

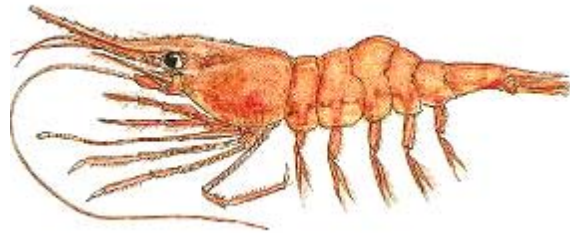
PACIFIC REGION

INTEGRATED FISHERIES

MANAGEMENT PLAN

SHRIMP TRAWL

APRIL 1, 2010 TO
MARCH 31, 2011



Smooth Pink Shrimp: *Pandalus jordani*
Sidestripe Shrimp: *Pandalopsis dispar*



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 Fisheries Act and Regulations, the Act and Regulations are the final authority. A description of Areas and Subareas referenced in this Plan can be found in the Pacific Fishery Management Area Regulations.

FOREWORD

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

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

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

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1. OVERVIEW

1.1. Introduction

This Integrated Fisheries Management Plan (IFMP) plan refers to Canada's Pacific coast harvest of shrimp by means of trawl gear and covers the period of April 1, 2010 to March 31, 2011. Information in addition to that presented here is available in documents titled Shrimp Trawl Fishery – 2000/01 (Harbo and Wylie 2006), and annual Shrimp Trawl Fishery Reviews (Toole 2007). Stock Assessment bulletins are available from the internet website:

<http://www.pac.dfo-mpo.gc.ca/fm-gp/commercial/shellfish-mollusques/shrimp-pcrevette/index-eng.htm>

Note that the commercial harvest plan is detailed in Appendix 1 Management Measures for the Shrimp Trawl Commercial Harvest.

Shrimp are harvested by two means in the Pacific Region: trawl nets and traps. For more information on the commercial, First Nations, and recreational fisheries for prawn and shrimp by trap gear, refer to the Pacific Region Prawn and Shrimp by Trap IFMP available from the Pacific Region internet site or from Pacific Fishery Licensing Units (see Appendix 3 Departmental and Industry Contacts).

The most frequent target of shrimp trawl gear are smaller shrimp species: northern or spiny pink (*Pandalus borealis*), smooth pink shrimp (*Pandalus jordani*) collectively called pink shrimp, living on sand and mud bottoms in protected inshore waters and offshore regions of the West Coast of Vancouver Island (WCVI). An insignificant amount of pink shrimp is harvested by trap gear. Another species, sidestripe shrimp (*Pandalopsis dispar*) grows larger and has a higher value for sale as fresh shrimp at the dock or frozen at sea in 1 kg boxes. Sidestripe shrimp are also not caught by trap gear since they are not attracted to baited traps. Two other species, Coonstripe Shrimp (*P. danae*) and Humpback Shrimp (*P. hypsinotus*) are caught in trawl nets and are allowed to be retained but seldom make up the majority of the catch. Prawns (*Pandalus platyceros*) are another species with a minor catch retention allowance, grow larger and have a higher value, but are attracted to bait in traps so the main harvest gear for this species has been defined in a separate licence and management framework.

1.2. History

A detailed history of the commercial shrimp trawl fisheries, showing landings by management areas, catch ceilings, opening and closure dates, number of participants, numbers of licenced vessels, values and occurrence reports is contained in the annual Shrimp Fishery Reviews.

The first records of trawl nets being used for commercial shrimp fishing date from 1895, but the fishery did not develop in earnest until the 1960's with the use of efficient bottom trawl gear and the discovery of major shrimp grounds. The history of trawling for shrimp in BC comprises an historical phase from the 1930's to the 1980's, a brief period of increasing participation, maximum effort and high landings in 1995 and 1996 when most

of the major shrimp grounds were fished (see Figure 1), and a declining phase with stock assessment, licence limitation and full fishery management control, starting in 1997.

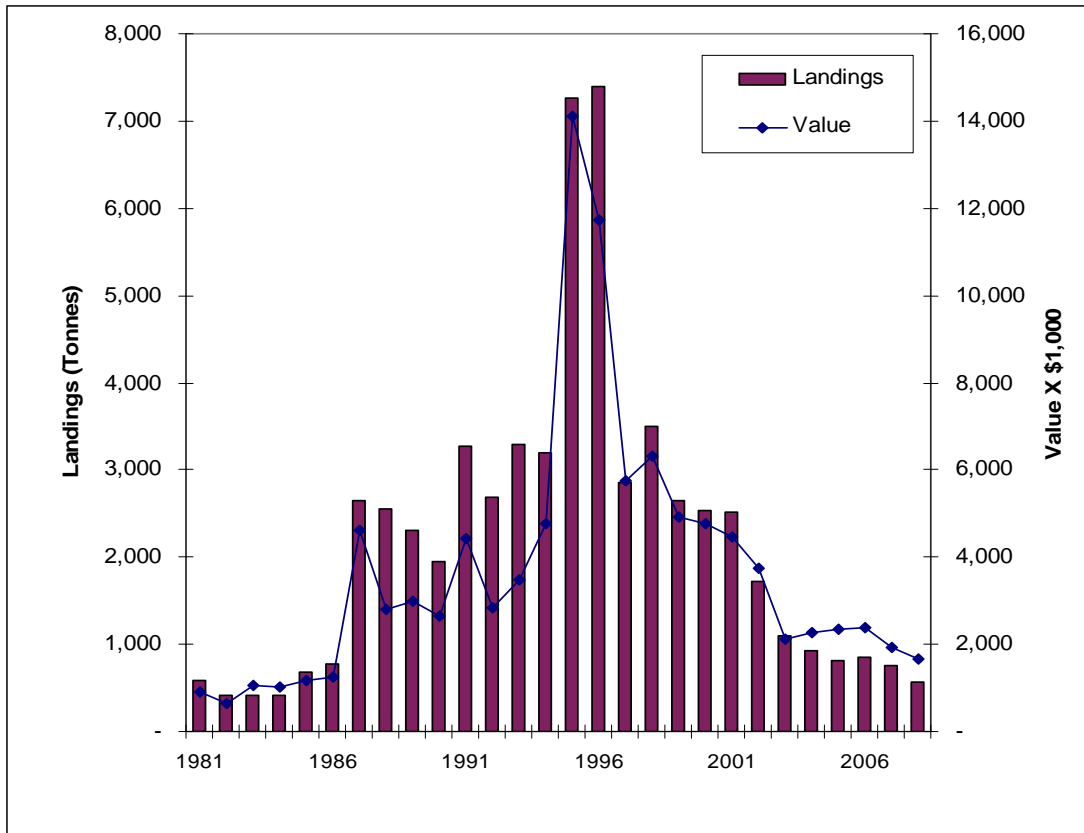


Fig. 1. Landings (tonnes) and Value of the BC Shrimp Trawl Fishery, 1981 to 2008.

The Shrimp Trawl fishery off the Pacific coast developed in earnest in the 1960's after shrimp beds were identified in the 1950's along with those in Washington, Oregon, California and Alaska. Mechanical peeling machines were introduced to the west coast beginning in Seattle in 1957 and by 1971 Alaska had 90 shrimp peeling machines operating and there were significant numbers of peeling machines in B.C. as well. Licences were available for any commercial fishing vessel with areas open seasonally with no catch ceilings. The shrimp beds off the West Coast of Vancouver Island were first surveyed in 1972 and a survey has been conducted annually since then. There was shrimp fishing offshore by US vessels, who landed the majority of the catch in US ports.

In 1978 the Tofino and Nootka beds were surveyed and the definition of the 200 nautical mile Exclusive Economic Zone eliminated the US vessels. In that year, shrimp fisheries in BC were separated into two licences: prawn and shrimp that could be attracted to bait in traps and the pink shrimp and sidestripe shrimp by trawl. In the trawl fishery, significant shrimp landings were made by larger vessels (average 15.8 m) fishing offshore areas with otter trawls (trawl nets with doors that hold the net open). Smaller beam trawl vessels (average 11.1 m), using a hollow beam to keep the net open, fished the inlets and more sheltered waters.

Shrimp biomass has fluctuated significantly in offshore areas and fishing effort may have had some impact on the annual production prior to assessment of offshore stocks in 1975. Few management and assessment programs for the commercial shrimp by trawl fishery were in place prior to the 1990's and the fishery was open year round without catch limits in most areas. Fluctuations in biomass have resulted in a boom and bust cycles. By the 1980's the offshore fisheries ceased due to depressed stocks, then started up again in 1987. In the mid 1990's there was a dramatic increase in effort and landings in the commercial trawl fishery. Reduction in the number of salmon licences through a buy-back program (Mifflin Plan) resulted in approximately 100 vessels with only shrimp licences. These vessels then could only be used for shrimp by trawl and a few minor fisheries using their Schedule 2 privileges to engage in commercial fishing. High shrimp prices and low salmon fishing opportunities in 1995 resulted in increased interest in fishing shrimp. In response to the increase in effort and landings, significant changes in the management of the shrimp trawl fishery were implemented in 1997. Fisheries and Oceans Canada was moving to more precautionary management and risk averse principles and promoting selective fishing practices.

Following the peak years of 1995 and 1996 when most of the shrimp areas in BC were fished, licence limitation was enacted and eligibility was restricted to those vessels with landings in those two years with 237 vessels qualifying for licences and 71 for Northern area permits. Once licences were finalized, a total of 245 S licences were issued, 171 were otter trawl and 65 beam trawl with vessel length restrictions on transferability. The establishment of total allowable catches (TAC) for most areas, a seasonal opening for the offshore pink shrimp fishery and the development of industry-funded programs to monitor catches and contribute to stock assessment were implemented.

As the Northern Shrimp fisheries in Newfoundland and Labrador expanded, supplying cooked and machine peeled, frozen-at-sea or land-based processed cocktail shrimp to the North American market, the economics of the Pacific fishery declined. The number of processors in BC using machine peelers declined until the last machine peeler was taken out of operation in 2006. In the late 1990's few of the otter trawl vessels in BC continued to be active in the fishery. Smaller vessels with beam trawl nets (using a hollow pole to hold the net open) continue fishing inshore in less exposed areas; however, current participation is fewer than 60 vessels and continues to decline.

1.3. Type of Fishery and Participants

1.3.1. First Nations

First Nations may use a shrimp trawl to fish for food, social and ceremonial (FSC) purposes, however, few First Nations have a vessel and trawl net and seldom target pink or sidestripe shrimp for food.

There are currently 12 commercial licences allocated to First Nations as FS licence eligibilities and 6 of these are assigned to specific First Nations organizations. With current market conditions and low participation in the commercial shrimp trawl fishery, few of these FS licences are being used.

1.3.2. Recreational

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

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

Recreational fishing for shrimp is generally conducted with baited traps or hoops and trawl gear is not permitted. The pink and sidestripe shrimp species harvested by trawl gear are not harvested by sport fish harvesters, since they are not attracted to baited traps. Therefore, the recreational harvest of pink and sidestripe is not considered in the setting of annual catch ceilings. There is no specific recreational sector representation on the Shrimp Trawl Sectoral committee. For information on the recreational harvest of shrimp by traps, see the Prawn and Shrimp by Trap IFMP.

1.3.3. Commercial

Pink and sidestripe shrimp are harvested commercially by trawl net under authority of 245 commercial licences, including the 12 FS licence eligibilities allocated to First Nations. They are assigned to vessels as S licences. Vessel sizes range from 6.9 m to 47.9 m. Currently, the majority of the catch is by small beam trawl vessels (average 11.3 m in overall length) fishing in inlets and sheltered waters. These fish harvesters depend on sales of fresh shrimp at the dock and small contracts to processors who cook and hand peel for local markets. The larger otter trawl vessels (average 15.8 m) fish the same inlets and occasionally offshore. Many of the vessels have more than one species/licence combination and are active in many fisheries. There are 84 vessels that have an S shrimp trawl licence and no other licence, but only 37 of these were active in 2007.

1.4. Location of Commercial Fishery

Pink and sidestripe shrimp are mostly associated with sand and mud substrates, feeding on zooplankton in the water column during the night and close to the bottom during the day. The fishery is conducted in protected inshore waters in Georgia Strait, inlets and fjords and offshore regions of the West Coast of Vancouver Island, Queen Charlotte Sound, and Prince Rupert District (Figure 2).

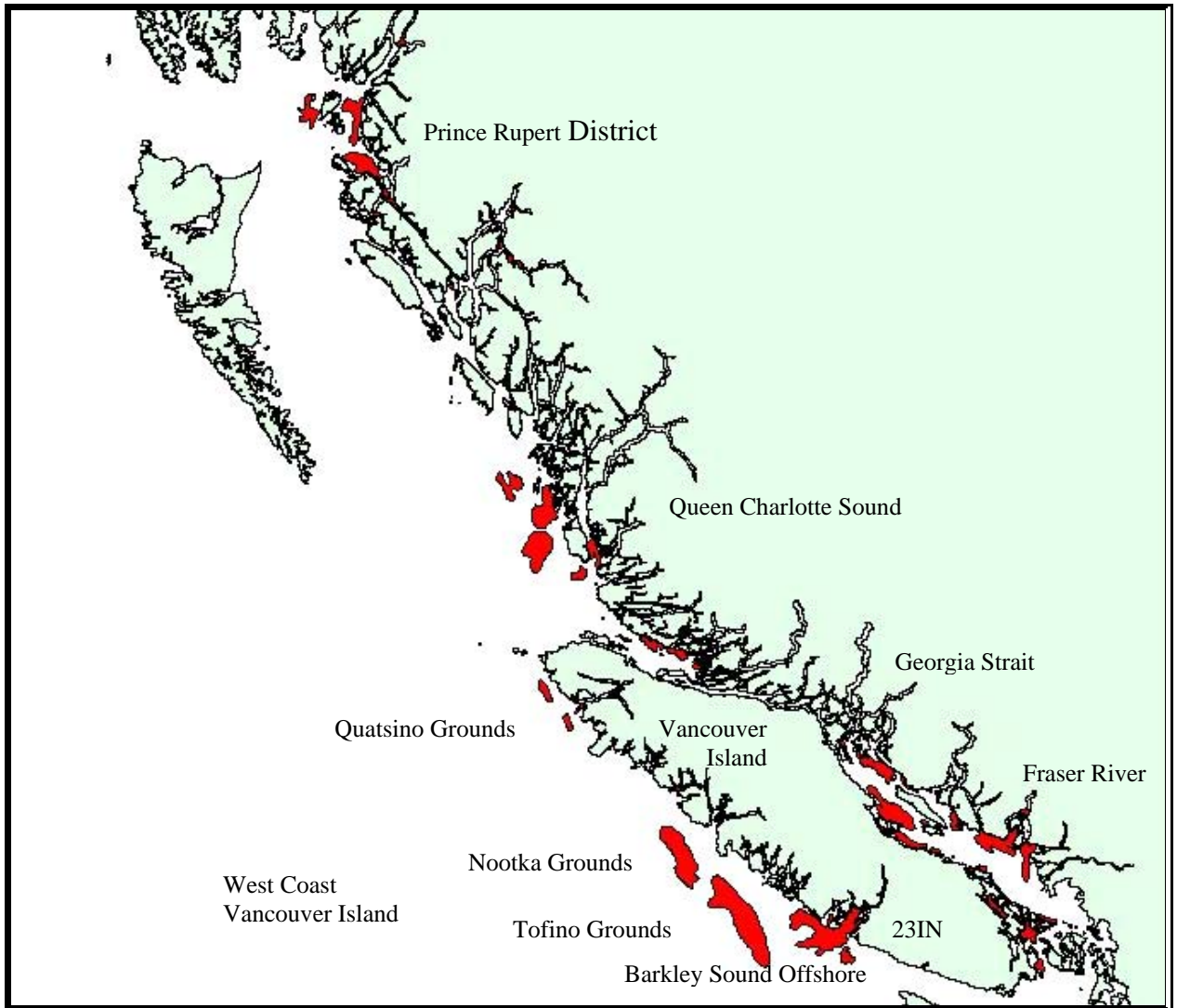


Fig. 2. Major shrimp production areas in British Columbia, Pacific Coast (highlighted areas).

Shrimp Management Areas (SMA's) are developed to define areas with significant shrimp production (Fig. 3) and annual fishery independent swept-area trawl surveys were implemented in selected SMA's to index shrimp abundance. The shrimp production areas in an SMA are somewhat discrete, although there may be mixing due to the planktonic larval stage and mixing by ocean currents. Maps of each SMA and the Pacific Fisheries Management Subareas that are included are in Appendix 9 Maps of Shrimp Management Areas.

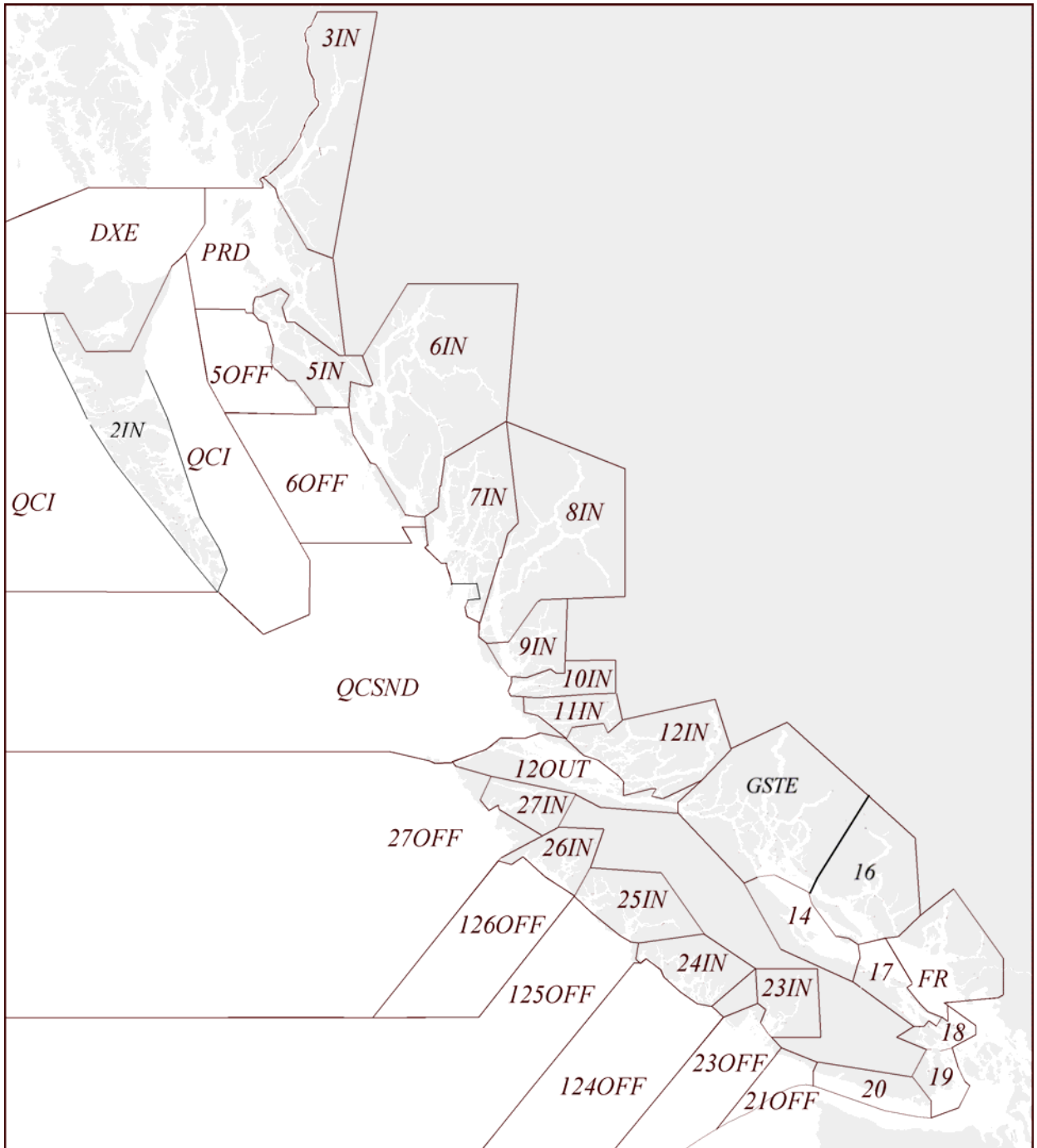


Fig. 3. Shrimp Management Areas (SMA) defined for the Shrimp Trawl fishery.

