish Buying Station Licence. The receiving vessel must also have a commercial fishing licence or a transporting, category "D", licence according to *Pacific Fishery Regulations, Part II*, Section 24.

## 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.

Sulphite mixtures or other mixtures which include additives not specified in the Food and Drug Regulations may only be used via an exemption whereby the product will be exported through a federally registered plant (not simply a cold storage) to a country that permits their use. The exemption is issued to the processor as products must be "processed" in a registered plant under an acceptable Quality Management Program.

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

Burnaby: (604) 666-6513
Victoria: (250) 363-3830
Parksville: (250) 248-4772

Commercial fish harvesters are reminded that a fisher's vending 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 (250) 897-7540 for additional information. Information is also available at:

www.agf.gov.bc.ca/fisheries/licences/main.htm

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

There are restrictions on commercial vessel participation in First Nations food, social and ceremonial (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. Groundfish Taken for Bait

Fish harvesters are reminded that any groundfish taken for bait must be taken in accordance with the appropriate groundfish licence and attached to Conditions of Licence. Dockside monitoring is an essential element of groundfish stock monitoring and quota management. Therefore, it is important 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.

## 8.7. Sponge Reefs

Concern has been expressed for the impact of commercial fishing gear on sponge reefs at several locations in southern waters that should be avoided. This includes a lower Gulf location 12 kilometres offshore of Sturgeon Bank in 160 to 220 metres of water, cloud sponge areas in Saanich Inlet in waters less than 40 metres depth at Henderson Point, 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, and in Tahsis Narrows around Mozino Point in waters less than 80 metres depth.

Four unique sponge reef ecosystems in Hecate Strait (in Subareas 105-2 and 106-1, Subareas 106-2 and 107-1 and Subarea 107-2) and Queen Charlotte Sound (in Area 110) are being considered as an Area of Interest for establishment of a Marine Protected Area (MPA) under the *Oceans Act* (see Section 4.4.2 of the 2012/13 Prawn & Shrimp by Trap Integrated Fishery Management Plan).

**Appendix 2: 2012/13 Prawn and Shrimp by Trap Recreational Harvest Plan**

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## 1. RECREATIONAL HARVEST PLAN HIGHLIGHTS AND CHANGES FOR 2012/13

1.1 Recreational prawn fishery regulations are described in the British Columbia Tidal Waters Sport Fishing Guide.

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

1.2 The management measures introduced for high use recreational fishing areas – Saanich Inlet and Stuart Channel in 2006 and Alberni Canal in 2007 – will continue for 2012/13 subject to confirmation of funding for fall sampling. This includes higher spawner index targets, a one-week closure in May, and 'pulse' fishing beginning in September (the day after Labour Day)(Sections 4.1.1 and 6.5).

1.3 The one-week closure under the 9 point plan for Saanich Inlet, Stuart Channel, and Alberni Canal will be delayed to May 3 - 9, 2012 to coincide with the delayed opening date of the commercial fishery (Sections 4.1.1 and 6.5).

1.4 Spawner index sampling in the fall is subject to funding in 2012 as a result of the Larocque court decision. In the event sampling can not be conducted, local area closure (January 1 to March 31, 2013), fishing time periods (e.g., weekend-only or "pulse fishing"), and/or reduced recreational catch limits will be implemented in-season (Section 4.1.3).

1.5 Fisheries & Oceans Canada (DFO) is considering proposed changes to the *BC Sport Fishing Regulations* and the recreational fishing conditions of licence to eliminate line floating at the surface; require unique floats for prawn and crab gear; and a mandatory requirement to include phone number (or Unique Fisher Identification #) on floats (Section 6.4.2).

## 2. CONTACTS AND SOURCES OF INFORMATION

DFO contacts including the Recreational Fisheries Co-ordinator are listed in Section 14 of the 2012/13 Prawn & Shrimp by Trap Integrated Fishery Management Plan. Sport Fishing Advisory Board representatives to the Prawn Sectoral Committee are listed in Section 15.

Information for recreational fisheries is available on the internet at:

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

Recreational fisheries in Canada are guided by principles which are outlined in "An Operational Policy Framework" available on the Internet at:

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

"A Vision for Recreational Fisheries in British Columbia 2009-2013" developed cooperatively by DFO, the Province of BC and the SFAB serves as a framework for developing initiatives and actions to support achievement of a collective vision for the recreational fishery in BC. The recreational fisheries Vision is available at:

www.pac.dfo-mpo.gc.ca/fm-gp/rec/docs/rec-vision-eng.pdf

## 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 in high use (Section 4.1.1) and important (Section 4.1.2) recreational fishing areas. If necessary, the seasonal area closures will be established by variation order and announced by public fishery notice (Section 4.3).

### 3.2. Daily Fishing Hours

Trap gear may be hauled, handled, or set 24 hours/day.

## 4. CLOSURES

### 4.1. Seasonal Closures

#### 4.1.1. High Use Areas

Saanich Inlet, Stuart Channel, and Alberni Canal are closed to recreational fishing for one week in May, then open through the summer, then a "pulse" fishing regime (closures for the first half of the month followed by 2 week openings for the remainder of the month) begins in September the first day after Labour Day. Pulse fishing continues for the remainder of the winter (January 1 to March 31, 2013) subject to results of spawner index surveys in the fall to assess spawning stocks. Surveys in 2012 are subject to funding following the "Larocque" court decision (Section 4.1.3).

The one week closure in May will delay to May 3 - 9, 2012, to coincide with the delayed opening date of the commercial fishery.

Closures will be announced in-season by fishery notice.

#### 4.1.2. Important Fishing Areas

Prawn fishing areas that have been sampled in the fall have included, in addition to the high use areas above, Quadra / Cortes Islands, Powell River, Malaspina Strait / lower Jervis, Sechelt / Salmon Inlets, north Nanaimo, Barkley Sound, Tahsis / Muchalat Inlet and Howe Sound. These areas remain open through the winter (January 1 to March 31, 2013) subject to results of spawner index surveys in the fall to assess spawning stocks. Surveys in 2012 are subject to funding following the "Larocque" court decision (Section 4.1.3).