1.5. Fishery Characteristics

1.5.1. First Nations

Fishing for shrimp by trawl is seldom practiced by First Nations for food, social or ceremonial purposes due to the need to have a vessel adequate for setting a trawl net. There are 12 licenses allocated to First Nations as FS licence eligibilities that can be

designated to any commercial vessel that meets the length designation on the licence. Six of the FS licences are assigned to specific First Nation's Organizations.

1.5.2. Recreational

Trawl nets are not permitted as recreational fishing gear and the pink and sidestripe shrimp targeted by trawl gear are not attracted to traps. Sport fishing for prawns and shrimp is conducted using traps or hoops and is not considered in this management plan. For characteristics of the recreational shrimp by trap fishery see the Prawn and Shrimp by Trap IFMP.

1.5.3. Commercial

The commercial shrimp by trawl fishery targets pink and sidestripe shrimp with trawl nets. Smaller beam trawl vessels (less than 15 m overall length) tend to fish in more sheltered areas. Larger otter trawl vessels (15 to 48 m) use larger nets towed at higher speeds and sometime fish in offshore areas. Of the 245 licences, participation has declined to 48 beam trawl and 11 otter trawl vessels active in 2009.

Trawl nets are required to have by-catch reduction devices or BRD's (Nordmore grates and escape holes in the top of the grate). Maximum spacing between the bars on the grate is 44.5 mm (1.75 inches).

The majority of the shrimp caught by trawl are small species that are cooked and peeled for cocktail shrimp either by hand or by peeling machine. A small portion of the catch is larger species (sidestripe shrimp) sorted from the catch. A portion of the current shrimp trawl fleet freezes their catch at sea and they typically target larger sidestripe shrimp for finger packing in 1 kg boxes for shipping to Japan or bagging the tails for marketing to local or restaurant specialty markets. The smaller pink shrimp caught at the same time are frozen in 10 kg bags for later cooking and hand peeling.

With no peeling machines operating, much of the catch is sold at the dock as fresh shrimp. The shrimp season opens coastwide on June 1st and historically the summer was when most of the fishing took place. The catch would be processed by cooking and peeling with machine peelers, and large quantities of shrimp were required to justify running the peeler. With no machine peelers operating, the market has changed to dock sales and frozen at sea and only a small amount of cooking and hand peeling on shore. Much of the effort is still conducted during the summer months, but in significantly reduced volumes, and the hand peeled market is supplied year round as a higher value, higher quality cocktail shrimp than the machine peeled product.

There are other management measures for the control and monitoring of the fishery:

- forecast catch ceilings by SMA
- species retention restrictions and release of all by-catch
- hail to fish and hail of catch before landing
- 50 days of at-sea observer coverage and 20 days of dockside observations
- eulachon by-catch monitoring and by-catch action levels
- harvest logbook and electronic reporting
- closures in rockfish conservation areas, navigational, sponge reef, ecological areas, parks, seasonal and other conservation closures
- split season for Southern Inside Waters catch ceilings.

The complete set of management measures are defined in Appendix 1.

A weekly Landings Quota Status report is provided by the service provider including the number of vessels hailed to fish, the catch to date and the catch remaining. This report is provided by fax or email to active vessels as an information source for which areas are open to fishing. A 24 hour information line also provides information on current status of fishing areas and notes to industry. The DFO Fishery Notice system provides the Departmental information to the industry.

1.6. Governance

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

Fisheries management in Canada is based on authority derived from the following principal acts and policy documents. These are set out and described in Table 1.

Table 1. Principal acts and policy documents with respect to fisheries management in Canadian waters of the Pacific Coast.

Principal Acts and Policy Documents	Description
The Fisheries Act 1985	Authorises <i>inter alia</i> the establishment of fishing licences, fishery regulations and fishery officers; keeping and submitting fishery records; protecting fish habitat; and pollution prevention.
The Pacific Fishery Regulations 1993	Prescribe <i>inter alia</i> that Canadian fishing vessels must be registered and licensed for the species being fished. For the shrimp fishery the Act prescribes the shrimp species, gear type (beam trawl net or otter trawl net) and the fishing seasons.
The Pacific Fishery Management Area Regulations, 2007	Establishes the management areas of the Pacific Ocean and Subareas used to define specific open or closed areas.
The Department of Fisheries and Oceans Act 1985	Establishes DFO and the powers, duties and functions of the Minister in respect of sea coast and inland fisheries; harbours; hydrography and marine sciences; and the coordination of the policies and programs of the Government of Canada respecting oceans
The Fishery (General) Regulations 1993	Authorise <i>inter alia</i> the setting of licence conditions, the variation of fishing seasons and quotas, the designation of fisheries observers, and restrictions on construction and use of fishing gear. For the shrimp fishery licence conditions are defined for specific fishing areas, type of gear to be used (by-catch reduction grate maximum spacing 44.5 mm), hail requirements and requirements to take an observer when requested.
The Aboriginal Communal Fishing Licences Regulations 1993	Permits the issue of an aboriginal communal fishing licence.
The British Columbia Sport Fishing Regulations (1996)	Apply to the sport fishing in the Canadian fisheries waters of the Pacific Ocean and of the Province.
The Oceans Act 1996	Prescribes <i>inter alia</i> the Canadian territorial sea and its contiguous zones; the Canadian EEZ and continental shelf; and the Canadian

	oceans management strategy. The latter embraces the concepts of sustainable development, the precautionary approach, and the implementation of integrated management of marine activities in Canadian estuaries and waters. Integration will take into account the interests of provincial and territorial governments, affected aboriginal communities, coastal communities and other relevant bodies, including those established under land claims agreements. Integrated management may be assisted by the establishment of appropriate management boards, scientific investigations, and marine protected areas within the Canadian territorial waters and EEZ.
The Species at Risk Act 2002	Authorises actions aimed at managing species of special concern, preventing the extirpation or extinction of endangered marine species, or promoting their recovery. Proposed actions include establishing a Stewardship Action Plan; Canadian Endangered Species Conservation Council; National Aboriginal Council on Species at Risk; species listing; conservation agreements; habitat

These documents are available on the Internet at:

<http://www.pac.dfo-mpo.gc.ca/fm-gp/actreg-eng.htm>

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

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

Along with existing economic and shared stewardship policies and future policies on by-catch, these will help the department meet objectives for long-term sustainability, economic prosperity, and improved governance. Information is available from the Internet website:

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

Scientific advice for this fishery is peer-reviewed through a committee called the Pacific Scientific Advice Review Committee (PSARC).

1.7. Consultation

The Shrimp Trawl Sectoral Committee (STSC) is the primary body guiding management decision-making processes for this fishery. See Appendix 13 Terms of Reference of the Shrimp Trawl Sectoral Committee for a full description of the structure of the STSC.

To involve the commercial sector in co-management of the fishery and to increase participation in the decision making process, an agreement is made annually with the Pacific Coast Shrimpers' Cooperative Association to provide for co-management programs. Since 2003/04 a Joint Project Agreement (JPA) has been defined that establishes cost-sharing and co-management programs for the enhanced management, assessment and enforcement activities.

A multi-sector meeting is held once each year. This Sectoral meeting provides a forum for the exchange of information and views between the people involved with the industry and the Department on issues important to the management of the fishery. It is open to

the public and anyone interested in providing advice on the management of the shrimp by trawl fishery.

Additional information is available from the Pacific Region Shrimp internet site:

<http://www.pac.dfo-mpo.gc.ca/fm-gp/commercial/shellfish-mollusques/shrimp-pcrevette/index-eng.htm>

1.8. Approval Process

This plan is approved by the Regional Director General for the Pacific Region, Fisheries and Oceans Canada.

2. STOCK ASSESSMENT, SCIENCE AND TRADITIONAL KNOWLEDGE

2.1. Biological Synopsis

There are over 90 species of shrimp found in waters of British Columbia. Seven of these species of shrimp, belonging to the Family Pandalidae, are harvested by the shrimp trawl fishery off the Pacific Coast of Canada. The species are the northern pink, (*Pandalus borealis eous*), smooth pink shrimp (*P. jordani*), flexed pink shrimp (*P. goniurus*), coonstripe shrimp (*P. danae*), humpback shrimp (*P. hypsinotus*), prawn or spot shrimp (*P. platyceros*), and sidestripe shrimp (*Pandalopsis dispar*). The fishery varies in complexity from single species harvest to multi-species harvest although pink and sidestripe shrimp are the main target species by the commercial trawl fleet.

Pandalid shrimp have a wide distribution in the northeast Pacific and range from California to the Bering Sea and occupy a variety of habitats from rocky to mud bottoms. They range in depths from intertidal to greater than 1300 m and inhabit both inshore and offshore areas.

Many members of the Pandalidae family, including the species listed above, have a unique life history where each individual begins life as a male and then changes sex into a female. The biological term for this unique sex change is called protandrous hemaphroditism.

A typical life cycle of a Pandalid shrimp starts its post-larval life as a male and reaches maturity in approximately 18-24 months. It then undergoes a transformation phase of approximately 3-5 months where it changes sex from male to female. By the third year, most shrimp have completed the sex change and are mature as females. Breeding takes place in the fall with females carrying eggs on their abdomen's for approximately 4-5 months until hatching in the late winter. This is followed by a 3 - 4 month pelagic larval stage from March to summer. Larval settlement occurs in the summer (Butler 1980). Shrimp generally have a 4 year life cycle.

2.2. Ecosystem Interactions

Ecosystem interactions for Pandalid shrimp are complex due to the wide range of habitats and niches they occupy. However, Pandalid shrimp likely play an important role as forage fish species because they are a source of food for a number of marine organisms. As larvae, they are a source of food for pelagic and marine organisms. As adults, shrimp

are a food source for a number of fish species such as hake, turbot, spiny dogfish, cod, rockfish, and skates (Butler 1980, and Hannah 1995).

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

2.3. Aboriginal Traditional Knowledge/Traditional Ecological Knowledge

Aboriginal Traditional Knowledge of pink and sidestripe shrimp is not available.

Traditional Ecological Knowledge in the form of observations and comments collected from commercial fish harvesters is incorporated into the management and assessment of shrimp stocks.

2.4. Stock Assessment

The shrimp trawl fishery takes place within 34 shrimp management areas (SMA) from large offshore areas to smaller inshore waters. Estimates of biomass are based on fishery independent surveys for pink shrimp, sidestripe shrimp and sometimes for coonstripe and humpback shrimp for a select number of SMA's. Area-swept trawl surveys are conducted annually to index shrimp biomass and to monitor trends in abundance over time. Survey methodology is documented in Rutherford et al. (2004).

Stock assessment survey results are published in survey bulletins and are available at: <http://www-ops2.pac.dfo-mpo.gc.ca/xnet/content/shellfish/shrimp/Surveys/surveys.htm>

2.5. Stock Scenarios

Recent trends in stock abundance for both pink and sidestripe shrimp indicate an increasing trend in biomass since about 2005 for most of the surveyed areas except for SMA 18 and 19 which saw a large decrease in biomass for pink shrimp for 2009 compared to previous years. However, SMA 23IN and SMA FR had the highest estimated biomass on record for both pink and sidestripe shrimp since surveys began in 1997. Trends in abundance for surveyed areas are documented in the survey bulletins (see link in Section 2.4).

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

2.6. Precautionary Approach

Provisional Harvest Control Rules (HCR) compliant with the Precautionary Approach (PA) have been developed for the commercial shrimp trawl fishery. Provisional reference points have been established with the limit reference point (LRP) = 40% Bmsy and upper stock reference (USR) = 80% Bmsy. For west coast shrimp stocks a proxy for Bmsy is used where $B_{msy} = \ln(\text{avg})$ biomass. A detailed description of the PA for shrimp is available in Proceedings of the PA workshop on Canadian shrimp and prawn stocks and fisheries (DFO 2009). The document is available on the internet at:

http://www.dfo-mpo.gc.ca/CSAS/Csas/Publications/Pro-CR/2008/2008_031_e.htm

2.7. Research

Annual fishery independent surveys are the primary source of stock abundance and research data. Ten core index sites are surveyed annually; these are: SMA's 23OFF+21OFF, 124OFF, 125OFF, 23IN, QCSND, 9IN, PRD, 14, and FR. In addition SMA's GSTE, 16, 18, 19, and a portion of 12IN are included when survey time permits.

There have been many research documents on shrimp written and reviewed through the Pacific Scientific Advice Review Committee (PSARC) and are available at:

<http://www.pac.dfo-mpo.gc.ca/science/psarc-ceesp/index-eng.htm>

3. SOCIAL CULTURAL AND ECONOMIC IMPORTANCE

3.1. First Nations

Pink and sidestripe shrimp have not been significantly important to First Nations culture or economy since it is relatively expensive to fish by trawl net and processing is time consuming. Other species of shrimp such as prawns, coonstripe and humpback shrimp that are attracted to baited traps are preferred for food, social or ceremonial purposes.

Commercial trawl effort by First Nations is under the FS licence authority. The effort has been low as a result of lack of vessels and lack of market for industrial shrimp.

For information on the social and economic importance of shrimp by trap for First Nations, see the Prawn and Shrimp by Trap IFMP.

3.2. Recreational

Over five million anglers enjoy recreational fishing in Canada in many ways, in all seasons and in all areas of the country. Sport fishing gives Canadians access to their land and its rich natural environment. It is also important for the \$4.9 billion economic activity it generates each year in our communities, whether through tourism, recreational industries or other activities. In this context, Fisheries and Oceans must ensure fishing opportunities are provided to all fish harvesters - commercial, Aboriginal and sport. The Department's resource management policies must consider access for recreational purposes.

The Pink and Sidestripe shrimp caught by trawl nets are fished at depths of 10 to 100 fathoms. These species are not attracted to baited traps, and trawl nets are not allowed for recreational fishing so they are not accessible to recreational fish harvesters. For information on recreational harvest of shrimp by trap, see the Prawn and Shrimp by Trap IFMP.

3.3. Commercial Socio-Economic Profile

Most vessels in the BC shrimp fleet are small, gillnet-sized craft and fish day-trips for modest catch volumes. Of the larger vessels in the BC fleet, often groundfish trawlers, virtually all are inactive. This fleet structure contrasts to global competition, particularly from the east coast of Canada, where factory trawlers engage in an industrial scale fishery. The BC industry, with low volumes and high production costs, is not competitive with large-scale shrimp fisheries. Thus, the majority of the BC fleet is tied-up because operations are non-economic. While high value species in BC afford opportunities for

live or direct to public sales, the TAC's for these species is low and the opportunities are limited.

Rising fuel prices have also limited the viability of travelling to fish in areas not close to home port. Shrimp Management Areas close to population centres have sufficient effort so that annual catch ceilings are often reached and the areas close before the end of the year. When fuel prices were lower, the fish harvesters would then travel to an SMA not immediately adjacent to their home port. This is not happening as fuel prices have risen and as a consequence, participation is declining.

Overall, positive results for earnings before interest, taxes, depreciation and amortization are achieved by only the top one-third of the active shrimp fleet (Nelson, 2009). Only a small portion of the fleet is achieving economic viability with only 59 active vessels in 2009. Two thirds of the vessels reporting in 2007 were not making sufficient income to cover their expenses and were relying on participation in gillnet salmon, troll salmon and tuna fisheries to cover fixed costs.

Shrimp licence values are extremely low. Although the shrimp industry has explored means of reforming the fishery to improve viability, it has been unable to reach an agreeable alternative approach to restructure/reform itself to meet the competitive realities facing it.

Commercial fishing vessels with other licences are less likely to participate in the shrimp trawl fishery and would rather pursue other (more lucrative) activities.

3.4. Viability and Market Trends

The maximum size of pink shrimp (6 grams) limits the product options to cocktail shrimp. Hand peeled shrimp require the largest pink shrimp but result in larger and higher quality (less broken shrimp and pieces) product so processors in BC have maintained some attachment to this market segment by promoting BC shrimp and supplying this market year-round. The prevalence and low price of machine peeled shrimp produced in Eastern Canada supplies the demand for quick frozen processed cocktail shrimp and the local processors do not try to compete in this product category, unless supply is discontinued. As long as the East Coast Shrimp stocks are healthy and supplying this product, the BC shrimp fishery is not likely to try to compete.

Sidestripe shrimp can be sorted for higher value fresh sales (head-on) direct to the public and for finger packed frozen at sea for the Japanese market for the largest size (16 grams). Removing the heads and packaging tails in 1 kg bags frozen at sea is another product option that produces a higher value product for restaurant and domestic markets, but the market is limited and the capital investment in on-board freezing capacity does not warrant updating a shrimp vessel unless the freezer is used for other fisheries (salmon or prawn by trap).

4. MANAGEMENT ISSUES

The following sections highlight the ongoing, or longer-term, management issues that are being addressed in the fishery. Specific management objectives designed to mitigate

these issues are detailed in section 5.4 Short Term Objectives for Pink and Sideshripe Shrimp by Trawl.

4.1. First Nations

Landing records in the First Nations FSC fishery for shrimp by trawl are incomplete. The Department has initiated, in consultation with First Nations, a more comprehensive approach to gathering catch data for these species.

The incidental by-catch of eulachon (*Thaleichthys pacificus*) (a culturally important fish to First Nations) is of concern to First Nations.

4.2. Recreational

Recreational fishing issues for shrimp are dealt with in the Prawn and Shrimp by Trap IFMP as shrimp are harvested by recreational fish harvesters using traps, ring nets, or spears while diving.

4.3. Commercial Pink and Sideshripe Shrimp by Trawl

4.3.1. Multi-species/Multi-stock Management

The geological, geographic, and biological features of the British Columbia coast have created many discrete stocks for many invertebrate species, including shrimp. The number of shrimp species and stocks involved in the shrimp trawl fishery has resulted in complex management and assessment issues and programs.

Fishery independent biomass surveys, setting catch ceilings by species and by shrimp management area following the Precautionary Approach, hauls of catch prior to landings, and catch monitoring by at-sea observers are tools that are employed to define biologically-based assessment and management scenarios to control harvest rates, monitor by-catch and identify habitat impacts.

The expectations of vessel owners for the development of directed humpback and coonstripe shrimp fisheries have not been achieved within the current management framework for this fishery, which has focused primarily on pink and sideshripe shrimp.

4.3.2. Year round Fishing

Year round fishing in support of a small market for freshly cooked, hand-peeled shrimp is a issue for Industry. The “shrimp year” has been defined as April 1 to March 31. Most SMAs open for fishing June 1 to avoid egg bearing females. The fishing season follows the egg bearing period to protect mature female shrimp from being impacted by the fishery as two year olds and a second time as females in the same biological year.

4.3.3. Co-management

A co-management approach was introduced in 2003/04, with co-management programs and cost-sharing for the enhanced management, assessment, and enforcement activities derived through a Joint Project Agreement (JPA) with the representative industry association, the Pacific Coast Shrimper’s Cooperative Association (PCSCA). Vessel owners who are actively fishing shrimp are required to provide the funds necessary for the haul system, fishery monitoring program and contribute to stock assessment, while those who choose not to fish shrimp do not contribute to the management costs. With low

participation in the fishery (approximately 60 vessels out of 245 licences) and poor prices, the commercial industry and PCSCA struggles to collect sufficient funds to meet the commitments to the fishery monitoring program.

The industry caucus recommended that the Department initiate efforts to have all vessel owners responsible for the cost-shared program. Establishing the requirement for all licence holders to be responsible for the costs of managing the shrimp trawl fishery is being considered.

The co-management approach will continue for the current year, with a JPA developed with the PCSCA.

4.3.4. By-catch of Eulachon

Eulachon (*Thaleichthys pacificus*), a species of smelt, are a small anadromous fish, found along the Pacific coast of North America from northern California to Alaska. It forms an important part of the diet of many ocean and shore predators, and serves as a prominent food source for First Nations people living near its spawning streams. Although eulachon abundance is subject to considerable fluctuations, recent spawning stock biomass in the Fraser River and estimates of juvenile biomass in offshore areas are extremely low (DFO 2008). Eulachon returns to Central Coast rivers, the Skeena River and the Nass River are not estimated but have been extremely low and are of concern. The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) has received a report on the status of eulachon and has scheduled an assessment for November 2010.

Eulachon returns to the Fraser River as evidenced from egg and larval surveys indicate substantial decline in population size since the mid-1990s. Eulachon abundances as incidental capture in the shrimp research survey off the WCVI indicate a peak in abundance in 2002, a decline to 2007 and a slight increase for 2008 and 2009. Anecdotal information suggests the decline in eulachon has been coast-wide throughout British Columbia, Washington and recently Alaska, implying a large scale oceanographic process impacting their survival.

By-catch of eulachon became an issue in the shrimp trawl fishery when it was identified that they were caught in significant numbers in the pink shrimp trawl fishery off west coast Vancouver Island and Queen Charlotte Sound in 1997 and 1998 (Hay and McCarter 1999, Hay et al 2000). Juvenile eulachon distribution in the ocean was a mystery until observations of shrimp trawl catches were documented by at-sea observers. Early and late life history continues to be a mystery until adults return to rivers to spawn.

For further information on eulachon, see the Eulachon Management Plan at:

<http://www-ops2.pac.dfo-mpo.gc.ca/xnet/content/MPLANS/MPlans.htm>

The eulachon internet web page at:

<http://www.pac.dfo-mpo.gc.ca/science/species-especes/pelagic-pelagique/eulachon-eulakane-eng.htm>

and the Shrimp Survey Bulletins for WCVI at:

<http://www-ops2.pac.dfo-mpo.gc.ca/xnet/content/shellfish/shrimp/Surveys/surveys.htm>

A precautionary approach is used to deal with eulachon by-catch and the Department is working with the shrimp trawl industry to minimize eulachon by-catch. A Departmental policy to address by-catch issues is in development.

4.3.5. Depleted Species Concerns

The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) is a committee of experts that assesses and designates which wildlife species are in some danger of disappearing from Canada. COSEWIC designates species as Extinct, Extirpated, Endangered, Threatened, and Special Concern. The Minister of Fisheries and Oceans will consult with the government of British Columbia, Aboriginal peoples, stakeholders, and the public on whether or not these species should be added to the List of Wildlife Species at Risk (Schedule 1) under the *Species At Risk Act*.

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

The formal SARA legal listing process begins when the Minister of Environment issues a response statement, detailing how he intends to proceed with the COSEWIC species designations. Response statements can be found on the SARA Public Registry website at: http://www.sararegistry.gc.ca/sar/listing/response_e.cfm.

COSEWIC designated species in Pacific region currently under consideration for listing under Schedule I of SARA can be found at: <http://www.pac.dfo-mpo.gc.ca/consultation/sara-lep/index-eng.htm>.

COSEWIC-designated marine or anadromous species of fish in Pacific region currently under consideration for listing under Schedule I of Species at Risk Act (SARA) are:

Basking shark – Endangered
Bocaccio rockfish – Threatened
Canary rockfish – Threatened
Darkbloched Rockfish – Special Concern
Okanagan Chinook salmon – Threatened
Quillback rockfish – Threatened
Yelloweye rockfish – Special Concern

COSEWIC has scheduled an assessment for eulachon for November 2010.

The formal SARA legal listing process begins when the Minister of Environment issues a response statement, detailing how he intends to proceed with the COSEWIC species designations. Response statements can be found at:

http://www.sararegistry.gc.ca/search/advSearchResults_e.cfm?styp=doc&docID=19

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

<http://www.dfo-mpo.gc.ca/species-especies/listing-eng.htm>.

Marine or anadromous species of fish in the Pacific Region currently listed under Schedule 1 of SARA are:

Longspine thornyhead – Special Concern
Rougheye rockfish types I & II – Special Concern
Sixgill shark – Special Concern
Soupfin shark (tope) – Special Concern

There are some management measures that are defined in consideration of the interaction of shrimp trawl in the recovery of depleted species designated by COSEWIC or listed by SARA. A number of rockfish species are on the lists and as a rockfish rebuilding strategy, fishing with trawl nets is not permitted in Rockfish Management Areas (see Appendix 1). Eulachon by-catch and low returns to the Fraser River and Central coast rivers resulted in eulachon by-catch action levels and closure of Queen Charlotte Sound.

Possible impacts of SARA legislation on the shrimp trawl fishery and potential mitigation measures will be discussed through the advisory process.

4.3.6. 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.

PNCIMA: As part of Canada's Oceans Strategy, DFO is initiating 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. The PNCIMA initiative marks a shift toward a broader ecosystem approach to ocean management. This is consistent with the Government of Canada's overall direction and with Fisheries and Oceans Canada's new Wild Salmon Policy. The PNCIMA initiative will bring the area's stakeholders together to develop an integrated management plan for the region that achieves conservation, sustainable resource use, and economic development goals for oceans and coastal areas. The PNCIMA initiative will also function as an umbrella for various ocean management processes, complementing and linking existing processes and tools, including IFMPs.

Marine Protected Areas (MPAs): DFO is also responsible for designating Marine Protected Areas (MPAs) under Canada's *Oceans Act*. Under this authority, DFO has designated two MPAs in the Pacific Region. The Endeavour Hydrothermal Vents, designated in 2003, lie in waters 2,250m deep 250 km southeast of Vancouver Island. The Bowie Seamount, designated in 2008, is 180 km west of Queen Charlotte Islands (Haida Gwaii) rising from a depth of over 3,000 m to within 25 m of the sea surface. 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) and the Hecate Strait / Queen Charlotte Sound Glass Sponge Reefs.

National Marine Conservation Areas (NMCAs): The Canada *National Marine Conservation Areas Act* provides for the establishment of National Marine Conservation Areas (NMCAs). Parks Canada, DFO and the Council of the Haida Nation are currently working together to establish the Gwaii Haanas NMCA through the exchange of information on marine resources, fisheries and cultural data and coordinated consultations. Following establishment, measures respecting the management of the Gwaii Haanas NMCA will be articulated in future IFMPs.

DFO is also working with other federal and provincial agencies to coordinate efforts towards establishing a national system of Marine Protected Areas to fulfill Canada's commitments to the UN Convention on Biological Diversity.

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/default_e.htm

Coldwater Coral and Sponge Conservation Strategy: DFO is working with other federal and provincial agencies, First Nations and stakeholders to develop a coldwater coral and sponge conservation strategy for the Pacific Coast. The Strategy outlines the Department's approach to the management of corals and sponges along Canada's Pacific coast. Fishing activities will be evaluated against the Department's national policy for *Managing the Impacts of Fishing on Sensitive Benthic Areas*.

Issues and management measures in the Shrimp Trawl fishery in relation to Sensitive Benthic Habitat and the Oceans Action Plan are yet to be defined.

4.3.7. Gear Impacts

Fisheries and Oceans Canada developed the Policy to Manage the Impacts of Fishing on Sensitive Benthic Areas. The policy outlines separate processes for historically fished and frontier areas. A historically fished area is a marine ecosystem area where there is a history of fishing. This includes current ongoing fishing activity. A frontier area is a marine ecosystem area in deep water (deeper than 2000m) or in the Arctic where there is no history of fishing and little if any information available concerning the benthic features (habitat, communities and species) and the impacts of fishing on these features.

This two-fold approach was taken in response to the 2006 Science Advisory Report, *Impacts of Trawl Gears and Dredges on Benthic Habitats, Populations and Communities* (Rice, 2006) which suggests that there is a higher level of scientific uncertainty about benthic habitats communities and species in frontier areas. The report also notes that the greatest impact to vulnerable benthic habitats, communities, and species in a given area can be caused by the first few fishing events. The policy thus requires greater precaution when fishing activities are being considered in frontier areas. It also gives special consideration to historically fished areas that have not been exposed to bottom-contact fishing. In particular, proposals for new bottom-contact fishing in historically fished areas will require risk assessments prior to proceeding.

The policy outlines the following key steps for both historically fished and frontier areas:

- a) Assemble and map existing data and information that would help determine the extent and location of benthic habitat types, features, communities and species; including whether the benthic features (communities, species and habitat) situated in areas

- where fishing activities are occurring or being proposed are important from an ecological and biological perspective;
- b) Determine whether management measures are needed, and implement such management measures; and
 - c) Monitor and evaluate the effectiveness of the management measure and determine whether changes are required to the management measures following this evaluation.

The policy provides that ongoing fishing activities and proposals to expand fishing activities in historically fished areas would be processed through existing management planning processes, including regional advisory processes for harvesting management plans and integrated fisheries management plans. Where such planning processes do not exist, new mechanisms to engage resource users and others with an interest in the resource will be developed. Engagement in the application of this policy is critical, and will be managed for the most part through regional offices of Fisheries and Oceans Canada.

Issues and management measures in relation to Gear Impacts in respect to the shrimp by trawl fishery are yet to be defined.

5. OBJECTIVES

5.1. National

Fisheries and Oceans Canada 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) has 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, Objective 1 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 an annual management plan produced by the Department since 1990. Management plans are provided to commercial fish harvesters as part of an information package when they acquire their annual licence. The management goals and objectives, as written by Fisheries Management and revised in 1997, are:

- To ensure conservation and protection of invertebrate stocks and their habitat through the application of scientific management principles applied in a risk averse and precautionary manner based on the best scientific advice available.
- To meet the federal Crown's obligations regarding aboriginal fisheries for 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. Short Term Objectives for Pink and Sideshripe Shrimp by Trawl

- To set catch ceilings by each SMA based on the best stock assessment information available. Catch ceilings will be defined following the Precautionary Approach. Fishery independent biomass surveys will be conducted in-season and harvest rates set based on stock biomass.
- To monitor the ratio of eulachon to shrimp in WCVI SMA's and to adjust fishing practices when estimated eulachon by-catch reaches action levels.
- To provide opportunities for shrimp harvests that maximize the potential economic return to shrimp trawl fish harvesters, while meeting the Departments goals for a precautionary approach to shrimp harvesting, and ecosystem, by-catch, species at risk, sensitive benthic areas and forage species policies.

5.4.1. Set Harvest Rates and Catch Ceilings following the Precautionary Approach

The objectives of Conservation and Sustainable use will be achieved by limiting shrimp catch to a level that allows the shrimp population to maintain above average biomass over a long term. This will be achieved by setting a catch ceiling for each species by Shrimp Management Area following the Precautionary Approach. Catch ceilings will be defined from in-season biomass estimates produced from fishery independent swept area trawl surveys in all significant SMA's. When the biomass estimates of April shrimp biomass are below limit reference biomass points, or in the critical zone, the SMA will not open for fishing. When biomass estimates are in the cautious zone, harvest rates will be 0% to 35%. When biomass is above the upper stock reference, harvest rate will be 35%. Catch

estimates from fish harvesters hailed at the end of each trip are accumulated for each SMA and areas close in-season when the catch ceiling is reached.

For SMA's with no in-season survey, arbitrary precautionary catch ceilings are set for inshore areas (10 tonne) and offshore areas (20 tonne) to allow for investigative fishing opportunities. When a significant shrimp ground is defined, it can be identified as a priority area for survey to refine TAC from a survey biomass.

5.4.2. Monitor Eulachon by-catch against Eulachon Action Level

Eulachon Action Levels (EAL) are set for West Coast Vancouver Island (WCVI) SMA's. EAL are set as 1% of the eulachon biomass index defined during the shrimp biomass surveys to a maximum of 20 tonnes for 124OFF plus 125OFF and 20 tonnes for 23OFF plus 21OFF plus 23IN. The Eulachon to shrimp ratio in commercial shrimp trawl sets is defined from at-sea observations during the commercial fishery. The ratio of eulachon to shrimp in the catch during observed tows is expanded by the total shrimp catch from fish harvester estimates of catch hailed at the end of each fishing trip. When the estimated eulachon by-catch reaches the Eulachon Action level, further management measures will be taken to avoid eulachon by-catch (see Appendix 1).

5.4.3. Ecosystem

The Ecosystem approach requires that fisheries management decisions consider the impact of the fishery not only on the target species, but also on non-target species, seafloor habitats, and the ecosystems of which these species are a part. This approach also requires that management decisions take into account changes in the ecosystem which may affect the species being fished. This includes the effects of weather and climate, and the interactions of target fish stocks with predators, competitors, and prey species.

Ecosystem objectives are addressed by defining selective and responsible fishing practices for the shrimp trawl fishery. An at-sea and dockside catch sampling program monitors fishery catch composition (all species) and collects biological samples of target species. By-catch is controlled through time and area closures, monitoring of in-season by-catch action levels, retention limits for some species, and the mandatory use of BRD's or selectivity devices. Specific habitats that have been identified as critical for rockfish and areas of unique sponge reef development have been closed to the use of trawl gear.

In consideration of the ecosystem approach, shrimp are considered a Forage Species. There are no identified specific goals set for seabirds, sea lions, rockfish or other pelagic species such as Hake that might be dependent on shrimp populations. The shrimp by trawl fishery is being reviewed with respect to the Forage Species Policy.

5.4.4. Stewardship

Stewardship Objectives for this fishery are:

To promote a best practices approach that meets the Departments objectives for sustainable, selective and risk averse harvest strategies by encouraging participation by commercial licence holders and processors in IFMP development by having licence holder and processor representation on the Shrimp Trawl Sectoral Committee (STSC).

To promote an understanding of the shrimp trawl management strategies by encouraging participation by First Nations in the STSC.

5.4.5. First Nations Fishery

Fisheries and Oceans Canada supports the aspirations of First Nations to participate in the Shrimp Trawl fishery by making licences available through the Aboriginal Transfer Program. Currently there are twelve licence eligibilities allocated to First Nations as FS licences, six are assigned and there are six available to interested First Nations organizations.

Fisheries and Oceans Canada will continue to provide opportunities on a priority basis for First Nations harvest of shrimp for FSC.

5.4.6. Aquaculture

Recognizing both the potential for aquaculture to benefit Canadians and the need to ensure the sustainable use of aquatic resources, Cabinet endorsed the Federal Aquaculture Development Strategy (FADS) in 1995. Building on FADS, Fisheries and Oceans Canada released the Aquaculture Policy Framework. The policy framework recognizes aquaculture as a legitimate use of land, water, and aquatic resources and the importance of providing aquaculturists with predictable, equitable, and timely access to the aquatic resource base, including access to biological materials such as broodstock and seedstock. Aquaculturists will be treated on an equal footing with other resource users.

Further information on the aquaculture can be found at the following internet site:

http://www.dfo-mpo.gc.ca/csas/Csas/publications/ResDocs-DocRech/1999/1999_067_e.htm

Requests to access the wild shrimp resource must be addressed to Fisheries and Oceans Canada and supported by a project proposal.

For more information on aquaculture or access to broodstock, please contact the Aquaculture Division (see the Appendix 3).

5.4.7. Exploratory/Experimental

The Department will consider experimental fishing proposals and the development of selective fishing techniques and standards in consultation with the STSC. Other proposals for research are directed through the scientific licence protocols with the Department and must be approved by the Regional Shellfish Coordinator (See Appendix 1 for more information).

Experimentation with selectivity devices that do not meet the specifications set out in the conditions of the licence can be considered under applications for a special amendment to the Conditions of Licence or for a scientific licence (see Appendix 1 for more information).

Exploratory fishing in areas with a lack of catch history will be considered with the use of arbitrary precautionary catch ceilings (10 tonnes for inshore SMAs, 25 tonnes for offshore SMAs).

Experimental fisheries for the development of directed humpback shrimp fisheries will be considered under the framework presented in Boutillier and Nguyen, 1999. This document can be viewed from the internet site:

www.pac.dfo-mpo.gc.ca/sci/psarc/ResDocs/Invertebrate_99_e.htm

Directed coonstripe fisheries will be based on species-specific catch ceilings developed through fishery independent surveys (Dunham and Boutillier, 2001).

6. ACCESS AND ALLOCATION

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

6.1. First Nations

First Nation harvest for food, social and ceremonial (FSC) purposes may occur coastwide where authorized by a communal licence. Currently, there are no limits on First Nation harvest for FSC purposes. When a commercial fishing vessel is used for FSC harvests by trawl, it is not allowed to fish for shrimp commercially at the same time.

There are currently 12 commercial licences allocated to First Nations as FS licences and 6 of these are assigned to specific First Nations organizations. With current market conditions and low participation in the commercial shrimp trawl fishery, few of these FS licences are being used. When an FS licence is used, the same fishery monitoring for effort, catch and logbook reporting applies and the same service provider is required to be used as the commercial S licence fish harvesters so that the catch can be monitored against species and area catch ceilings.

6.2. Recreational

The daily limit for sport caught shrimp is 200, possession limit is 400. Trawl gear is not allowed, so almost all shrimp caught recreationally are prawns using traps. See the Prawn and Shrimp by Trap IFMP for recreational shrimp harvest access guidelines.

6.3. Commercial

Commercial fishing for shrimp by trawl is controlled by catch ceilings defined by species and Shrimp Management Area (SMA). When an SMA is open, any licenced vessel can fish in that area. There are no individual vessel or licence quotas or allocations for pink or sidestripe shrimp. There is a possession limit of 100 prawns and retention limit for squid (*Loligo opalescens*) to a maximum of 2% of the shrimp catch. Octopus (*Octopus dofleini*) caught incidentally may be retained when fishing shrimp by trawl. See Appendix 1 for the areas closed to shrimp by trawl, maps of shrimp management areas, and harvest control guidelines.