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 distribute sampling effort throughout the area, in locations and in a manner comparable to commercial fishing season activity. Every vessel has an experienced index sampler on-board for all haul days to collect and record data from each trap. Data sheets are received and reviewed by

DFO Science, Marine Ecosystem and Aquaculture Division (MEAD). Sets outside commercial prawn locations or 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 than baseline + 10%, the area remains open. Areas with index values between the baseline spawner index level and baseline + 10% are considered for reduced fishing effort, such as partial weekly closures, or are closed. Baseline + 35% is applied to the high use areas (Section 4.1.1). 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.

Surveys in 2012 are subject to funding following the "Larocque" court decision (Section 4.1.1 of the 2012/13 Integrated Fishery Management Plan for Prawn and Shrimp by Trap). If surveys can not be established by October to demonstrate that the areas can remain open during the winter period, local area closure may be necessary from January 1 until March 31, 2013 while the spawning cycle completes. Fishing time periods (e.g., weekend-only fishing or pulse fishing) and reduced catch limits will be considered in areas, where possible, following a Scientific review of past sampling (2000-2011).

Closures are scheduled to provide at least two weekends of advance notice to recreational harvesters to become informed of the impending closure and to allow time for gear removal. Closures take effect January 1. Closures are in place until the end of the spawning cycle, allowing recreational gear to go back into the water on April 1.

## 4.2. Permanent Closures

Closure descriptions are provided in the British Columbia Tidal Waters Sport Fishing Guide.

### 4.2.1. Gwaii Haanas National Marine Conservation Area

Harvesting of all species is prohibited in Burnaby Narrows, Louscoone Estuary, Flamingo Estuary, Gowgaii Estuary, Cape Saint James, and SGang Gwaay (1 nm around Anthony Island) (National Marine Conservation Area).

### 4.2.2. Victoria Area Ecological Reserves

Harvesting of all shellfish is prohibited in waters shallower than 40 m at Race Rocks and in waters within 1/3$^{rd}$ nautical mile of Cadboro Point navigation light.

### 4.2.3. Vancouver Harbour

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

### 4.2.4. 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.

#### 4.2.5. Saanich Inlet Sponge Reefs Advisory

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.

### 4.3. Closure Notifications and Announcements

Permanent closures are published in the British Columbia 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:

www.pac.dfo-mpo.gc.ca/recfish/Opportunities/shellfish_e.htm

## 5. LICENSING

### 5.1. Licence Category

A Tidal Waters Sport Fishing Licence is required to fish and retain shellfish, including prawn and shrimp by trap. 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. Fees are published in the British Columbia Tidal Waters Sport Fishing Guide.

Tidal Waters Sport Fishing Licences can be purchased at many tackle stores and marinas or online at:

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

## 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 3: 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/rec/species-especes/shrimps-crevettes-eng.htm

Prawns have a 4 year life cycle, and so are larger than the other species which have 3 year life cycles. 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 8 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. Harvest

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

## 6.4. Gear

### 6.4.1. Trap Limits and Ground Lines

Each harvester may fish 4 ring nets or traps for prawn and shrimp. There is no mesh size restriction. Two ring nets or traps may be attached to a single buoy. If 3 or 4 traps are set together on a single bottom line (ground line), then a buoy is required at either end of the ground line. Only one fisher's traps may be set on a single ground line, that fisher's name must be on each of the buoys, and the gear must be hauled and set only by that fisher.

Regulations also permit fishing for prawns and shrimp with spears while diving. Although this sounds unusual, some persons have related that other means of catching shrimp or prawns underwater are difficult, and that small spears like fondue forks fired by elastic, have been tried.

### 6.4.2. 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 or if it is necessary for it to be hauled by the DFO.

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

During 2011, the Department consulted with stakeholders regarding proposed changes to the *BC Sport Fishing Regulations* which regulate aspects of recreational fishing for prawns and crab. There are four proposed changes: eliminating line floating at the surface; having unique floats for crab and prawn gear; mandatory requirement to have phone numbers or Unique Fisher Identification Numbers on floats; and rot cord for round stainless steel crab traps. The proposed changes have been described in detail in the discussion document "*Proposed Changes to Recreational Crab and Prawn Regulations and Conditions of Licence*" which is available from DFO Prawn Fisheries Managers (Section 14 of the 2012/13 Integrated Fishery Management Plan for Prawn and Shrimp by Trap).

### 6.4.3. Recovery of 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. Gear that has been found may be returned if it can be identified in some manner. Contact the local Fishery Office if you believe that your gear may have been lost and found from the water.

### 6.4.4. Recreational/Commercial Fishing Gear Conflicts

Commercial and recreational harvesters are advised to exercise care when setting gear near other gear in similar locations, when those 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. High Use Areas

The high use areas of Saanich Inlet, Stuart Channel, and Alberni Canal are managed in the commercial fishery to the greatest index levels on the coast, well above the "baseline" set by Science. The recreational fishery in these areas is managed to a target that is 15 points lower than the commercial target. There is also a one week recreational closure at the start of the commercial fishery, and "pulse" recreational fishing begins no later than September.

The measures are intended to leave more female prawns carrying eggs on the spawning grounds, to release more larvae, with an anticipated benefit of more prawns for all harvest sectors, and thereby a reduction in the need for winter recreational fishing closures. However, benefits to spawning potential may not be seen every year.

The measures that are applied to the high use areas consist of:

- A one week recreational fishing closure in May to allow for comprehensive spawner index sampling to begin;
- Increased spawner index targets for management of the commercial fishery;
- "Pulse" recreational fishing commencing in September until March with closures for the first half of the month and openings for the remainder of the month pending fall stock assessment surveys and a winter fishing opportunity;
- Increased spawner index targets for management of the recreational fishery;
- Spawner index sampling in October, subject to funding in 2012, to determine if winter closures are necessary; and
- Index sampling in January to confirm that increased numbers of spawning females have survived to the end of their life cycle.