6.4. Requests for Changes to Management Measures

Requests for closures to Shrimp Management areas from First Nations organizations for consideration of access to shrimp or other species for food, social or ceremonial purposes

will be considered following the Pacific Region Guidelines for access to shellfish (DFO 2003).

The process to assess a request to change a management measure, modify a shrimp management area, or define an operational requirement such as observer coverage, gear modification or to close a management area to shrimp by trawl will proceed as follows:

1. The First Nation should notify the DFO resource manager responsible for the species and area in question and identify the general nature of their concern.
2. DFO will co-ordinate the exchange of information between the First Nation and the appropriate DFO representatives. The information exchanged should include the following.
 - (1) The First Nation should describe their preferred area, their preferred means of harvest, their expectations for harvest or fishing opportunities in the area, and any available empirical or anecdotal information respecting the reason/nature of the concern and current and historical fishing activity (e.g., gear used, harvest time, catch).
 - (2) DFO should provide general information on the biology and management of species (e.g., IFMP, stock status reports), available catch and effort data for the area, and other information as required.
 - (3) The First Nation and DFO should discuss what further information is needed and, if necessary, what action will be taken to try to get the needed information.
3. DFO will review the request against the criteria for assessing requests to determine if a management change is appropriate. If required, DFO (with, if appropriate, advice from other government agencies) will prepare options for appropriate management changes, including options for interim action while collecting additional information; a evaluation period and, where necessary, options for a monitoring program. Monitoring programs may be part of the management measure as a better means to provide information to help determine if the management measures are achieving their intended results. A monitoring program would take into account the cost and practicality of the monitoring and provide basic information such as the number of people harvesting per unit time (e.g., day, week, month), amount of shellfish caught, location of harvest, harvest method (gear), and problem/issues
4. DFO will consult with the First Nation and, where appropriate, other affected parties to review options and to seek advice and, if possible, agreement on the preferred management measures.
5. The area resource manager recommends a management measure, evaluation period, and possible monitoring program to the Regional Shellfish Co-ordinator and Area Director for approval.
6. At the end of the evaluation period, DFO and the First Nation evaluate the management measure and the results of any monitoring program to determine whether objectives have been met and whether additional management action is required. Consultation with others can occur where appropriate.

Management measures are reviewed as part of the annual IFMP process. DFO may consider the possibility of conducting collaborative studies to review and assess the specific stock in question and the impact of a commercial or recreational fishery with the First Nation.

7. MANAGEMENT MEASURES FOR THE DURATION OF THE PLAN

See Appendix 1 for detail on specific management measures. The Shrimp by Trawl fishery is managed through a passive adaptive process of setting biological thresholds at which some management action must be taken along with other management measures:

- Total allowable catch ceilings by species and Shrimp Management Area are based on pre-season forecasts and in-season survey biomass. Harvest rates are determined following the Precautionary Approach;
- Retention is limited to target species and defined incidental species;
- Mandatory specific by-catch reduction devices in trawl gear are required;
- A coastwide seasonal opening date of June 1 is defined to avoid egg-bearing shrimp;
- At-sea observer coverage is required in special management areas;
- A by-catch action level is set for eulachon, a culturally important smelt species;
- Closures are defined for Rockfish Conservation Areas, specific sponge reefs, conservation areas, seasonal areas, navigational areas and ecological reserves;
- At-sea observations to monitor eulachon by-catch and for specific issues in other areas (50 days) and random dockside observations for a sample of fishing trips (20 days) are required at industry expense;
- Entry is limited to licensed vessels with length restrictions on licence transfers;
- Notification and reporting measures are implemented (hails when fishing, hails of catch, logbooks, electronic data reporting);
- Exploratory or experimental testing of new gear configurations and in situations where an area/species catch ceiling has been reached require at-sea observations and/or dockside observations for a sample of fishing trips; observers may be required at industry expense.

8. SHARED STEWARDSHIP ARRANGEMENTS

8.1. First Nations

There are twelve FS licence eligibilities providing First Nations communal participation in the commercial fishery, six are currently assigned to aboriginal organizations which have entered into multi-year Fisheries Agreements with Fisheries and Oceans Canada under the Aboriginal Fisheries Strategy. Six additional licences are held in reserve. There is no licence fee attached to these licences, however, the contribution agreement between the First Nation organization and DFO may include a contribution towards the costs of managing the shrimp trawl fishery. In 2009, the contribution from each AFS agreement was \$1500 for an FS licence. The obligations to make arrangements with a service provider for the delivery of in-season information to the Department regarding vessel

fishing locations and a landing hail report (payment of management fees) remains the same as with other shrimp trawl licences.

8.2. Commercial

The industry association representing the shrimp trawl vessel owners, the Pacific Coast Shrimpers Cooperative Association (PCSCA) and Fisheries & Oceans Canada have defined a Joint Project Agreement (JPA) agreed upon annually for delivery of co-management programs in support of the commercial fishery. For 2009/10 \$16,500 was required for stock assessment support, and it is expected that this will continue. In 2009, the total Department cost of assessing, managing and enforcing the shrimp by trawl fishery was estimated to be \$670,000.

Management Fees

Shrimp trawl vessel owners who want to fish shrimp by trawl are required by Conditions of Licence to make arrangements with a service provider for the delivery of in-season information to the Department regarding vessel fishing locations and a landing hail report. A catch monitoring program including at-sea by-catch and dockside sampling of shrimp are included in the JPA. The cost of this service to vessel owners is established by the PCSCA by negotiation with a service company on behalf of shrimp trawl vessel owners. The industry service provider is Archipelago Marine Research Ltd. The costs of the program are covered by individual fees paid to the PCSCA, prior to obtaining a vessel licence tab from DFO.

Vessels who do not intend to fish shrimp by trawl are required to renew their S licence (fee \$100) and obtain conditions for zero shrimp catch. They are permitted to exercise their Schedule 2 privileges on their licence.

8.3. Fisheries and Oceans Canada

Fisheries and Oceans Canada provides stock assessment, management of the fishery and enforcement activities. Personnel are generally multi-tasked and, as a consequence, costs incurred by the Department to manage this fishery are difficult to assess. Area Resource Managers also have duties that relate to First Nations fisheries, including shrimp. Intermittent duties of local enforcement personnel can also be ascribed to this fishery. The estimate of the direct costs to the Department to implement this fishery is \$670K annually (for management, stock assessment, enforcement and other activities, including licensing and administration).

8.4. Individual Fish Harvester

Costs of at-sea observers are the responsibility of individual fish harvesters when specific observations are needed and the activity is not part of the regular shrimp trawl fishing plan (catch ceiling defined and the area open to all licence holders). The observations may be required to document species mix, by-catch or fishing methods and results in areas where one species catch ceiling is already achieved, and it is necessary to document the ability to target a particular species. Other examples where observer coverage may be required include: experimenting with new gear configurations, areas defined as data limited and requiring specific data collection (see Appendix 1 section 1.15), new shrimp populations (humpback shrimp see Appendix 1, section 1.20.4), and Industry sponsored biomass surveys.

9. COMPLIANCE PLAN

9.1. Overview

The Department's Conservation and Protection program (C&P) has the main responsibility for carrying out the Department's enforcement program. Fishery officers and marine enforcement officers working throughout Pacific Region carry out enforcement activities for the C&P program. First Nations fishery guardians assist DFO Fishery Officers in a number of locations where joint enforcement protocols are in place. Observers designated by the Department, complement enforcement staff by performing a monitoring, verification and sampling function. Enforcement staff will pursue opportunities to enforce the regulations and Conditions of Licence applicable to this fishery while engaged in enforcement activities directed to other fisheries in the Pacific Region.

The Conservation and Protection program promotes and maintains compliance with legislation, regulations and management measures implemented to achieve the conservation and sustainable use of Canada's aquatic resources, and the protection of species at risk, fish habitat and oceans.

The program is delivered through a balanced regulatory management and enforcement approach including:

- promotion of compliance through education and shared stewardship;
- monitoring, control and surveillance activities; and,
- management of major cases /special investigations in relation to complex compliance issues.

Fisheries and Oceans Canada has the responsibility to enforce the Fisheries Act and associated regulations, to address conservation, health and safety issues and to maintain proper management and control of the various fisheries.

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

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

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

9.2. Priorities for 2010/11

Fisheries Management staff identified the following priority enforcement issues for the 2010/11 season to maintain control of this fishery: patrol of closed areas/times and monitoring of catches through hailing and reporting requirements.

Resource managers will monitor the harvest in SMAs using the catch monitoring program, random dockside observations, and at-sea observer information.

C&P staff will pursue opportunities to monitor and enforce the issues and problems associated with this fishery in conjunction with other regional priorities. C&P staff will

pursue opportunities to monitor and inspect fishing vessels at-sea and at landing ports. Inspections will focus on hauls, landing records and harvest logs. Closed time and area patrols may be conducted by Canadian Coast Guard (CCG) patrol vessels, program vessels, or by air, in conjunction with other patrols.

9.3. Enforcement Issues and Strategies

Issue	Section	Strategy
Licensing Verification a) Vessel licensed. b) No Fisher's Registration Card (FRC). c) Fail to produce FRC.	<i>Pacific Fisheries Regulations</i> (PFR) Section (S) 22 PFR S 25 <i>Fisheries General Regulations</i> F(G)R S 11	At-sea and dockside inspections will occur when opportunities exist. These inspections may include checks of all licensing documents on board the vessel to ensure compliance with regulations.
Fishing during closed time/area.	PFR S 63	Patrols utilizing patrol vessels will be pursued when opportunities exist. Possibilities exist to use the regional air surveillance plane in co-ordination with patrols scheduled for priority fisheries.
Fail to provide proper landing and hail information, lack of notification for change of area, cancellation of trip, or incorrect reporting of area fished.	F(G)R S 22(7)	At-sea and dockside inspections will occur when opportunities exist. Investigations will occur on an opportunistic basis, after C&P has been notified by Fisheries Management that a violation has occurred.
Fail to maintain Harvest Log Book.	F(G)R S 22(7)	At-sea and dockside inspections will occur when opportunities exist. Investigations may also occur on an opportunistic basis, after C&P has been notified by Fisheries Management that a violation has occurred.
a) By-catch monitoring. b) Retain prawns during closed time for prawn. c) Exceed prawn by catch limit (100). d) Retain prawns < 33 mm. e) Fail to keep prawns	PFR 68 F(G)R S 22(7)	At-sea and dockside monitoring may include inspections for by-catch limits as noted to ensure compliance with the regulatory requirement. Inspections may occur in conjunction with enforcement activities in other

Issue	Section	Strategy
separate from shrimp catch. f) Fish without a selectivity device in place. g) Use of mechanical device for the purposes of automatically separating by-catch from shrimp. h) More squid than 2% of total shrimp onboard. i) Retention of non-retention species. j) Failure to record retained squid or octopus on Shrimp Harvest Log.		fisheries, particularly where non-compliance in this fishery may impact conservation or control in other fisheries.
Fail to off-load “shrimp by trap” prior to fishing shrimp by trawl.	F(G)R S 22(7)	At-sea and dockside inspections will occur when opportunities exist.
Fish with gear other than trawl net.	F(G)R S 22(7)	At-sea and dockside inspections will occur when opportunities exist.
Fish with gear that does not contain an escape hole, or maximum spacing on rigid grate is larger than 44.5 mm.	F(G)R S 22(7)	(New for 2009) At-sea and dockside inspections will occur when opportunities exist.
Dockside sales without Fish Vending Licence.	<i>B.C. Fish Act S</i> 13(4)	Dockside inspections and monitoring will be pursued when opportunities exist.

10. 2010/11 PERFORMANCE REVIEW CRITERIA

10.1. Management Plan Evaluation Criteria

- Was there progress in maintaining the co-management approach for the 2010/11 fishery? Were co-management programs accomplished successfully?
- Was harvest limited to the catch ceilings for each SMA?
- How closely was the eulachon action levels met? Has a more comprehensive approach to eulachon assessment and management been developed?
- Was there adequate enforcement of this fishery?
- What progress was made in regard to fish harvesters’ goals for the improved economics of the fishery, enhancing fishery values, or alternative management strategies?

- What progress was made with respect to managing and accounting for multiple shrimp species in the catch?
- Were the egg-bearing females protected long enough for the larval hatch to complete prior to the fishery opening?
- Were fishery landings adequately monitored through the Catch Monitoring Program and harvest logs? Was there misreporting or under-reporting of catch? Were there problems with the Catch Monitoring Program in the opinion of industry members, the Department, or the Service Bureau?
- Was in-season stock assessment information incorporated into the in-season management of the fishery?
- Were results compiled from the Catch Sampling Program? Can areas for improvement to selective fishing practices be identified?
- What was the participation in the fishery: number of vessels licensed, number meeting pre-condition for arranging catch monitoring, number actively fished for both “regular” and communal commercial licences?
- How many communal licences for FSC fisheries were issued? What were the First Nations catches of shrimp?
- Were any issues brought forward by First Nations and, if so, how were they addressed?
- Were issues of safety in the operation and management of the fishery brought forward?
- How many amendments and scientific licences were issued to experiment with selectivity devices? What were results?
- How many exploratory areas were fished? Has there been any information collected for stock assessment in those exploratory areas that were identified as productive for shrimp?
- Was there any further progress in developing directed humpback shrimp fisheries?

10.2. Enforcement Plan Evaluation Criteria

- How many hours were spent on enforcement of this fishery? How many charges, warnings, seizures, and suspected violations? Did this change from last season?
- How many occurrences were reported by the Catch Monitoring Service Bureau, and what was the nature of these occurrences?
- Were there any other in-season enforcement issues and were any unresolved?

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12. GLOSSARY

Acronyms	BRD	By-catch Reduction Device
	DFO	Department of Fisheries and Oceans
	EEZ	Exclusive Economic Zone
	EAL	Eulachon Action Level
	FSC	Food, Social and Ceremonial
	IFMP	Integrated Fishery Management Plan
	JPA	Joint Project Agreement
	LRP	Limit Reference Point (40% of ln(avg)biomass)
	MSC	Marine Stewardship Council
	PCSCA	Pacific Coast Shrimper's Cooperative Association
	PSARC	Pacific Scientific Advise Review Committee
	SMA	Shrimp Management Area
	STSC	Shrimp Trawl Sectoral Committee
	TAC	Total Allowable Catch
	USR	Upper Stock Reference (80% of ln(avg)biomass)
	WCVI	West Coast Vancouver Island
Aquaculture	The process of spawning animals and rearing the progeny to marketable size, usually involving some level of intervention (e.g. feeding, predator protection) by the aquaculturist.	

Area	A division of Canadian fisheries waters as described in Schedule II of the <i>Pacific Management Area Regulations</i> , maps are available on the Pacific Region internet at: http://www.pac.dfo-mpo.gc.ca/fm-gp/maps-cartes/areas-secteurs/index-eng.htm
beam trawl	A type of trawl net in which the mouth of the net is held open by a “beam” or “pole.” The beam is held horizontal across the mouth of the net while under tow.
BRD	By-catch reduction device (rigid grate, fish eye, fish excluder, escape holes, or other device in a trawl net to permit non-target, incidental or unintentional catch to escape the net and not be brought on board the vessel.
by-catch	Incidental or unintentional catch of non-target stocks or species.
catch ceiling	A total allowable catch defined from a pre-season biomass forecast, or survey biomass index and harvest rate of 0 percent to 35 percent, or defined by an arbitrary precautionary quota.
communal licence	Issued to First Nations organizations pursuant to the <i>Aboriginal Communal Fishing Licences Regulations</i> to carry on fishing and related activities.
Communal Commercial Licence	Issued to First Nations organizations pursuant to the <i>Aboriginal Communal Fishing Licences Regulations</i> for participation in the general commercial fishery. Licences issued are equivalent to the capacity of licences that have been retired under the Aboriginal Fisheries Strategy (AFS) Allocation Transfer Program.
exclusion grate or excluder	A grate that when inserted properly into a trawl net reduces the amount of non-target species in the catch (one form of BRD).
excluder net	A second trawl net that when attached properly inside a trawl net reduces the amount of non-target species in the catch. No longer allowed as the only by-catch reduction device.
fishing hail	Notification prior to commencement of fishing.
fishing trip	That period when the vessel departs from a dock to engage in fishing until fishing ceases and shrimp are offloaded.

fixed exploitation rate	The exploitation rate is the proportion of the fishable population that is taken as catch. With a fixed rate, the harvestable quota varies with the population size.
harvested	Referring to fish, including shrimp, caught by any means.
invertebrate	An animal without a backbone.
landed or landing	The transfer of catch from a licensed vessel to land (including docks and wharves).
landing hail	Notification prior to landing or offloading catch at the end of a fishing trip.
offloaded	The landing or removal of catch from the licensed vessel.
observer	An individual who has been designated as an observer by the Regional Director General for Pacific Region pursuant to Section 39 of the <i>Fishery (General) Regulations</i> .
otter trawl	A type of trawl net in which the mouth of the net is held open and towed by means of boards of wood and/or metal (“otter” boards or “doors”).
PCSCA	Pacific Coast Shrimpers’ Cooperative Association: the incorporated society that negotiates on behalf of shrimp trawl (S licence) licensed vessel owners and undertakes to provide the fishery monitoring, hail system, observer coverage and dockside observations required to monitor the fishery.
PSARC	Pacific Scientific Advice Review Committee
quota	For the purposes of the shrimp trawl fishery, an annual quota refers to the total allowable catch determined from a biomass survey or other stock assessment information, and harvest rates of zero percent to 35 percent of the survey biomass.
selective fishing	The ability to avoid known, non-target species and stocks or, if encountered, to release them alive and unharmed.
selectivity device	A general term that refers to a device that when added to a trawl net will reduce the amount of non-target species in the catch. Also called BRD.

Shrimp Management Area (SMA)	The area of a management unit in the shrimp trawl fishery, based on location of fishing grounds and shrimp stocks. Maps of SMAs are in Appendix 9.
Shrimp Trawl Fishing Log (logbook)	A record of fishing activity, catch, effort, and gear.
Southern Inside Waters	Shrimp Management Areas 12IN, 14, 16, 17, 18, 19, GSTE, FR, and 23IN, differentiated from other areas to allow a split in the quota for two openings, ensuring some fishing opportunity in November.
stock assessment	Analyses of fisheries and research data used to estimate stock abundance and health or evaluate the effects of fishing on a stock or population and predict the reactions of populations to alternative management choices.
stock	A biologically discrete population.
Subarea	A division of Canadian fisheries waters as described in Schedule II of the <i>Pacific Management Area Regulations</i> , maps are available on the Pacific Region internet at: www.pac.dfo-mpo.gc.ca/ops/fm/Areas/areamap_e.htm
trawl net	Any bag-type net that is dragged in the water by a vessel for the purpose of catching fish, (under the <i>Fisheries Act</i> and <i>Regulations</i> , “fish” includes shellfish).
verification	Verification of any or all of the following activities: estimating, weighing, sampling all species, inspection of fishing records, and/or interviewing the vessel master.
WCVI	West Coast of Vancouver Island (generally includes Areas 21, 121, 123 to 127 and Subareas 23-7 to 23-11, but may be less depending on the area surveyed and used to estimate biomass).

Internet Sites

Pacific Region Shrimp web page (and links to shrimp trawl fishing information):

<http://www.pac.dfo-mpo.gc.ca/fm-gp/commercial/shellfish-mollusques/shrimp-pcrevette/index-eng.htm>

Acts, Regulations, and Pacific Fishery Management Area Definitions:

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

Infectious Diseases of Shrimp:

<http://www.pac.dfo-mpo.gc.ca/science/species-especies/shellfish-coquillages/diseases-maladies/index-eng.htm>

PSARC (e.g., shrimp stock status reports):

<http://www.pac.dfo-mpo.gc.ca/science/psarc-ceesp/index-eng.htm>

Shrimp Survey Bulletins:

<http://www-ops2.pac.dfo-mpo.gc.ca/xnet/content/Shellfish/shrimp/surveys/surveys.htm>

Openings and Closures (from Commercial Fisheries Notices):

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

13. APPENDICIES

Appendix 1: 2010/2011 Management Measures for the Shrimp Trawl Commercial Harvest

Appendix 2: Post Season Review (2008/09 Season)

Appendix 3: Departmental and Industry Contacts

Appendix 4: Safety at Sea in the Shrimp Trawl Fishery

Appendix 5: Identification of Commercial Shrimp Species

Appendix 6: Example of Shrimp Trawl Log (Harvest Logbook) Record

Appendix 7: Prawn Minimum Size

Appendix 8: Locations of Glass Sponge Reefs in Hecate Strait and Queen Charlotte Sound

Appendix 9: Maps of Shrimp Management Areas

Appendix 10: Fishing Hazard Advisory – Current Meters, Area 12

Appendix 11: Fishing Hazard Advisory – VENUS Georgia Strait Node, Area 29

Appendix 12: Fishing Hazard Advisory - NEPTUNE Node, West Coast Vancouver Island

Appendix 13: Terms of Reference of the Shrimp Trawl Sectoral Committee

Appendix 14: Example Conditions of Licence Shrimp Trawl 2010/2011.

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MANAGEMENT MEASURES - HIGHLIGHTS AND CHANGES

- 1.1.**Shrimp Trawl Licence Renewal - letter from an approved service provider:** The vessel owner is required to provide a letter to Fisheries and Oceans Canada indicating that arrangements have been made for the vessel owner to meet the requirements for notifications, catch verification, and catch sampling (at-sea observers).
- 1.2.**Early Opening for 21OFF and 23OFF and PRD:** These areas may open April 1 if 30 percent of the previous year's catch ceiling and a minimum of 3,000 pounds of any species are left as of March 15. The areas will close if the previous year's catch ceiling is reached (21OFF and 23OFF would then re-open May 15 and PRD would re-open June 1).
- 1.3.**Coast-wide Opening date:** The 2010/2011 shrimp trawl fishery will open coast-wide no earlier than 00:01 June 1, 2010. A Notice to Industry 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 Notice to Industry.
- 1.4.**Eulachon Action Levels (WCVI):** A precautionary approach will continue to be taken in 2010 to the setting of eulachon by-catch action levels in the shrimp trawl fishery. The initial eulachon by-catch action level for WCVI will be set at a total of 27.5 tonnes: 7.5 tonnes for SMAs 23IN, 23OFF and 21OFF combined and 20 tonnes for SMAs 124OFF and 125OFF combined. The initial eulachon action level may be adjusted in-season following a review of eulachon abundance indices from offshore surveys of the shrimp grounds, to a maximum of 1% of the estimated eulachon biomass or 40 tonnes. Eulachon by-catch in SMA 23IN will be included with SMA 23OFF and 21OFF when considering WCVI eulachon action levels.
- 1.5.**Southern Inside Waters:** The Southern Inside Waters (SMA 23IN, 12IN, 14, GSTE, 16, 17, 18 and 19 and FR) will continue to have a split season. The Southern Inside Waters will open no earlier than June 1, 2010 for 75 percent of the annual catch ceiling and November 15, 2010 for the remainder of the annual catch ceiling.
- 1.6.**Hail Requirement:** Fish harvesters are to obtain a Fishing Hail Number by contacting the service provider prior to commencing fishing and at least 24 hours prior to leaving port by calling 1-866-377-1400 (08:00 to 17:00 hours only). Fish harvesters are also required to hail their catch at the end of a fishing trip prior to landing product at the dock. If hailing requirements are not met the Department may implement closures to ensure that catch monitoring and proper management of the fishery are maintained.
- 1.7.**Harvest Logbook:** A Harvest logbook shall be maintained where the vessel master will keep a record of harvest operations including the latitude and longitude of each catch location, the species retained and an estimate of the quantity of each species retained. Information shall be recorded into the logbook before midnight of the day of harvest. Logbooks require the Fisher's Identification Number (FIN) to be recorded.
- 1.8.**Fish Slips:** Licence holders are required to ensure that information in the form of Fish Slips is submitted to the Department for all fish and shellfish caught under the authority of this licence. A report must be made even if the fish or shellfish landed are used for bait, personal consumption or disposed of otherwise.

- 1.9. **At-Sea Observers:** As a condition of licence fishing masters must arrange for at-sea observer coverage, and arrange to carry an observer when requested to do so. Observers will be deployed to monitor catch onboard vessels and to obtain biological data and samples.
- 1.10. **Random Dockside Observations:** A random dockside observation program was introduced in 2003/04 to verify information in the hail program. This program will continue with a goal of 20 observations. Vessels are required to hail landing information a minimum of 2 hours prior to landing at port and offloading product. Dockside observations conducted by a Department certified observer will weigh and verify species mix in the catch on board.
- 1.11. **By-Catch Reduction Gear** Rigid grates for by-catch reduction (Nordmore Grids) are mandatory in all trawl nets. The maximum spacing between the bars is 1.75 inches (44.5 mm) to minimize by-catch of larger fish species. Additional by-catch reduction features such as escape holes above the rigid grate and large mesh panels in otter trawls will continue. Industry recommends further reduction of grate spacing to 25 mm is possible when targeting pink shrimp in offshore areas.
- 1.12. **Shrimp Biomass Surveys:** Priority areas surveyed in 2010/2011 will continue to be surveyed in order to maintain a time series of biomass estimates. Additional areas will be added as time and funding permit. Areas not surveyed during the season will open under precautionary forecast quotas using 10 t inshore and 20 t offshore catch ceilings.
- 1.13. **Precautionary Approach to setting Harvest Rates** Harvest rates (HR) will be set following the Precautionary Approach (PA) framework. When stocks are estimated to be in the Healthy zone the HR will be 35%. When stocks are estimated to be in the Cautious zone the HR will vary between 35% to 0% depending on stock size and its proximity to the Healthy zone. If stocks are estimated to be in the Critical zone then HR will be set to 0%. Identification of the 3 zones and reference points used to delineate the zones are prescribed in the PA framework document <http://www.dfo-mpo.gc.ca/fm-gp/peches-fisheries/fish-ren-peche/sff-cpd/precaution-eng.htm> . The reference points for each of the species and SMA's for which estimates of stock size are available are included in Section 1.5.1 of Appendix 1. Areas with survey information but not enough information to define reference points will have catch ceilings set at 33% of survey biomass.
- 1.14. **Funding of Fishery Programs:** Co-management programs to fund the catch monitoring programs for the shrimp trawl fishery will be delivered through a Joint Project Agreement between the department and the Pacific Coast Shrimpers' Cooperative Association.
- 1.15. **Rockfish Conservation Areas:** Fishing by Shrimp Trawl is not permitted in Rockfish Conservation Areas (RCA). New RCA's in Georgia Strait came into effect March 1, 2007 and were announced by public Fishery Notice. There are 164 RCA's closed to trawl gear.
- 1.16. **Sponge Reefs:** Permanent area closures have replaced the voluntary closures around four hexactinellid (glass) sponge reefs in Hecate Strait and Queen Charlotte Sound. Fishers are also advised that concern has been expressed about the impact of commercial fishing gear on a sponge reef area in the lower Gulf of Georgia.

1. MANAGEMENT MEASURES

1.1. Species

The following shrimp species may be retained:

- d) Northern (spiny) pink shrimp (*Pandalus borealis*).
- e) Pink (smooth or ocean) shrimp (*Pandalus jordani*).
- f) Flexed shrimp (*Pandalus goniurus*).
- g) Sidestripe shrimp (*Pandalopsis dispar*).
- h) Coonstripe (dock) shrimp (*Pandalus danae*).
- i) Humpback shrimp (*Pandalus hypsinotus*).

Prawn (*Pandalus platyceros*), squid, and octopus caught incidentally while fishing for the above species may be retained subject to the restrictions in section 2.10.

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

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

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

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

1.2. Gear

Trawl nets for fishing shrimp are either beam trawls (net held open by a neutrally buoyant beam) or otter trawl (net held open with doors). The trawl net must be modified to reduce by-catch of species other than shrimp with the insertion of a rigid grid (e.g. aluminium, PVC) into the forward end of the cod end of the trawl net at an angle so that it entirely blocks access to the cod end, except for the spaces between the bars. The spacing between the bars of the grid must be no greater than 44.5 mm (1.75 inches) apart. (the Shrimp Trawl Sectoral Committee (STSC) recommends that the spacing between the bars of the grid be no greater than 25 mm apart). The netting directly above the grid must have an opening (escape hole) and the sides of the opening must be reinforced so that the opening remains unobstructed and maintains its shape while the net is being towed through the water.

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

Amended Conditions of Licence to the shrimp trawl licence may be issued upon application to permit the use of an experimental selectivity device that does not fit the description above.

1.3. Fishing Season

With the exception of those seasonal and permanent closures and the possible early opening of 21OFF and 23OFF and PRD, the harvest of shrimp by trawl will open no earlier than 00:01 hours May 15 for 21OFF and 23OFF and 00:01 hours June 1, for the rest of the coast. SMAs will generally remain open until either March 31 or the catch ceiling or action level for a given SMA is attained. All openings referred to in this plan are tentative until confirmed by issuance of a variation order accompanied by a Fishery Notice.

1.3.1. 21OFF and 23OFF Offshore – April and May

As an early opening opportunity, 21OFF and 23OFF may open April 1 if more than 30 percent of the annual previous year's quota and a minimum of 3,000 lbs of any species quota remains on March 15. The area will close during April and May if the previous year's annual quotas are attained. The April and May catch will be counted against the current year's catch ceiling.

Fish harvesters are requested to submit logbook information earlier than is outlined in the conditions of the shrimp trawl licence to assist in the evaluation of fishing opportunities.

1.3.2. Prince Rupert District – April and May

If more than 30 percent of the previous year's quota and a minimum of 3,000 lbs of any species quota remains on March 15, SMA PRD may open April 1. The landings in April and May will be accumulated with the landings to date, and should the total reach the previous year's quota for SMA PRD, the area will close and not reopen until June 1. The landings during April and May will also be counted against the current year's catch ceiling.

1.3.3. Southern Inside Waters - Two Openings

Based on the recommendation from the Shrimp Trawl Sectoral Committee the Southern Inside Waters (12IN, GSTE, 14, 16, 17, 18, 19, FR, and 23IN) will have two openings:

1. June 1, 2010 for 75 percent of the initial catch ceiling.
2. November 15, 2010 for the remainder of the annual quota.

The initial catch ceilings for these areas are provided in Table 1 (section 2.4). Each SMA will close independently upon attaining the allocated proportion of the catch ceiling on any one species. Landings from the first opening that exceed, or are short, of the allocated amount will be applied to the final opening.

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

1.4. Special Management Areas

1.4.1. Shrimp Management Area Queen Charlotte Sound

Pacific Fisheries Management Areas 107, 108, 109, 110, 111, 130, and Subareas 7-1, 7-25, 7-26, 7-31, 8-1, 10-1, 10-2, 11-1 and 11-2 are currently closed. SMA

Queen Charlotte Sound was closed in 2000 because of concerns for eulachon stocks in central coast rivers. Considerations to re-open Queen Charlotte Sound will be dependent on the criteria established by Fisheries and Oceans Canada in discussion with the shrimp trawl industry and First Nations. These criteria include seeing returns of eulachon to central coast rivers, the index of offshore eulachon abundance, identifying an available shrimp quota, and adopting a precautionary approach to eulachon by-catch. In the event SMA Queen Charlotte Sound is re-opened, vessel operators wishing to fish in these areas would be required to obtain amended Conditions of Licence prior to commencement of fishing. For further information, contact the Fisheries Manager in Port Hardy (see Appendix 3 Departmental and Industry Contacts).

1.4.2. Shrimp Management Area 2IN

For SMA 2IN, vessel operators wishing to fish in this area are required to obtain amended Conditions of Licence prior to commencement of fishing. Sampling coverage in this remote area has been proven to be cost prohibitive to the catch sampling program. Commencing in 2001, and continuing for the current season, costs for observer coverage in this area will be the responsibility of the individual vessel master. Amended Conditions of Licence are issued subject to fulfilling application requirements, including the vessel master securing arrangements for certified shrimp fishery observer coverage and having up-to-date and complete Shrimp Trawl Harvest Logbooks. Proposals will be considered from groups of fish harvesters that arrange collectively for adequate observer coverage. Arrangements for amended Conditions of Licence can be made with the North Coast Management Biologist (see Appendix 3).

1.4.3. Shrimp Management Areas 27IN and 27OFF

Shrimp Management Areas 27IN and 27OFF (Pacific Fishery Management Areas 27 and 127) open upon request from a vessel master subject to the vessel master securing arrangements for a certified shrimp fishery observer for the first fishing trip to these areas. Contact the Central Coast Fisheries Co-ordinator to request an opening (see Appendix 3).

1.4.4. Shrimp Management Area 9IN

Shrimp Management Area 9IN (Pacific Fishery Management Areas 9-1 to 9-12), will open with the coast-wide opening for shrimp trawl, and will remain open until December 31, 2010 or until the annual catch ceiling is attained. As of January 1, 2011, SMA 9IN will open upon request from a vessel master subject to the vessel master securing arrangements for a certified shrimp fishery observer for the first fishing trip to this area. A limited number of observer days will be available from the industry-funded catch monitoring program. It will be the responsibility of the vessel master to secure arrangements for observer coverage before the area is opened. Contact the Central Coast Fisheries Co-ordinator to request an opening (see Appendix 3).

1.5. Setting Catch Ceilings

In keeping with Fisheries and Oceans Canada mandate on conservation and risk adverse management, catch ceilings have been implemented for shrimp management areas (see Appendix 9 Maps of Shrimp Management Areas for a description and maps of SMAs).

Catch ceilings are defined for most of BC's shrimp stocks using provisional reference points linked to indexes of stock biomass defined from fishery independent trawl surveys. The goal is to scale resource use to its condition in a manner that avoids undesirable outcomes. Catch ceilings are defined using harvest rates following the Provisional Harvest Control Rules (HCR) compliant with the Precautionary Approach. The HCR adjust the harvest rate to a proportion of the biomass depending on the stock status (healthy, cautious or critical zone) for each major target species.

- Healthy and Cautious zone is delineated by Upper stock reference point
- Cautious and Critical zone delineated by Limit Reference Point

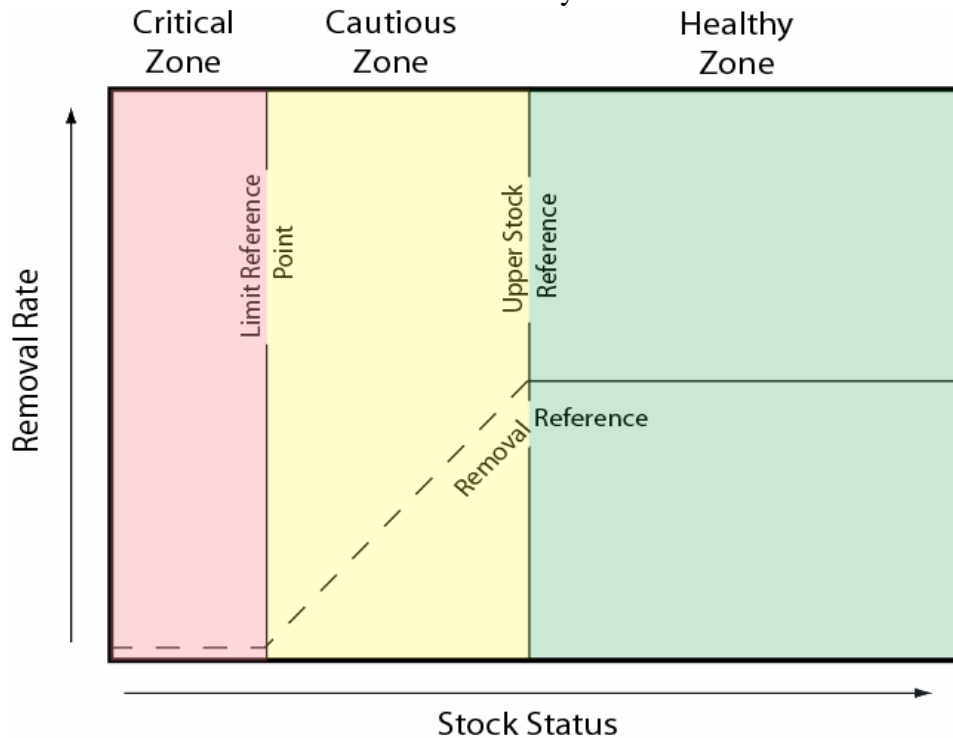


Fig. 1. Adjustments to Removal Rate (Harvest Rate) as Stock Status (Index from biomass survey) in the Shrimp Trawl fishery.

1.5.1. Provisional reference points

Provisional reference points have been established with reference to Biomass of maximum sustainable yield (B_{msy}) (Table 1). For west coast shrimp stocks a proxy for B_{msy} is used where $B_{msy} = \ln(\text{average})\text{biomass}$ (DFO 2009).

The Limit reference point (LRP) = 40% B_{msy}

The Upper stock reference (USR) = 80% B_{msy} .

Table 1. Summary of Bprox (tonnes), limit reference point (LRP) and upper stock reference (USR) points for sidestripe shrimp (*Pandalopsis dispar*), spiny pink shrimp (*Pandalus borealis*) and smooth pink shrimp (*P. jordani*) by shrimp management area (SMA).

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

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

1.6. Harvest Control Rules

When biomass is above the Upper Stock Reference, Healthy zone, Harvest rate is 35%.

When biomass is below the Limit Reference Point, Critical zone, Harvest rate is 0%.

When the biomass is above LRP and below USR, Cautious zone, Harvest rate is varied from 0% to 35% based on the formula $HR=35\% * ((Biomass-40\%BMSY)/(80\%BMSY-40\%BMSY))$.

1.7. Initial Catch Ceilings

At the beginning of the season a pre-season biomass forecast is used to estimate biomass by species and SMA. A 5 year running average (5YRA) model is used to estimate biomass. The pre-season forecasted stock size is set at a risk level of a 25% chance stock size will be smaller than forecast. Where information is available on age classes, a biological model is used to estimate biomass. The pre-season forecast is further qualified using the biological model as follows: if the biological model forecast was equal to or greater than the 50% level from the "avg" model then the 50% 5YRA level was used. If

the biological model forecast was equal to or less than the 10% level from the "avg" model the 10% level 5YRA is used.

The pre-season biomass forecast is compared to the provisional reference points and harvest rates set according to the HCR to define initial catch ceilings. If the pre-season forecast biomass is below the LRP, the area will not open until the area has been surveyed and biomass has been estimated. Initial catch ceilings are generally conservative and avoid overharvesting weak stocks before the surveys have provided a current estimate of the state of the stock.