For 2012/13, the schedule for the recreational fishery in Saanich Inlet, Stuart Channel and Alberni Canal, is as follows:

| | |
|---|---|
| April 1 to May 2 | Open in all coastal areas. |
| May 3 to 9 | Closed in Saanich Inlet, Stuart Channel and Alberni Canal only; |
| May 10 to Sep. 4 | Open. |

| | |
|---|---|
| Sep. 5 to 15 | Closed in Saanich Inlet, Stuart Channel and Alberni Canal only. |
| Sep. 16 to 30 | Open. |
| Oct. 1 to 15 | Closed in Saanich Inlet, Stuart Channel, and Alberni Canal only. |
| Oct. 16 to 31 | Open. |
| Nov. 1 to 15 | Closed in Saanich Inlet, Stuart Channel, and Alberni Canal only. |
| Nov. 16 to 30 | Open. |
| Dec. 1 to 15 | Closed in Saanich Inlet, Stuart Channel, and Alberni Canal only. |
| Dec. 16 to 31 | Open. |

After Jan. 1, 2013, the schedule is dependent on the outcome of spawner index sampling results collected in October. In 2012, this sampling is subject to funding. If surveys can not be established to demonstrate that the areas can remain open during the winter period, local area closure may be necessary from January 1 until March 31, 2013 while the spawning cycle completes (Section 4.1.3). If closures are necessary, they will be announced by public fishery notice (Section 4.3). Otherwise the pulse fishing will continue to the end of March, i.e., closed in Saanich Inlet, Stuart Channel and Alberni Canal from the 1st to the 15th of each month and open from the 16th to the end of each month. All areas re-open April 1, 2013.

## 7. GENERAL INFORMATION

### 7.1. Release of Undersized and Berried Prawn and Shrimp

"Berried" refers to prawns and shrimp that are carrying eggs held under their tails. There are various means of releasing undersized and berried prawns and shrimp in order to increase their survival. Release at the fishing location is recommended so that there is a greater chance of the prawn and shrimp returning to their preferred habitat. Release in other locations after or during moving will needlessly increase their mortality. Release as soon as possible is recommended to reduce the potential damage to eyes from UV radiation or from air exposure.

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.

### 7.2. 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.

**Appendix 3: 2012/13 Prawn and Shrimp by Trap First Nations Harvest Plan**

## TABLE OF CONTENTS



## 1. OVERVIEW OF THE FISHERY

Fisheries & Oceans Canada's policy on the management of First Nations fishing identifies First Nations harvests for food, social and ceremonial (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 harvest documents (under treaty) are issued annually to First Nations under the authority of the *Aboriginal Communal Fishing Licences Regulations* made under the *Fisheries Act*. 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.

First Nations may also participate in the commercial fishery (see Section 3.3 of the Integrated Fishery Management Plan and Appendix 1 Commercial Harvest Plan).

## 2. MANAGEMENT MEASURES FOR THE FIRST NATIONS FISHERY

First Nations fishing effort for a FSC (domestic) purpose is 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.

In recent years, DFO has observed a much greater harvest of prawns for FSC purposes than in the past and observed an increasing number of commercial vessels harvesting prawns for FSC purposes with commercial gear. DFO is becoming increasingly concerned about the impact such harvest will have on the conservation and sustainability of the resource. In the past, effort was small enough that there was not need to have gear or catch limits for FSC harvest.

Last year, licence conditions were introduced on commercial vessels during the commercial opening to prohibit recreational or FSC catch to be onboard during the commercial season. In

2013, DFO is considering introducing licence conditions for the FSC fishery, such as trap limits, to address the concern about commercial vessels and gear being used to harvest prawns for FSC purposes. DFO welcomes First Nations views on this issue by contacting the Lead Fishery Manager for Prawn and Shrimp by Trap or a Resource Manager for their area (Section 14 Contacts of the 2012/13 Integrated Fishery Management Plan for Prawn and Shrimp by Trap).

## 3. OPEN TIMES

First Nations fishing for FSC purposes are open coast-wide throughout the year, from April 1 to March 31, annually. Spawner index management to leave female spawners at levels 10% or greater in excess of the baseline and the increased commercial size limit leaving all 30-33 mm carapace length prawns in the water are measures supportive of year round FSC harvest opportunities.

Winter closure of First Nations FSC fisheries has not been required to date when recreational fishing areas closed. 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 2012/13 Prawn & Shrimp by Trap Integrated Fishery Management Plan for DFO contacts).

## 4. 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*.

## 5. 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, as well as provisions for monitoring and reporting by the group of the First Nations fishery in co-operation with Fisheries & Oceans Canada.

First Nations communal licences specify the locations permitted for use by First Nations for food, social and ceremonial harvests. Harvesting generally takes place in areas fronting or adjacent to reserves.

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 3 months).

### 5.1. 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 Ucluelet First Nation on the west coast of Vancouver Island.

The Maa-nulth Fisheries Operational Guidelines (FOG) sets out the operational principles, procedures and guidelines to assist Canada, BC and Maa-nulth in implementing the Fisheries Chapter of the Final Agreement. The FOG provides guidance on the Maa-nulth fishery incorporating biological, harvesting, catch monitoring and reporting considerations, and other matters of the Maa-nulth Final Agreement.

Each year the Joint Fisheries Committee will make recommendations to the Minister on the issuance of 'Harvest Documents' to authorize harvesting for domestic purposes.

More information on the Treaty can be found at:

www.bctreaty.net/

## Appendix 4: Diagrams - Prawn Size Limits and 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).

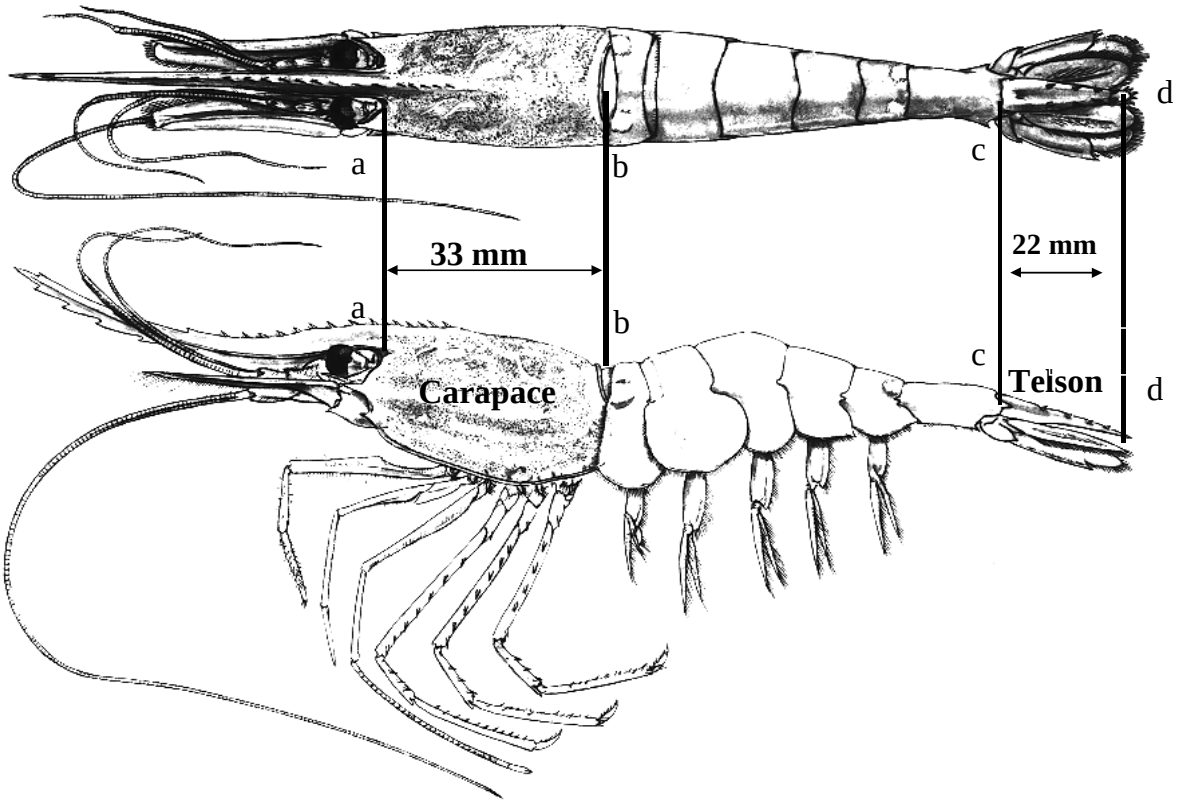
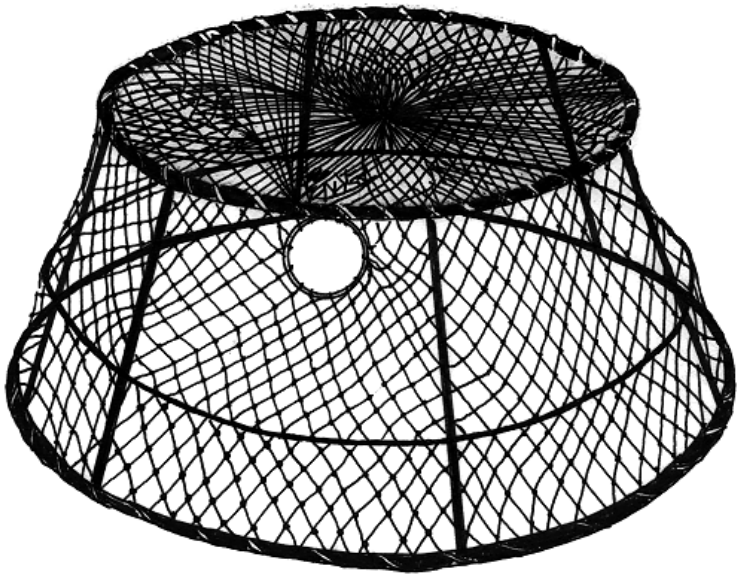


**FIGURE 2: WEB TRAP MESH REQUIREMENTS**

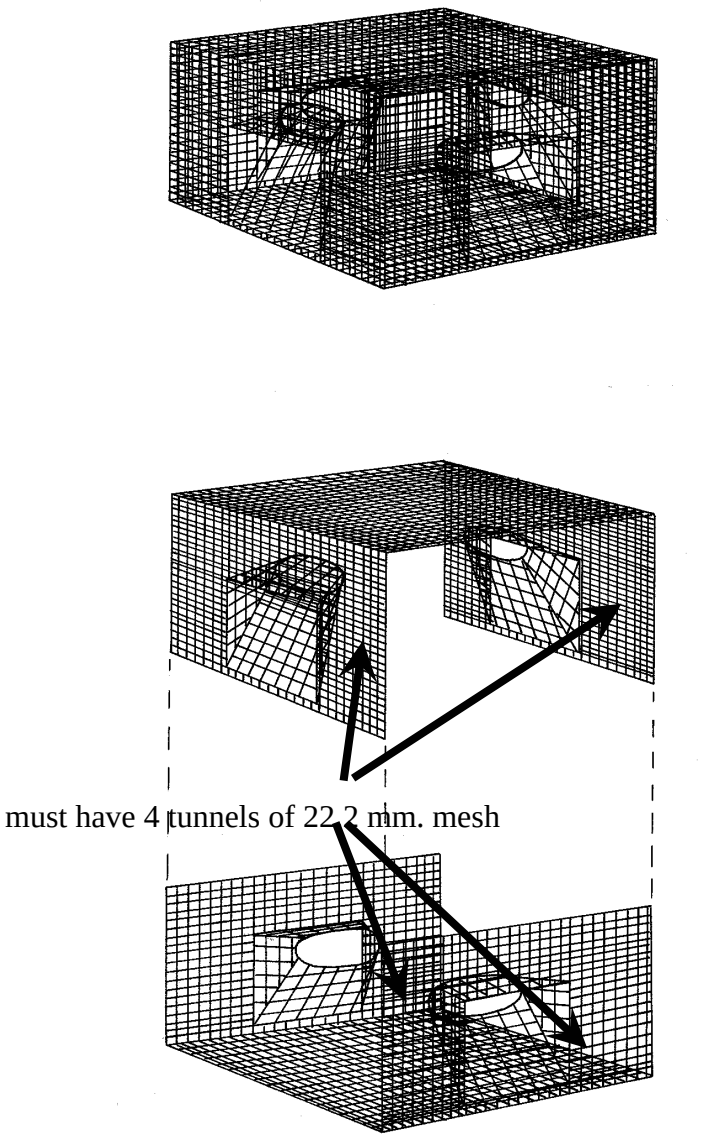
Web or Soft Mesh Traps: Maximum Volume 170 Litres



**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

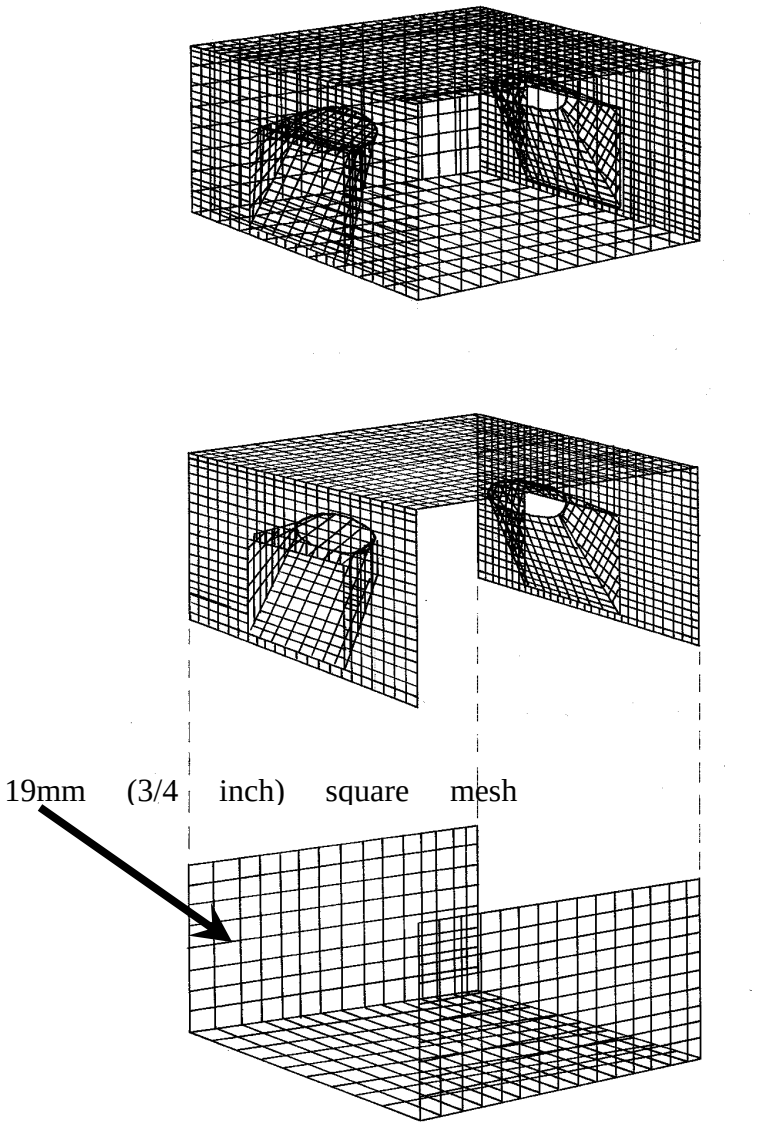
**Wire or Hard Mesh Traps** - These traps must have either:

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

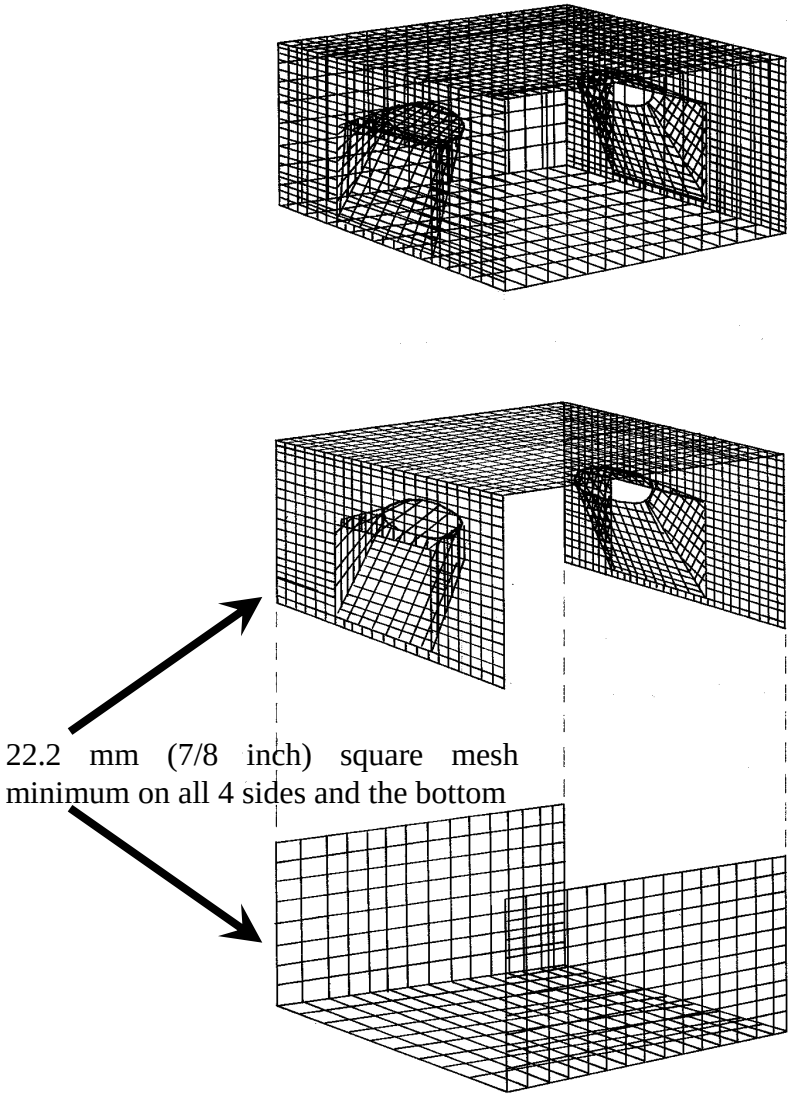



The bottom and two opposing sides must be constructed of a square mesh material that will allow the passage of a 19mm (3/4 inch) square peg through the mesh without altering the shape of the mesh opening, or

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.