Catch ceilings will be in effect for the period April 1, 2010 to March 31, 2011, with areas closing earlier on achieving the catch ceiling. Initial catch ceilings for those areas surveyed in 2009 have been based on preseason forecasts. In-season adjustments to the initial catch ceilings may occur based on 2010 surveys and stock assessment information (see next section).

Table 2: Initial Catch Ceilings for 2010/2011 - All Species Combined Unless Noted.

SMA	Areas and Subareas	INITIAL CATCH CEILING	
		Pounds	Tonnes
DXE	1 and 101	22,050	10
QCI	102 and 142	55,155	25
2IN	2 (Amended Conditions of Licence required.)	22,050	10
3IN	3-5 to 3-18	28,660 pink 31,526 sidestripe	13 pink 14.3 sidestripe
PRD	3-1 to 3-4, 103, 4-1 to 4-15, 104, 5-1, 5-2 and 5-23	950,701 pink 509,880 sidestripe	431.2 pink 231.3 sidestripe
5IN	5-3 to 5-10, 5-12 to 5-19, 5-21 and 5-24	22,050	10
5OFF	5-11, 5-20, 5-22, 105	22,050	10
6IN	6-1 to 6-8, 6-10 to 6-12, 6-14 to 6-16, 6-18 to 6-28	22,050	10
6OFF	6-9, 6-13, 6-17 and 106	55,120	25
7IN	7-2 to 7-24, 7-27 to 7-30	22,050	10
8IN	8-2 to 8-16	22,050	10
9IN	9-1 to 9-12	36,833 pink 23,469 sidestripe	16.7 pink 10.6 sidestripe
10IN	10-3 to 10-12	22,050	10
QCSND	107, 7-1, 7-25, 7-26, 7-31, 108, 8-1, 109, 110, 10-1, 10-2, 111, 11-1, 11-2 and 130	Closed	Closed
11IN	11-3 to 11-10	22,050	10
12OUT	12-1 to 12-21, 12-24, and 12-25	8,818 pink 17,637 sidestripe	4 pink 8 sidestripe
20	20	22,050	10
24IN	24	22,050	10
25IN	25	22,050	10

SMA	Areas and Subareas	INITIAL CATCH CEILING	
		Pounds	Tonnes
26IN	26	22,050	10
27IN	27-3, 27-7 to 27-11	22,050	10
27OFF	127, 27-1, 27-2, 27-4 to 27-6	55,115	25
West Coast of Vancouver Island Offshore (WCVI)			
23OFF and 21OFF	21, 121, 123, 23-7 to 23-11	765,042 pink 36,303 sidestripe	347.0 pink 16.5 sidestripe
124OFF	124	1,300,163	589.8
125OFF	125	604,093	274.0
Southern Inside Waters - 2 openings (first opening for 75% of initial catch ceiling)			
12IN	12-22, 12-23, 12-26 to 12-48	21,607 humpback 192,517 pink 75,309 sidestripe	9.8 humpback 87.3 pink 34.2 sidestripe
GSTE	13 and 15	114,740 pink 55,633 sidestripe	52.0 pink 25.2 sidestripe
14	14	176,573 pink 66,744 sidestripe	80.1 pink 30.3 sidestripe
16	16	108,720 pink 22,685 sidestripe	49.3 pink 10.3 sidestripe
17	17	17,637	8
18 and 19	18 and 19 Closed till surveyed	0 coonstripe 0 pink 0 sidestripe	0 coonstripe 0 pink 0 sidestripe
23IN	23-1 to 23-6	244,292 pink 27,92 sidestripe	110.8pink 12.7 sidestripe
FR	28 and 29	124,064 pink 182,640 sidestripe	56.3 pink 82.8 sidestripe

1.8. Adjustment of Catch Ceilings after survey

Estimates of biomass are based on fishery independent trawl surveys conducted in May to September. Catch ceilings are defined from the survey biomass and following the Harvest Control Rules, depending on the state of the stock (Healthy, Cautious or Critical zone). After the survey a bulletin is produced and the results of the survey made available on the internet. Survey results and abundance trends are available from:

<http://www-ops2.pac.dfo-mpo.gc.ca/xnet/content/shellfish/shrimp/Surveys/surveys.htm>

1.9. Arbitrary 10 tonne and 25 tonne Catch Ceilings

SMA's with no survey history have arbitrary precautionary catch ceilings that allow for fishing to identify shrimp grounds and to help define priority areas for survey efforts. Inshore areas are provided with a 10 tonne (22,050 lb) and offshore areas are provided a 25 tonne (55,120 lb) catch ceiling. These areas account for approximately 9.7% of the coastwide Total Allowable Catch (TAC).

When a catch ceiling is reached in an area with no survey, the area closes. A stock assessment project to further define the shrimp area or to conduct a biomass estimate may be pursued under the Exploratory/Experimental protocol (see section 1.15).

1.10. Setting Harvest Rates with no Reference Points

When an area is surveyed and sufficient information is obtained to estimate a biomass for a species but there is not sufficient history to define LRP or USR, a catch ceiling is defined from the survey biomass and a harvest rate of 33%. These areas account for 3.9% of the coastwide TAC.

1.11. Rebuilding Harvest Rate for Fraser River

Historically, the catches in the Fraser River were significantly higher (450 tonnes in 1957). When the area was surveyed in 1998 the biomass of pink shrimp was low (437 t) and was dominated by 1+ shrimp so a lower harvest rate of 25% was defined to allow the population to rebuild. Since surveys began in 1998, the TAC and catch have been less than half of historical levels and the lower harvest rate has been used to set catch ceilings. The survey biomass estimates declined further until 2006 when annual biomass estimates started to increase and the biomass has continued to be larger each year since then. The 'rebuilding' harvest rate of 25% will be used for FR pink stocks until the biomass has reached 1,800 tonnes, when it is considered to be in a healthy state.

1.12. Critical Zone Closures

When a survey biomass is below the Limit Reference Point (LRP), the area will close to fishing. The area will not open until a subsequent survey defines a biomass index above the LRP.

1.13. Catch Ceiling Reached

Catch estimates by each fish harvester are obtained for each species of shrimp at the end of each trip, prior to landing and selling the catch. A landing hail number is required and is entered in fishing logbooks and must be recorded prior to landing and selling the catch. The service provider maintains a cumulative catch from all fish harvesters and provides a Landing Quota Status report to the industry and the Department once a week, showing the catch ceiling, total landed, pounds remaining, percent remaining, area status and number of active vessels hailed to fish in each SMA for each species catch ceiling.

Weekly Shrimp Trawl Landings Quota Status reports can be obtained by email or by fax from the service provider, Archipelago Marine Research Ltd, (250) 383-4535.

When a catch ceiling for one species is reached, the area closes. Trawl gear is not selective and if there is a mix of species at the location of fishing, avoiding further catch of the species is not possible.

1.14. Selective Fishing

When a catch ceiling for one species is reached, further fishing for another species may be possible by choosing fishing locations (depth, habitat, tidal influences, etc). In order to monitor the catch and document impact on all species, and to ensure that further catch of the species does not continue, observer coverage is required. This observer coverage is at the individual fish harvester's expense and arrangements to carry an observer are required prior to obtaining a fishing hail number.

Should continued mortality continue when a catch ceiling has been reached, the area will be closed to all fishing by trawl activity until the next season's biomass estimate has been analysed and a new biomass estimate has been published in a Shrimp Bulletin.

1.15. Exploratory/Experimental Fishing

The Department will consider experimental fishing proposals and the development of selective fishing techniques and standards in consultation with the Shrimp Trawl Sectoral Committee, Industry Caucus. Other proposals for research are directed through the scientific licence protocols and New Emerging Fisheries Policy and must be approved by the Regional Shellfish Coordinator. Procedures for the application of New Emerging Fisheries Policy can be obtained from the internet at:

<http://www.dfo-mpo.gc.ca/fm-gp/policies-politiques/efp-pnp-eng.htm#6c>

Experimentation with selectivity devices that do not meet the specifications set out in the conditions of the licence can be considered under applications for a special amendment to the Conditions of Licence or for a scientific licence.

Exploratory fishing in areas with a lack of catch history will be considered with the use of arbitrary precautionary catch ceilings (10 tonnes for inshore SMAs, 25 tonnes for offshore SMAs).

Experimental fisheries for the development of directed humpback shrimp fisheries will be considered under the framework presented in Boutillier and Nguyen, 1999. This document can be viewed from the internet site:

http://www.dfo-mpo.gc.ca/csas/Csas/publications/ResDocs-DocRech/1999/1999_067_e.htm

If a fish harvester is interested in pursuing a special project or initiative concerning selective fishing, developing increased value to the fleet, new management approaches, fishing in unconventional time, area, etc, they should contact the shrimp trawl manager or Science Branch advisor. Exploratory or experimental projects or initiatives should be planned well in advance of proposed implementation so that effective planning and approval can take place. After discussion, a detailed proposal will likely be required to submit for approval. It may have significant components that relate to selective fishing, such as observer coverage or biological review to analyse results. Observer coverage may be necessary and may need to continue at the fish harvester's expense until the fishing results have been analysed by Resource Management and Shellfish Stock Assessment in consultation with resource users and interested First Nations and deemed to be acceptable. It should be noted that all special projects will have to be evaluated for conflicts with recent court cases regarding the Minister's authority regarding use of fish. Catch that is a target species with catch ceilings defined will be accumulated against the current catch ceiling. Where no catch ceiling has been defined, the project will be assessed against the New Emerging Fisheries Policy, before approval of fishing activity.

1.16. Eulachon By-catch Action Levels

A precautionary approach is used to deal with eulachon by-catch and the Department is working with the shrimp trawl industry to minimize eulachon by-catch. The following management actions have been implemented to reduce eulachon by-catch in the WCVI shrimp trawl fishery.

An eulachon by-catch action level is set annually for WCVI. Eulachon monitoring will be divided into two areas: SMAs 23IN, 23OFF and 21OFF and SMAs 124OFF, 125OFF, and 126OFF. This action level is 1% of the offshore abundance index, based on biomass estimates from the fishery-independent shrimp survey up to a maximum of 20 t in each of areas 23IN+23OFF+21OFF and 124OFF+125OFF. The initial eulachon action level for the WCVI in 2010/11 will be 27.5 tonnes based on the 2009 eulachon biomass index; 7.5

tonnes for SMAs 23IN, 23OFF and 21OFF and 20.0 tonnes for SMAs 124OFF and 125OFF. If estimated eulachon by-catch meets this level, further management actions will be implemented. Management actions could include: closure of the shrimp trawl fishery, closure of certain areas to shrimp trawling or restricting trawling to beam trawlers which have been found to have a lower eulachon by-catch rate than otter trawlers.

In-season adjustment to the action levels will be based on the eulachon abundance in each area as determined from the May shrimp trawl survey. The action level will be revised to 1 percent of the estimated eulachon biomass based on the 2010 biomass survey.

In the event eulachon abundance is determined to reach critically low levels, further management actions to address incidental by-catch may be implemented.

1.16.1. Mandatory by-catch reduction devices in shrimp trawl nets

Fish exclusion grids, soft mesh fish excluders, escape holes, escape panels and by-catch reduction modifications to gear are used as ways to avoid eulachon by-catch. By-catch reduction devices are mandatory for all shrimp trawlers. Maximum spacing between the grates is 44.5 mm (1.75 inches). When fishing pink shrimp in offshore areas, 25 mm spacing can be used.

1.16.2. Area Closures based on Eulachon by-catch

Shrimp trawl fishing was closed in Queen Charlotte Sound in 1999 because of concerns for Central Coast eulachon stocks. The industry caucus has recommended that efforts continue to re-start commercial fishing opportunities. Consideration for re-opening SMA QCSND will depend on eulachon returns, by-catch reduction methods, documentation of eulachon interception and discussion with the shrimp trawl industry and local First Nations.

The action levels, by-catch monitoring, and the SMA QCSND closure will continue for the coming year.

1.16.3. Specific trawl gear requirements – beam or otter trawl

It has been documented that vessels using otter trawl nets have had higher eulachon by-catch rates than vessels using beam trawls. Should eulachon by-catch estimates reach the eulachon action levels areas of the West Coast of Vancouver Island, one possible management measure is to close the area to otter trawl vessels. SMA's 124OFF and 125OFF will be treated as one area and 23OFF, 21OFF and 23IN as another area for monitoring eulachon by-catch and for defining gear requirements. At-sea observations will continue and should eulachon by-catch rates continue to be high, the area will close to all shrimp by trawl fishing for the remainder of the season.

1.17. In-Season Adjustments to Catch Ceilings

Notification will be given by Fishery Notice and on the shrimp information line (888) 978-7888 for any in season adjustments to the catch ceilings listed in Table 1.

1.17.1. In-season Changes to Catch Ceilings Based on Biomass Estimates

In-season adjustments to the catch ceilings in Table 1 may occur based on stock assessment information. Industry-supported, fishery-independent biomass surveys will be conducted to collect biomass information. Biomass estimates may be

made in those areas or in non-surveyed areas that have been identified as a priority for analysis.

If an in-season adjustment to the catch ceiling results in the re-opening of an area, effort will be made to give a minimum 48 hours advance notice prior to re-opening.

The results from surveys are reported in Shrimp Survey Bulletins and are available in-season from the Pacific Region Shrimp Trawl internet site at:

<http://www.pac.dfo-mpo.gc.ca/fm-gp/commercial/shellfish-mollusques/shrimp-pcrevette/index-eng.htm>

1.17.2. In-Season Re-openings in the Event of Available Quota

Areas that close but do not achieve the catch ceiling or annual quota, will re-open provided all hailed vessels are cleared from the grounds and an assessment of landings determines that there is sufficient quota available for the Department to deem a re-opening to be manageable. Effort will be made to provide a minimum 48 hours advance notice prior to re-opening. Vessel operators may assist in this process by ensuring that all landings have been hailed and that all hails have been cleared with the service provider.

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

In-season changes to catch ceilings for Southern Inside waters will be determined at the time the survey results become available, and will be re-proportioned to the two harvest periods at that time.

If survey results indicate additional quota and become available while an area is open and actively being fished, the quota will be re-proportioned at that time and the fishery will continue. If survey results indicate sufficient additional quota to manage a re-opening and become available while the area is closed, effort will be made to provide 48 hours advance notice prior to re-opening.

1.18. Shrimp Management Area Closures

SMA's will close in-season as required on the basis of any one or more of the following:

- a) Catch ceilings or annual quotas for any species of shrimp have been attained.
- b) For the areas included as Southern Inside waters, the proportion of the catch ceiling allocated to that period has been attained.
- c) Indications of misreporting of harvest on hails or harvest logs.
- d) At-sea observer coverage goals are not being met.
- e) Eulachon or other by-catch levels, including that of prawns, are deemed by the Department as too high. If shrimp trawl fishing occurs in areas identified as having low prawn spawner index and are closed to recreational prawn by trap fishing, the Department may close areas to trawl fishing to avoid handling mortality of egg bearing females and the overall prawn population.
- f) For other reasons of conservation.
- g) If the Department is of the opinion that the fishery may be characterized as unmanageable.
- h) Access to shrimp by First Nations for food, social and ceremonial (FSC) purposes is jeopardized.

1.19. Information on Shrimp Management Area Status

It is the fish harvester's responsibility to ensure that an area is open prior to setting gear.

1.19.1. Shrimp Information Line

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

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

1.19.2. Fishery Notices

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

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

1.19.3. Canadian Coast Guard Announcements

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

Tofino MCTS	Mondays	14:15 hours	2115 UTC
Vancouver MCTS	Tuesdays	08:10 hours	1510 UTC
Comox MCTS	Tuesdays	08:20 hours	1520 UTC
Prince Rupert MCTS	Tuesdays	09:05 hours	1650 UTC

1.20. Retention of Incidental Catch

1.20.1. Prawns

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

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

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

Permanent Prawn Closures: South coast Area 17 and Subarea 29-5 are closed year round to the retention of prawn by shrimp trawl gear.

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

Storage: All retained prawns must be kept segregated from all other catch.

Berried Prawns: From May 1 to June 30, any prawns with more than 200 eggs shall be released immediately and unharmed to the waters from which they are caught.

1.20.2. Squid

Vessels operating under the authority of an S licence are restricted in the retention of incidentally caught opal squid (*Loligo opalescens*) to an amount that does not exceed two percent of the total weight of shrimp on board.

1.20.3. Octopus

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

1.20.4. Humpback and Coonstripe Fisheries

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

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

However, directed fisheries for humpback shrimp are under consideration following the presentation to the PSARC Committee in 2002 on *Pandalus hypsinotus*. Areas for development of directed humpback shrimp fisheries will be identified with input from the Shrimp Trawl Sectoral Committee. These may be areas that have been surveyed or areas where there are significant proportions of

humpback shrimp in the landings. Following stock surveys, directed fisheries with quotas for humpback shrimp may be set in select areas.

Subareas 2-3, 2-4 and 17-17 have been identified as areas in which humpback are a significant proportion of the shrimp population. These Subareas are currently closed. Any directed fisheries for humpbacks in these areas will follow the New Emerging Fisheries Policy.

The Shrimp and Prawn by Trap fishery will be subject to the same guidelines (refer to the IFMP for Shrimp and Prawn by Trap).

2. CLOSURES

2.1. Seasonal Closures

2.1.1. Areas 1, 2, 101, 102, 104 and 105

2.1.1.1. Dixon Entrance/Hecate Strait Closure: Those waters of Subareas 1-3, 1-4, 1-5, 1-6, 2-1, 2-2, 2-3, 101-7, 102-1, 104-2, 104-4 and 104-5 and that portion of Subareas 101-10 and 104-1 south of 54⁰16'N latitude, that portion of Subarea 102-2 north of 53⁰N latitude and west of 131⁰W longitude and that portion of Subareas 104-3, 105-1 and 105-2 west of 131⁰W longitude will be closed 00:01 hours March 1, 2010 to 08:00 hours August 15, 2010. (Crab Softshell Closure) If a soft-shell monitoring program is in place, the area, or portions of the area, could close earlier or later than March 1 and open earlier or later than August 1 if sampling indicates a change to the opening date is appropriate. Contact the North Coast Fisheries Management contact.

2.1.2. Area 2

2.1.2.1. SMA 2IN: Open under request with confirmation of observer coverage at fish harvester's expense. Amended conditions of licence required. (See Section 1.4.2.)

2.1.3. Area 3

2.1.3.1. Nass River: Those waters of Subareas 3-12 and 3-18 will be closed February 1, 2010 to March 31, 2010 to avoid interaction with schooling adult eulachon returning to spawn. This closure will be reviewed annually with industry and First Nations, considering expected eulachon returns. (Conservation closure)

2.1.4. Area 9

2.1.4.1. SMA 9IN: Opens June 1 and remains open until December 31, or until the annual catch ceiling is attained. After January 1, if sufficient catch ceiling remains, SMA IN will open under request with confirmation of observer coverage. (See Section 1.4.2.)

2.1.5. Area 14

2.1.5.1. Baynes Sound Closure: Those waters of Subareas 14-8 and 14-15 will be closed April 1, 2010 to March 31, 2011 pending proposal from fish harvesters to address by-catch issues in this area. (Conservation closure, by-catch concern)

2.1.6. Areas 27 and 127

2.1.6.1. SMA 27IN and 27OFF: Open under request with confirmation of observer coverage. (See Section 1.4.3.)

2.2. Permanent Closures

The following areas will be closed April 1, 2010 to March 31, 2011.