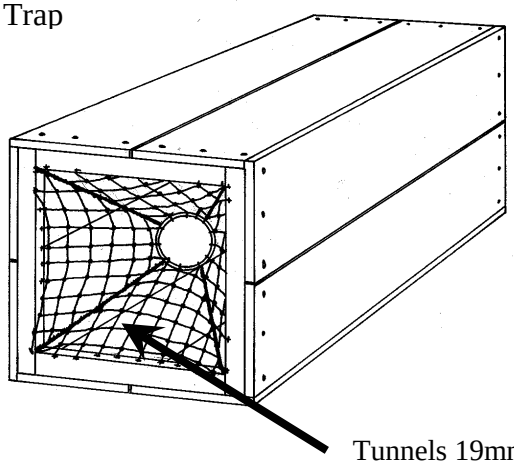

The bottom and all 4 sides must be constructed of a square mesh material that will allow the passage of a 22.2 mm (7/8 inch) square peg through the mesh without altering the shape of the mesh opening; or

Refer to Wire Mesh Options 1 and 2 on the preceding pages.

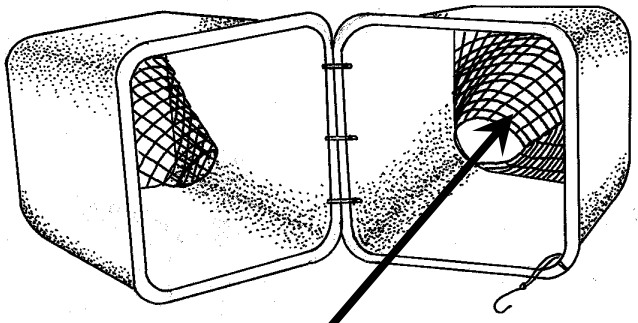
**FIGURE 6: SOLID SIDED TRAP OPTIONS**

Maximum Volume 50 Litres, except max. volume of 230 L in Sooke coonstripe fishery in Subarea 20-6 and 20-7

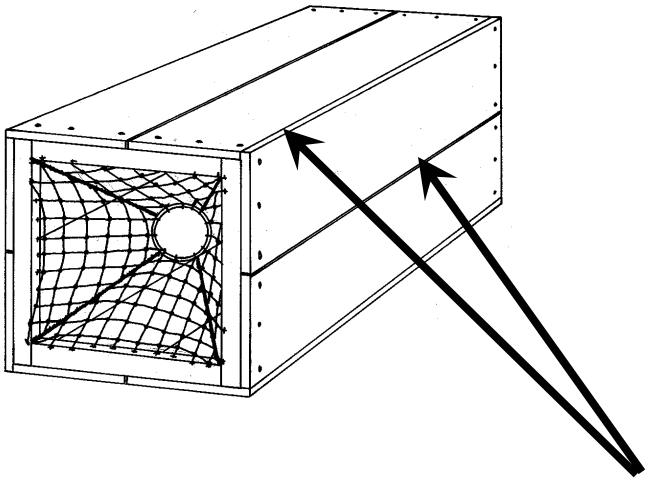
Box Trap



Bucket Trap



Tunnels 19mm (3/4 inch) square minimum



Box Trap Option - Escapement Slots, 16mm (5/8 inch) slots

**Solid Sided Traps**

The tunnels are to be constructed of a mesh material in such a manner that a 19mm (3/4 inch) round peg will readily pass through the mesh without altering or stretching the shape of the mesh openings, or;

Four slots a minimum of 16mm (5/8 inch) wide for the entire length of the trap, top and bottom of each side. (This is not recommended due to the warping of the trap sides and significant loss of legal sized prawns.)

## 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.

## Appendix 6: Fishing Vessel Safety

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

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

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

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

Education and Training Programs
Marine Emergency Duties
Fish Safe Stability Education
First Aid
Radio Operators Course
Fishing Masters Certificates
Small Vessel Operators Certificate
Publications:

- Transport Canada Publication TP 10038 '*Small Fishing Vessel Safety Manual*'(can be obtained at Transport Canada Offices or on the internet at: www.tc.gc.ca/eng/marinesafety/menu.htm),
- Gearing Up for Safety – WorkSafeBC
- Safe At Sea DVD Series – Fish Safe
- Stability Handbook – Fish Safe and Measuring Stability –DVD

For further information see the internet at:

www.tc.gc.ca/eng/marine-menu.htm

### 1. Important Priorities for Vessel Safety

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

## 1.1. Fishing Vessel Stability

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

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

Every fishing vessel built after 06 July 1977 and engaged in fishing herring or capelin must have a valid stability book. Additionally, Transport Canada has published a Stability Questionnaire (SSB 04/2006), and Fishing Vessel Modifications Form which enable operators to identify the criteria which will trigger a stability assessment. A stability assessment is achieved by means of an inclining experiment, which has to be conducted by a naval architect. Please contact the nearest Transport Canada office if you need to determine whether your vessel requires one.

**Fish Safe BC**

Fish Safe encourages Vessel masters and crew to take ownership of fishing vessel safety. Through this industry driven and funded program Fish Safe provides fishing relevant tools and programs to assist fishermen in this goal. The Fish Safe Stability Education Course, is available to all fishermen who want to improve their understanding of stability and find practical application to their vessel's operation. The Safe on the Wheel Course is designed to equip crewmen with the skills they need to safely navigate during their wheel watch. The Safest Catch Program along with fishermen trained safety advisors is designed to give fishermen the tools they need to create a vessel specific safety management system.

Fish Safe is managed by Gina McKay along with Project Coordinator John Krgovich and fishermen safety officers. 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 WorkSafe BC to improve the fishing injury claims process.
For further information, contact:

| | |
|---|---|
| Gina Johansen | Phone: 604-261-9700 |
| Program Manager | Cell: 604-339-3969 |
| Fish Safe | Fax: 604-275-7140 |
| #2, 11771 Horseshoe Way | Email: admin@fishsafebc.com |
| Richmond, BC V7A 4V4 | www.fishsafebc.com |

## 1.2. Emergency Drill Requirements

The master must establish procedures and assign responsibilities to each crew member for emergencies such as crew member overboard, fire, flooding, abandoning ship and calling for help.

The Crewing Regulation under the Canada Shipping Act (CSA) states that as of July 30th 2002 all seafarers, including fish harvesters, must have a Basic Safety Certificate (MED A1 or A3 depending upon vessel and operating waters) within 6 months of becoming a crewmember, regardless of time at sea. The MED A1 is a three day course, and must be taken by all crew regardless of duty station.

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

## 1.3. Cold Water Immersion

Drowning is the number one cause of death in B.C.'s fishing industry. Cold water is defined as water below 25 degrees Celsius, but the greatest effects occur below 15 degrees. BC waters are usually below 15 degrees. 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 WorkSafe BC website).

## 1.4. Other Issues

### 1.4.1. Weather

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

www.weatheroffice.gc.ca/marine/index_e.html

### 1.4.2. Emergency Radio Procedures

Vessel owners and masters should ensure that all crew are able to activate the Search and Rescue (SAR) system early rather than later by contacting the Canadian Coast Guard (CCG). It is strongly recommended that all fish harvesters carry a registered 406 MHz Emergency Position Indicating Radio Beacon (EPIRB). These beacons should be registered with the National Search and Rescue secretariat. When activated, an EPIRB transmits a distress call that is picked up or relayed by satellites and transmitted via land earth stations to the Joint Rescue Co-ordination Centre (JRCC), which will task and co-ordinate rescue resources.

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

Since August 1, 2003 all commercial vessels greater than 20 metres in length are required to carry a Class D VHF Digital Selective Calling (DSC) radio. A registered DSC VHF radio has the capability to alert other DSC equipped vessels in your immediate area and MCTS that your vessel is in distress. Masters should be aware that they should register their DSC radios with Industry Canada to obtain a Marine Mobile Services Identity (MMSI) number or the automatic distress calling feature of the radio may not work. For further information see the Industry Canada site at:

www.ic.gc.ca/eic/site/ic1.nsf/eng/h_00014.html

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

www.ccg-gcc.gc.ca/

### 1.4.3. Collision Regulations

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

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

Exceptions include:

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

More detailed information on VTS can be obtained by calling (604) 775-8862 or from Coast Guard website:

www.ccg-gcc.gc.ca/e0003901

### 1.4.4. Buddy System

Fish harvesters are encouraged to use the buddy system when transiting, and fishing as this allows for the ability to provide mutual aid. An important trip consideration is the use of a sail plan which includes the particulars of the vessel, crew and voyage. The sail plan should be left with a responsible person on shore or filed with the local MCTS. After leaving port the fish harvester should contact the holder of the sail plan daily or as per another schedule. The sail

plan should ensure notification to JRCC when communication is not maintained which might indicate your vessel is in distress. Be sure to cancel the sail plan upon completion of the voyage.

## 2. WORKSAFE BC

Commercial fishing is legislated by the requirements for diving, fishing and other marine operations found in Part 24 of the Occupational Health and Safety Regulation (OHSR). Many general hazard sections of the OHSR also apply. For example, Part 8: Personal Protective Clothing and Equipment addresses issues related to safety headgear, safety foot wear and personal floatation devices. Part 15 addresses issues on rigging, Part 5 addresses issues of exposure to chemical and biological substances, and Part 3 addresses training of young and new workers, first aid, and accident investigation issues. Part 3 of the Workers Compensation Act (WCA) 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: Shane Neifer (250) 615-6640 (Terrace), Bruce Logan (604) 244-6477 (Lower Mainland), Wayne Tracey (604) 232-1960 (Lower Mainland), David Clarabut (250) 881-3469 (Victoria), Pat Olsen (250) 334-8777 and Mark Lunny, (250) 334-8732 (Courtenay) or the Manager of Interest for Fishing, Mike Ross (250) 881-3419.

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

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.

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 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*) rinse with mild bleach solution 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.

### 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 B.C. 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 Office:

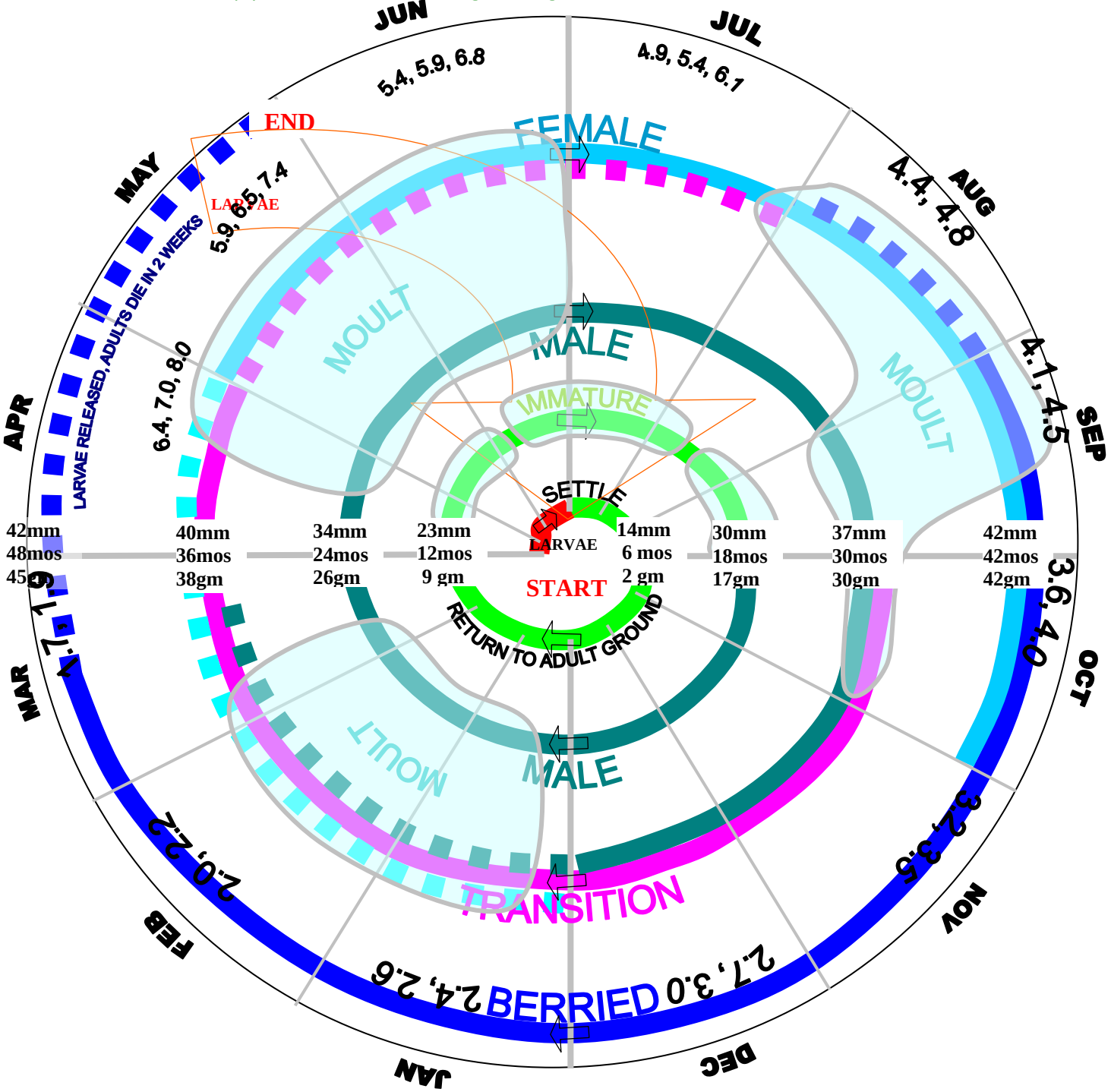
**CFIA - Vancouver**
400 – 4321 Still Creek. Dr.
Burnaby B.C.
V5C 6S7
(604) 666-6513