2.2.1. Rockfish Conservation Areas

Fishing shrimp by trawl is not permitted in Rockfish Conservation Areas (RCAs).

Currently, 102 RCAs exist and consultations are ongoing for additional rockfish conservation measures, including changes to existing RCAs and the addition of new ones. New RCAs came into effect February 1, 2007 and changes to existing RCAs were announced in season. For further information on the RCAs, the permitted fishing activities within the areas, and possible further consultations, see:

www-comm.pac.dfo-mpo.gc.ca/pages/consultations/fisheriesmgmt/rockfish/default_e.htm

2.2.2. Area 1

2.2.2.1. McIntyre Bay: Subarea 1-5. (Conservation Closure - Halibut)

2.2.3. Areas 101 and 142

2.2.3.1. Bowie Seamount Marine Protected Area: 180 km west of the Queen Charlotte Islands Areas. For a schedule of boundaries and a map see the internet website at: <http://gazette.gc.ca/rp-pr/p2/2008/2008-04-30/html/sor-dors124-eng.html> (Conservation Closure) **New for 2010.**

2.2.4. Areas 105-107, 110

2.2.4.1. Glass Sponge Reef Closures: Areas 105, 106, 107, and 110: Three closures have been established surrounding glass sponge reefs in the North and Central Coast areas. Area closure boundaries for each reef are shown in Appendix 8 Locations of Glass Sponge Reefs in Hecate Strait and Queen Charlotte Sound.

2.2.5. Area 2

2.2.5.1. Cumshewa Inlet: Subareas 2-3 and 2-4. (Conservation Closure subject to New Emerging Fisheries Policy)

2.2.6. Area 12

2.2.6.1. Fishing Hazard Advisory – Current Meter Moorings in Area 12. Two current meter moorings are temporarily installed in Knight Inlet and Tribune Channel and may constitute a hazard to fishing gear within one chain of the described location. The moorings are shown in Appendix 10 Fishing Hazard Advisory – Current Meters, Area 12.

2.2.7. Area 13

2.2.7.1. 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)

2.2.7.2. Deepwater Bay: A portion of Subarea 13-7 inside a line from a fishing boundary sign at Separation Head to a fishing boundary sign at the north-westerly entrance to Deepwater Bay. (Salmon Holding Area)

2.2.7.3. Kelsey Bay: Subarea 13-34. (Navigational Closure)

2.2.8. Area 14

2.2.8.1. Upper Baynes Sound (Subarea 14-11) and Comox Harbour (Subarea 14-14). (Navigational Closure)

2.2.9. Area 16

2.2.9.1. Bargain Bay (Subarea 16-3), Pender Harbour (Subarea 16-4) and Head of Sechelt Inlet (Subarea 16-5). (Navigational Closure)

2.2.9.2. Skookumchuck Narrows Provincial Park: Subarea 16-9. Those waters of Skookumchuck Narrows and Sechelt Rapids bounded on the West by a line from a point on the foreshore at the westerly limit of Secret Bay on Sechelt Peninsula thence 500 true to a point on the foreshore on the mainland; and the east by a line from Raland Point on Sechelt Peninsula, thence 500 true to a point on the foreshore on the mainland. (Park)

2.2.10. Area 17

2.2.10.1. Area 17 is closed year round to the retention of prawn by shrimp trawl gear. (Conservation Closure)

2.2.10.2. Ladysmith Harbour (Subarea 17-7) and Nanaimo Harbour (Subarea 17-14). (Navigational Closure)

2.2.10.3. Subarea 17-17 Pylades Channel. This Subarea is mainly a humpback shrimp area with very few pink shrimp or sidestripe shrimp and the population have not been assessed. (Conservation Closure subject to New Emerging Fisheries Policy)

2.2.11. Area 18

2.2.11.1. Sansum Narrows, Burgoyne Bay and Maple Bay (Subarea 18-7), Cowichan Bay (Subarea 18-8) and Fulford Harbour (Subarea 18-10). (Navigational Closure)

2.2.11.2. Satellite Channel: that portion of Subarea 18-6 found inside a line starting at 48°41.46'N latitude 123°29.48'W longitude, thence one nautical mile 60° true to 48°41.96'N latitude 123°28.178'W longitude, thence one nautical mile 330° true to 48°42.82'N latitude 123°28.92'W longitude, thence one nautical mile 240° true to 48°42.32'N latitude 123°30.23'W longitude, thence one nautical mile 150° true to the point of origin. (B.C. Provincial Ecological Reserve #67)

2.2.12. Area 19

2.2.12.1. Victoria Harbour (Subarea 19-1) and Esquimalt Harbour (Subarea 19-2). (Navigational Closure),

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

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

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

2.2.12.5. 10 Mile Point: Subareas 19-4 and 19-5. Those waters of within 0.4 nautical miles of Cadboro Pt. navigation light. (Marine Reserve)

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

2.2.13. Area 20

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

2.2.13.2. Port San Juan: Subareas 20-2) and Sooke Harbour and Basin (Subareas 20-6 and 20-7). (Navigational Closure)

2.2.14. Area 23

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

2.2.14.2. Fishing Hazard Advisory – Areas 23 and 123. The NEPTUNE Canada Ocean Observatory is a scientific cabled ocean observatory that will be installed on the seafloor off the West Coast of Vancouver Island. The main network cable installation began in the summer of 2007 and the remaining infrastructure will continue. The Observatory will consist of a ring of powered telecommunications cable laid on the seafloor down the centre of Alberni Inlet and Trevor Channel across the continental shelf and out to approximately 160 nautical miles offshore (2500 meters water depth). For further information, see Appendix 12 Fishing Hazard Advisory – NEPTUNE Node, West Coast Vancouver Island or check the Neptune internet site: www.neptunecanada.ca

2.2.15. Area 24

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

2.2.16. Area 28

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

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

2.2.16.3. Whytecliff Park: Subarea 28-2. Those waters bounded by a line commencing from the most southerly point of Whytecliff Park; thence in a straight line to a point located 100 m East of the most southeasterly point of Whyte It.; thence following the southern shoreline of Whyte It. at

a distance of 100 m to a point lying 100 m from the most southwesterly point of Whyte It.; thence in a straight line to a point lying 100 m west of White Cliff Point; thence following the shoreline at a distance of 100 m in a northerly direction to a point 100 m North of Lookout Point; thence following the shoreline at a distance of 100 m in an easterly direction to a point 100 m perpendicular to the most northerly point of Whytecliff Park; thence to the most northerly point of Whytecliff Park on the mainland. (Marine Reserve)

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

2.2.16.5. Subareas 28-8 and 28-10. (Navigational Closure)

2.2.16.6. Subareas 28-11 to 28-14. (Conservation Closure)

2.2.17. Area 29

2.2.17.1. Sponge Reef Advisory: 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 km. offshore of Sturgeon Bank at approximately 49°9.5' North and 123°23' West in 160 to 220 meters of water.

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

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

2.2.17.4. Fishing Hazard Advisory - Subareas 29-6, 29-7. The Victoria Experimental Network under the Sea (VENUS) project includes a shallow water installation that may pose a hazard to trawl fishing (see Appendix 11 Fishing Hazard Advisory – VENUS Georgia Strait Node, Area 29). For further information, check the VENUS internet site: www.venus.uvic.ca

3. LICENSING

3.1. Licence Category

A shrimp trawl category S or communal commercial category FS licence is required to commercially harvest shrimp with trawl gear. There are a total of 233 S licence eligibilities and 12 category FS commercial licence eligibilities that are allocated to First Nations as communal commercial licences that can be designated to a vessel of specific length.

3.2. Application Fees

Currently the annual licence application fee for category S licence eligibility is \$100.00. There is no fee for a communal commercial, category FS licence.

3.3. Licence Application and Issuance

The 2010/2011 Shrimp Trawl license year is April 1 to March 31.

Applications must be completed and submitted to a Pacific Fishery Licence Unit by March 31 of each year along with the required fee.

Category FS (communal commercial) licence eligibilities are party-based. First Nations' organization holds the licence eligibility, which is designated annually to a vessel that meets the licensing requirements, including length restrictions.

Prior to annual application for either category shrimp trawl licence, please ensure:

- i) Any Ministerial conditions placed on the licence eligibility are met.
- j) Any conditions of the previous year's licence such as submission and approval of Shrimp Trawl Harvest Logbooks and Hail Reports have been met.
- k) That you have a letter to Fisheries and Oceans Canada from an approved service company indicating that arrangements have been made to meet the notifications, catch verification, and catch sampling (at-sea observers). The Service Company selected by the industry (through the PCSCA) and approved by the Department for the fishing season is Archipelago Marine Research Ltd.

3.4. Vessel Replacement

Commercial S licences are vessel-based and are 'married' to any other commercial licence eligibilities held on the vessel (will be replaced onto another vessel with all other married licence eligibilities). Licence eligibility vessel replacements are restricted to vessels of the equivalent overall vessel length. Only one category S or FS licence eligibility is allowed on a vessel at a time. Replacing vessels may not exceed the overall length of the existing vessel.

3.5. Schedule II Species

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

3.6. Conditions of Licence to Transport Fish

Part 3 of the shrimp trawl licence authorizes the vessel to transport fish other than fish caught by the licensed vessel, provided that the conditions are followed as outlined in Part 3 of the licence. Refer to the conditions of the shrimp trawl licence Part 3 for details. Fish harvesters are reminded that under British Columbia Provincial requirements, a Fish Buying Station Licence with an accompanying "bill of lading" is required in order to transport any product other than that caught under the authority of one's own licence.

3.7. Fishers Registration Card

Under *Pacific Fishery Regulations*, any person over the age of sixteen engaged in commercial fishing, or on board a vessel being used in commercial fishing, must possess a Fisher's Registration Card (available from Pacific Fishery Licensing Units).

4. CONTROL AND MONITORING OF COMMERCIAL FISHING ACTIVITIES

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

The service company selected by the industry (through the PCSCA) and approved by the Department for the 2010/2011 fishing season is Archipelago Marine Research Ltd.

4.1. Notification Procedures

4.1.1. Notification Prior to Commencement of a Fishing Trip

The vessel master shall obtain a Fishing Hail Number 24 hours prior to leaving port and prior to commencing fishing by contacting (866) 377-1400 between the hours of 08:00 to 17:00, and provide the following information (hereinafter referred to as a “Fishing Hail”):

1. Vessel name and Vessel Registration Number (VRN #).
2. Vessel master’s name (first and last) and contact phone number.
3. Vessel’s autotel or cellular number.
4. Gear type (beam or otter trawl).
5. SMA or Subarea to be fished (note - one area only).
6. Anticipated date and time that fishing will begin.
7. Anticipated number of fishing days for the trip.
8. Target shrimp species.
9. Product type (fresh, live, frozen at sea, etc.).
10. Anticipated offload location and date.

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

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

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

In all instances, it is the vessel master’s responsibility to obtain a Fishing Hail Number prior to leaving the dock to go fishing. A Fishing Hail Number may be refused if the hail location is vague or misleading. It is a Condition of Licence that vessels arrange for 100 percent at-sea observer coverage. This requirement may be waived at the time of Fishing Hail if the Department does not require an observer on-board the vessel for that particular fishing trip.

The service provider is not responsible for notifying fish harvesters of existing or impending closures. (See section 1.19).

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

4.1.2. Notification of a Change in Fishing Area

If the SMA or target species to be fished is different from the original Fishing Hail, the vessel master shall contact (866) 377-1200 (24 hours per day) or (866) 377-1400 (08:00 to 17:00) to update the fishing hail record prior to fishing in the new SMA. This shall be done by quoting the original Fishing Hail Number for that trip and advising of the new SMA to be fished and the weight of each species of shrimp on board from the SMA fished prior to changing locations.

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

4.1.3. For Fishing Trips Longer Than Seven Days

If the fishing trip is longer than seven days (i.e. the landing date is more than seven days after the Fishing Hail), the vessel master shall contact (866) 377-1200 (24 hours per day) or (866) 377-1400 (08:00 to 17:00) and provide the following information every seven days:

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

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

4.1.4. Notification Prior to Landing Catch

Prior to landing any catch at the end of a fishing trip, the vessel master shall obtain a Landing Hail Number by calling (866) 377-1200 (24 hours per day) or (866) 377-1400 (08:00 to 17:00) and provide the following information (hereinafter referred to as a "Landing Hail"):

1. Fishing hail number which applies to the current fishing trip.
2. Vessel name and VRN #.
3. Vessel master's name.
4. Date fishing began.
5. Date and time of offloading.
6. Port and location of offloading.
7. Buyer.
8. SMA(s) or Subarea(s) in which fishing occurred.
9. Weight of each species* of shrimp on board from each SMA fished.
10. Total hours towed for each SMA fished.

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

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

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

4.1.5. Cancellation of a Fishing Hail Number

Where a fishing hail number has been issued and no fishing occurs, the vessel master shall notify (866) 377-1200 (24 hours per day) or (866) 377-1400 (08:00 to 17:00) to cancel the hail, i.e. specify that no fishing took place. No follow-up paperwork will be required by the vessel master.

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

4.2. Dockside Observations for Catch Verification

The service provider will conduct dockside observations for catch validation during 2010/2011 to verify shrimp landing weights, species composition, and quality against hailed or otherwise reported figures. Biological samples may also be requested for use in the stock assessment program. The program includes 20 random days defined as opportunities present themselves.

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

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

4.3. Catch Sampling Program

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

During the 2010/2011 fishing season vessel owners will be responsible for arranging at-sea observer coverage with a Fisheries and Oceans Canada certified observer. Observers will be distributed coast-wide to monitor catch onboard vessels and in some instances to collect biological information or samples.

4.3.1. Selection of Vessels for Catch Sampling Program

During the course of the season, certified shrimp fishery observer coverage is required as part of the catch sampling program. Vessels will be selected randomly for catch sampling depending on sampling requirements by area and time period. The actual days of coverage will be determined in-season according to area fished, gear, fishing effort, month, and the need for biological samples.

It is a Condition of Licence that vessels arrange for 100 percent observer coverage prior to leaving the dock to start fishing activities. For vessels that are not deemed to require an observer on that particular trip, the service provider will issue an exemption at the time of hail-in. The shrimp information line will provide updates on the outstanding requirements for observer coverage in priority areas. Fishery closures will be implemented if the level of observer coverage required for the proper management of the fishery has not been achieved.

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

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

4.4. Shrimp Samples for Biological Sampling

Observers, catch monitors, or patrol vessels from Fisheries and Oceans Canada may also approach vessels, while at a dock or at-sea while fishing, to request samples of shrimp or to collect other catch information. Detailed information may be requested concerning the location, depth and area of catch, gear type, by-catch reduction devices, preferred cod end mesh size, by-catch species and marketing of the shrimp sampled. Fisheries and Oceans Canada, the Pacific Coast Shrimpers' Cooperative Association, and the Shrimp Trawl Sectoral Committee ask for the co-operation of fish harvesters and processors in providing biological samples and other catch information. These samples will provide the information such as shrimp species in the catch, strength of age classes, location of shrimp stocks, number of egg-bearing female shrimp, and preferred mesh size or gear.

4.5. Shrimp Trawl Harvest Logbook Data

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

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

To fulfil stock assessment objectives it is imperative that much finer resolution of fishing location be reported in this fishery. The vessel master is responsible for reporting latitude/longitude position on the logbook in the "location" field for each "tow" undertaken.

Logbooks meeting Fisheries and Oceans Canada requirements are available from outside service providers 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 logbook and the electronic copy must be forwarded within 28 days following the end of each month in which fishing occurred. This information must be sent to:

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

As an alternative to logbook provision through a service provider, the vessel master may provide a hard copy logbook in the same form and providing the same particulars as shown in the logbook sample attached as Appendix 6 Example of Shrimp Trawl Log (Harvest Logbook) Record. The vessel master 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 Fisheries and Oceans Canada. The electronic copy must be 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 requirements and acceptable data formats for supplying logbook and electronic data in a format that meets the Conditions of Licence. The paper copy of the logbook and the electronic data must be forwarded within 28 days following the end of each month in which fishing occurred. This information must be sent to the above address.

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

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

4.5.1. Gear Questionnaire

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

4.5.2. Submission and Release of Logbook 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 logbook data. The Department can only release logbook data to the reported vessel owner and only upon written request.

4.5.3. Nil Report for Logbook - 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 logbook identifying the vessel, licence tab number, and the year with “Nil” entered in the body of the logbook and signed by the vessel owner constitutes a Nil Report. The exception to the Nil Report requirement is when the licence issued is ‘Option N – Schedule II fishing only’. A Nil Report for the ‘Option N’ licence is not required.

4.5.4. Confidentiality of Data

Harvest data, including fishing location data supplied through latitude/longitude coordinates, loran or chart records and gear configurations, collected under the logbooks for use by shellfish fisheries programs, are collected for use by the Department in the proper assessment, management, and control of the fisheries. Upon receipt by the Department of harvest data and/or fishing location information, supplied by the fish harvester in accordance with Conditions of Licence, Section 20(1)(b) of the *Access to Information Act* prevents the Department from disclosing to a third party, records containing financial, commercial, scientific or technical information that is confidential information. Further, Section 20(1)(c) of the *Act* prevents the Department from giving out information, the disclosure of which could reasonably be expected to prejudice the competitive position of the licence holder.

4.6. Catch Reports – Fish Slips

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

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

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

5. SELECTIVE FISHING PRACTICES

5.1. Selectivity Devices

The shrimp trawl industry through the Shrimp Trawl Sectoral Committee with the support of the Pacific Coast Shrimpers’ Cooperative Association and the Department, recommended that selectivity devices (also known as exclusion grates, excluders, soft

mesh excluders or BRD) be mandatory as a Condition of Licence. Fisheries and Oceans Canada commends the shrimp trawl industry's initiative in fishing selectively and taking active measures to reduce by-catch. Each trawl net used shall have an exclusion grate (or Nordmore grate) inserted into the forward end of the cod end of the trawl net at an angle so that it entirely blocks access to the cod end, except for the spaces between the bars. A maximum spacing of 44.5 mm (1.75 inches) on the rigid grate has been implemented as a Condition of Licence. The Shrimp Trawl Caucus recommends the **spacing for grates be 25 mm** to more effectively reduce by-catch. The netting directly above the grate shall have a triangular opening (escape hole) the full width of the grate.

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

5.2. Experimenting with Selectivity Devices

Experimentation with selectivity devices that differ from those described in the conditions of the shrimp trawl licence will be made possible through an application for amended Conditions of Licence of shrimp trawl licence or through a scientific licence.

Those fish harvesters wishing to experiment during open times may apply for amended Conditions of Licence to the shrimp trawl licence by submitting a proposal to the Fraser River Management Biologist, or Central Coast Fisheries Coordinator (see Appendix 3). The proposal shall include a description of the proposed experimental gear and will require that the vessel master agree to take an observer or catch monitor on board upon request from the Department while fishing under authority of the amended Conditions of Licence. Amended Conditions of Licence will be valid for a period of five months from the date of issue.

Requests for renewals of amended Conditions of Licence beyond five months will require that the vessel take on board a certified shrimp observer in order to collect catch composition information. Prior to issuance, the vessel master must provide a letter from a catch monitoring service bureau to Fisheries Management personnel stating that arrangements for one day of certified shrimp observer coverage have been made. This letter shall accompany the application for a renewal. Cost of observer coverage is the responsibility of the vessel owner.