**CFIA - Victoria**
103 – 4475 Viewmont Ave.
Victoria, B.C
V8Z 6L8
(250) 363-3455

**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 to 42 months appear insufficient, and the shape of the timing of the moult period occurring 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.

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 percent 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 percent 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 surveys 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.

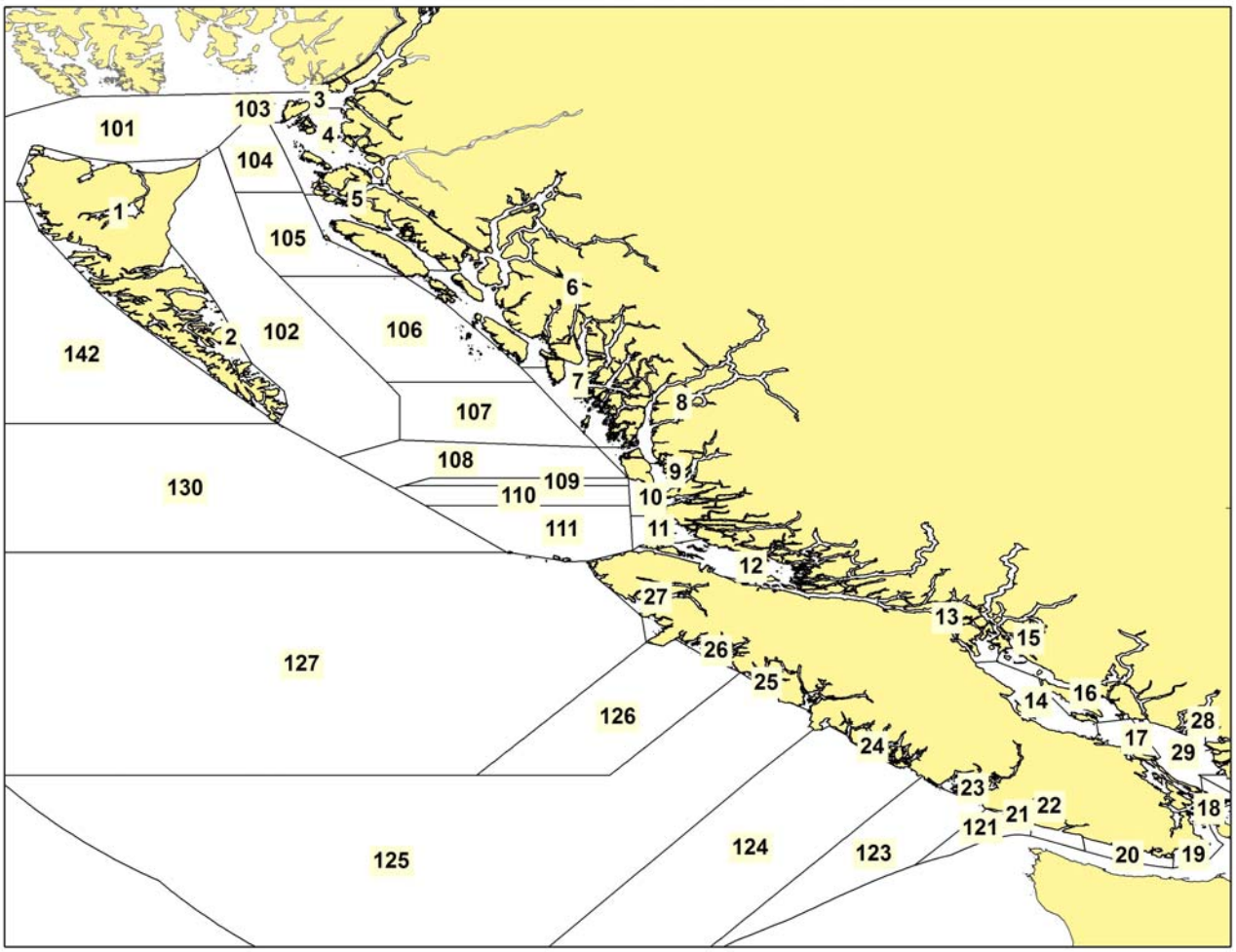
Further, there will be variations based on geography. For more northern areas, the whole diagram may have to be rotated or lengths of development periods altered to represent growing conditions in those waters. As well, size and weight characteristics may change. One enduring question is how those northern 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 9: Map of Fishing Areas (Pacific Fishery Management Areas)




Inshore fishery areas include Pacific Fishery Management Areas 1 to 29.
Offshore areas include PFMAs 101 to 111, 121 to 127, 130 and 142.