Those fish harvesters wishing to experiment with selective fishing devices during closed times will be required to apply for a scientific licence. There is special consideration

given to experimentation during close times as areas are allocated total allowable catches. Prior to the Department issuing a scientific licence, the Selective Fishing subcommittee of the Shrimp Trawl Sectoral Committee will review the proposal and make a recommendation to the Department for the study to be undertaken under scientific licence. Full time observer or catch monitoring coverage will be required. The Department will approve the observer or catch monitor prior to issuance of a scientific licence. Costs of the observer coverage are the responsibility of the project proponents.

5.3. Future Standards for Selectivity Devices

Future standards for selectivity devices will be determined in consultation with the Department and the Industry Caucus of the Shrimp Trawl Sectoral Committee. Those selectivity devices that are deemed acceptable and desirable will be defined as a Condition of Licence for fishing shrimp with trawl gear. Fish harvesters that have found experimental selectivity devices to be effective are advised to submit a report to the Industry Caucus (contact Pacific Coast Shrimpers' Cooperative Association (see Appendix 3) for consideration in developing standards. The report should provide details on testing of the device and demonstrate the value of the device as legitimate selectivity gear.

5.4. Selective Fishing Practices

For information on selective fishing initiatives in the shrimp trawl fishery, visit the shrimp trawl web page.

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

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

The ongoing Catch Sampling Program will collect information for the evaluation of selective fishing practices. Anyone who would like to provide information or feedback on by-catch and selectivity devices should contact the Selective Fishing Subcommittee. By-catch information collected through the Catch Sampling Program, and other directed studies, will be consolidated for review by the Selective Fishing Subcommittee and the Shrimp Trawl Sectoral Committee. The gear questionnaire included in the Shrimp Trawl Harvest Logbook is an important component of this study and fish harvesters are reminded to submit a completed questionnaire as part of the logbook Condition of Licence. Results of the catch sampling program are available in the document: Estimated by-catch in the British Columbia Shrimp Trawl Fishery (Olsen *et al.* 2000), available from the Pacific Scientific Advice Review Committee Secretariat at:

www.dfo-mpo.gc.ca/csas

Based on a recommendation from the Shrimp Trawl Sectoral Committee, the use of mechanised devices (e.g. "smelt belts") for the purposes of automatically separating by-catch from shrimp has been prohibited. Smelt belts can be described as on board by-catch-discarding machines that use a series of sandpaper belts to separate small fishes, such as smelts, from shrimp. The texture and slope angle of the belt allows the fish to travel up the belt and be discarded overboard while shrimp, having a hard exoskeleton, do not adhere to the belt and roll to the bottom of the machine. Smelt belts come in different sizes and configurations, generally made of aluminium and powered by several small hydraulic motors, which turn the belts. Smelt belts are not to be confused with conveyor belts that are used simply to move shrimp on deck, or grading machines (series of slotted

trays) used to grade shrimp into different sizes to maximize value, although they may be used in conjunction with grading machines. Smelt belts are not as commonly used in British Columbia, as they may be in other jurisdictions. In particular, the British Columbia shrimp trawl industry does not support high by-catches of eulachon and believes that allowing the use of these devices may overcome the usual incentives to avoid fishing in areas with high eulachon by-catches.

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

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

The use and effectiveness of on board graders and “pickers” will be evaluated and additional restrictions may be implemented in the future.

5.5. Eulachon Monitoring

Information collected from the co-management Catch Sampling Program will be used to monitor in-season estimates of incidental eulachon by-catch in areas where eulachon by-catches can occur. These areas are offshore off the WCVI and Queen Charlotte Sound. By-catch action levels for eulachon by-catch are set annually in these areas in discussion with the Shrimp Trawl Sectoral Committee. The shrimp trawl industry and Fisheries and Oceans Canada is committed to controlling and minimizing the by-catch of this species.

In the event the estimate of eulachon by-catch from the fishery reaches the Eulachon Action Level in a given area, the fishery will continue under amended conditions to the shrimp trawl licence to permit the use of beam trawl only in that specific area. Beam trawl catch rates of eulachon in the past years have been regarded as having minimal risk to eulachon stocks. Under the amended Conditions of Licence, sampling will continue to monitor and assess eulachon by-catch with beam trawl gear. If the by-catch of eulachon by beam trawls is observed to increase above the level it has been over the last eight seasons of sampling (1997-2005), or 0.5 kg/hour, additional management actions may be implemented, such as time and area closures.

If required, amended Conditions of Licence will be sent in-season by registered mail from the Pacific Fishery Licensing Unit to all licence holders and will replace the original shrimp trawl Conditions of Licence in their entirety. Note that amended Conditions of Licence will be required to be on-board while undertaking fishing activities. Contact one of the Fishery Managers (see Appendix 3) for further information.

6. GENERAL INFORMATION

6.1. Commercial Vessels Engaged in First Nation's Food Fisheries

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

APPENDIX 2: POST SEASON REVIEW (2008/09 SEASON)

The shrimp catch for the 2008/09 fishing season was 563.9 tonnes (1.2 million lb), down 29% from 2007/08. Catch has declined due to reduced demand for pink shrimp with no machine peelers operating in BC. The reduction in market opportunities has reduced participation with only 65 of the 233 vessel based licences participating. Although there has been significant shrimp abundance in offshore areas, larger otter trawl vessels have not been active, and most of the vessels are smaller beam trawl vessels who fish close to home and sell their catch live at the dock. The concentration of effort near more populated centres in the Strait of Georgia results in these areas closing when the annual catch ceiling for at least one of the shrimp species is reached. In previous years, the fleet would then travel to more northerly inlets to continue fishing.

1. Management Plan Evaluation Criteria	Performance
a) Was there progress in maintaining the co-management approach for the 2008/2009 fishery? Were co-management programs accomplished successfully?	Yes. JPA with Pacific Coast Shrimpers Cooperative Association. PCSCA collected fees to operate hauls, observers, and logbook data entry.
b) Was harvest limited to the catch ceilings for each SMA?	Not in 2 species/areas. 19 SMAs fished. 31 SMA+Species combinations. 2 species quotas exceeded. (1 humpback and 1 coonstripe quota) TAC exceeded by less than 1% in individual SMAs.
c) How closely was the eulachon action levels (EAL) met? Has a more comprehensive approach to eulachon assessment and management been developed?	EAL not reached. WCVI EAL was 12.5 tonnes. Eulachon by-catch estimate was 0.2 tonnes. No effort by otter trawl vessels, low effort by beam trawls.
d) Was there adequate enforcement of this fishery?	Unable to determine if adequate – Shrimp Trawl is a low priority for enforcement activity.
e) What progress was made in regard to fishers' goals for the improved economics of the fishery, enhancing fishery values, or alternative management strategies?	Negative progress - high fuel prices, low landed value.
f) What progress was made with respect to managing and accounting for multiple shrimp species in the catch?	Area 18&19 - Observers on 4 vessels noted ability to avoid sidestripes. Area re-opened with no retention of sidestripes.
g) Were the egg-bearing females protected long enough for the larval hatch to complete prior to the fishery opening?	Yes, except for PRD and WCVI. Catch ceilings not achieved, areas left open for April and May.

h) Were fishery landings adequately monitored through the Catch Monitoring Program and harvest logs? Was there misreporting or under-reporting of catch? Were there problems with the Catch Monitoring Program in the opinion of industry members, the Department, or the Service Bureau?	Yes. No issues reported.
i) Was in-season stock assessment information incorporated into the in-season management of the fishery?	Yes. Bulletins published to website by October.
j) Were results compiled from the Catch Sampling Program? Can areas for improvement to selective fishing practices be identified?	Yes. By-catch of Eulachon and total by-catch monitored in-season. Reduction in rigid grate spacing would reduce by-catch in Beam trawls.
k) What was the participation in the fishery: number of vessels licensed, number meeting pre-condition for arranging catch monitoring, number actively fished for both "regular" and communal commercial licenses?	61 vessels paid fees, 59 had landings. No communal commercial licenses used.
l) How many communal licenses for FSC fisheries were issued? What were the First Nations catches of shrimp?	None. Possibly a small amount of shrimp caught for FSC.
m) Were any issues brought forward by First Nations and, if so, how were they addressed?	Low Eulachon returns to Central Coast and North Coast rivers. Nisga'a requested closure of mouth of Nass River to avoid vessel/eulachon interaction.
n) Were issues of safety in the operation and management of the fishery brought forward?	No.
o) How many amendments and scientific licenses were issued to experiment with selectivity devices? What were results?	None.
p) How many exploratory areas were fished? Has there been any information collected for stock assessment in those exploratory areas that were identified as productive for shrimp?	SMA 2IN fished but no observer, shrimp abundance was low so fishing did not continue long enough to send observer.
q) Was there any further progress in developing directed humpback shrimp fisheries?	No.

2. Enforcement Plan Evaluation Criteria	Performance
a) How many hours were spent on enforcement of this fishery? How many charges, warnings, seizures, and suspected violations? Did this change from last season?	9 occurrences, 3 violations which led to charges, court or warning.
b) How many occurrences were reported by the Catch Monitoring Service Bureau, and what was the nature of these occurrences?	Data not received as of Dec 2009.
c) Were there any other in-season enforcement issues and were any unresolved?	No.

For more information on the 2010/11 season, see the following documents:

Landings Quota Status Report (weekly in-season).

Shrimp Survey Bulletins (in-season as completed, see internet site).

These documents are available from Resource Managers (see Contacts) or the Pacific Region Shrimp internet site.

An annual Fishery Review is prepared for the Pacific Coast Shrimper's Co-operative Association. Requests for the Fishery Review can be directed to Archipelago Marine Research Association, 525 Head Street, Victoria, BC V9A 5S1.

APPENDIX 3: DEPARTMENTAL AND INDUSTRY CONTACTS

Contacts

Observe, Record, and Report (Enforcement Line)		(800) 465-4336
Fisheries Information and Shellfish Contamination Closure Update (24 Hours):		
	Toll free	(866) 431-3474
	Lower Mainland	(604) 666-2828
Shrimp Information Line		(888) 978-7888

Resource Management

Regional Resource Manager - Invertebrates	Russell Mylchreest	(604) 666-3869
Lead Shrimp Trawl Manager	Dan Clark	(250) 756-7327
Regional Recreational Fisheries Co-ordinator	Devona Adams	(604) 666-3271
North Coast Area (Areas 1 through 10) 417 2nd Avenue West Prince Rupert, B.C. V8J 1G8	Bryan Rusch Fax	(250) 627-3477 (250) 627-3427
Resource Manager – Port Hardy	Todd Johansson	(250) 902-2683
Resource Manager - First Nations Fisheries	Karen Kimura-Miller	(250) 627-3020
Resource Manager - Recreational Fisheries	Mark Reagan	(250) 627-3409
South Coast Area (Areas 11 through 27) 3225 Stephenson Point Road Nanaimo, B.C. V9T 1K3	General Inquiries Fax	(250) 756-7270 (250) 756-7162
Resource Management Biologist	Juanita Rogers	(250) 756-7268
Resource Management Biologist	Dan Clark	(250) 756-7327
Resource Manager - First Nations Fisheries	Jonathan Joe	(250) 756-7243
Resource Manager - Recreational Fisheries		
Resource Manager – Prawn and Shrimp by Trap	Laurie Convey	(250) 756-7233
Lower Fraser Area, Areas 28 and 29 Unit 3, 100 Annacis Parkway Delta, B.C. V3M 6A2	General Inquiries Fax	(604) 666-8266 (604) 666-7112
Resource Management Biologist	Bridget Ennevor	(604) 666-6390
Resource Manager - First Nations Fisheries	Debra Sneddon	(604) 666-8426
A/Resource Manager - Recreational Fisheries		(604) 666-6509

Science Branch

Pacific Biological Station 3190 Hammond Bay Road Nanaimo, B.C. V9T 6N7	Dennis Rutherford Ken Fong	(250) 756-7174 (250) 756-7368
Shellfish Data Unit	Leslie Barton	(250) 756-7306

Conservation and Protection

Field Supervisor Derek Chung (604) 664-9308

Commercial Licensing

Pacific Fishery Licence Unit (604) 666-0566
Suite 200 - 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

Oceans Directorate

Oceans, Habitat and Enhancement Bruce Reid (604) 666-0209

Aquaculture

Director, Aquaculture Division Andrew Thomson (604) 666-7009

British Columbia Ministry of Environment

Oceans and Marine Fisheries Branch Barron Carswell (250) 953-3417

Canadian Food Inspection Agency

Vancouver (604) 666-6513
400 - 4321 Still Creek Drive Fax (604) 666-4440
Burnaby, B.C. V5C 6S7

Victoria (250) 363-3455
4475 Viewmont Ave.
Victoria, BC V8Z 6L8

Parksville (250) 248-4772
457 E. Stanford Ave.
Parksville, BC V6P 1V7

Pacific Coast Shrimpers' Co-operative Association

Facilitator Lorne Clayton (250) 658-0179

Shrimp Trawl Service Provider

Archipelago Marine Research Ltd. (250) 383-4535

Catch Monitoring
 At-sea observer Co-ordinator
 Catch Monitoring Hails www.archipelago.ca

Jennifer Toole
 Scott Buchanan
 Linda Daniels

1. SHRIMP TRAWL SECTORAL COMMITTEE

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

The STSC terms of reference and meeting calendar are available from the Resource Managers (see Contacts) or from the Department's consultation internet site at:

www-ops2.pac.dfo-mpo.gc.ca/xnet/content/consultations/shellfishInvertebrates/shrimp/default_e.htm

The Shrimp Trawl Sectoral Committee (STSC) was elected in the fall of 2005 for a three-year term. Committee members and their contact numbers are listed below.

Vessel Owner Representatives	Phone	Fax
Joe Bauer, UFAWU	(604) 277-9447	(604) 277-9447
Ray Silvey (Alternate) and FS licence holder representative	(250) 757-8700	(250) 757-8700
Phil Burgess philburgess@telus.net	(250) 248-9401	(250) 248-9415
Russ Lloyd (Alternate) russlloyd@bcsupernet.com	(250) 752-7596	
Bruce Evans bruceanddawn@shaw.ca	(250) 652-1767	(250) 652-1767
Alan Holt (Alternate)	(250) 753-0806	(250) 753-4135
Bill Gilker bdgilker@citytel.net	(250) 624-6270	
Vance Whyte whythouse5@shaw.ca	250-724-6757	
Guy Whyte (Alternate) guywhyte@shaw.ca	(250) 709-9976	

Processor Representatives			
Ron Higgs rhiggs@albion.bc.ca	Albion Fisheries Ltd.	(604) 875-9424	(604) 707-0826
Harry Mose	Bornstein Seafoods of Canada Ltd.	(250) 951-9700 (250) 949-1545	(250) 951-9938
Roger Paquette	Hub City Fisheries	(250) 753-4135	(250) 753-2942
Other Representatives			
Bob Williams bob.williams@gov.bc.ca	B.C. Ministry of Environment	(250) 953-3422	(250) 953-3401
Jennifer Toole	Archipelago Marine Research Ltd.	(250) 383-4535	(250) 383-0103
Lorne Clayton	Pacific Coast Shrimpers' Cooperative Association	(250) 658-0179	

APPENDIX 4: SAFETY AT SEA IN THE SHRIMP TRAWL FISHERY

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), WorkSafe BC, 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., WorkSafe BC 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 have formalized cooperation through an MOU 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.

Useful publications include Transport Canada Publication TP 10038 ‘Small Fishing Vessel Safety Manual’ which can be obtained from TC or printed from their website:

www.tc.gc.ca/marinesafety/tp/tp10038/menu.htm

There are several issues that are important for fishing vessel safety, including three priority areas: 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.

Fish Safe BC

Vessel masters and crew are encouraged to become more knowledgeable regarding vessel stability. FishSafe BC developed the Fish Safe Stability Education Course, which is available to all fishermen who want to improve their understanding of stability and find practical application to their vessel's operation.

Fish Safe is coordinated by Gina Johansen and 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 claims process.

For further information, contact:

Gina Johansen Phone: 604-261-9700
Fishing Industry Safety Coordinator Direct Line: 778-329-0970
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. Weather

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

www.weatheroffice.ec.gc.ca/marine/region_03_e.html

1.5. 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 coordinate 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.

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.pacific.ccg-gcc.gc.ca/index_e.htm

1.6. 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 (above).

1.7. 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.

1.8. 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 WorkSafe BC website:

www.worksafebc.com

For further information, contact an Occupational Safety Officer

Shane Neifer, Northern BC (250) 615-6640

Bruce Logan, Lower Mainland (604) 244-6477

Pat Olsen, Vancouver Island (250) 218-4866

Mark Lunny, Vancouver Island (250) 334-8732

Dave Clarabut, Vancouver Island (250) 881-3469

or the Focus Sector Manager for fishing:

Bruce Clarke, Prince George, (250) 612-3708)

For information on projects related to commercial fishing contact:

Ellen Hanson, (604) 233-4008

toll free 1-888 621-7233 ext. 4008

email: Ellen.Hanson@worksafebc.com

Although the entire set of Occupational Health and Safety Regulations (OHSR) applies to fishing operations, there are specific requirements of interest to shrimp fish harvesters.

Diving, Fishing and Other Marine Operations – Part 24.

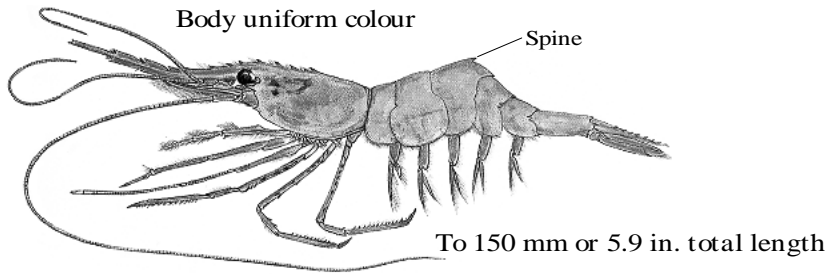
Equipment and Work Areas – OHSR S.24.88, S.24.102, S.24.104 and S.24.205

Safe shooting and hauling procedures for trawls – OHSR S.24.138 and S.24.140

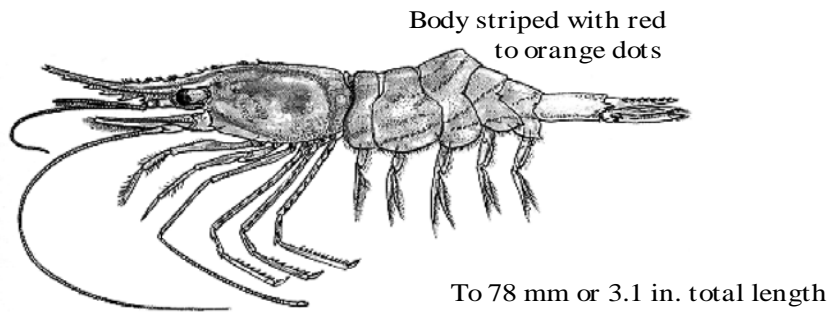
Securing shrimp and fish boxes – OHSR S.24.139

The regulations do change and are updated from time to time, so check with WorkSafe for up-to-date versions.

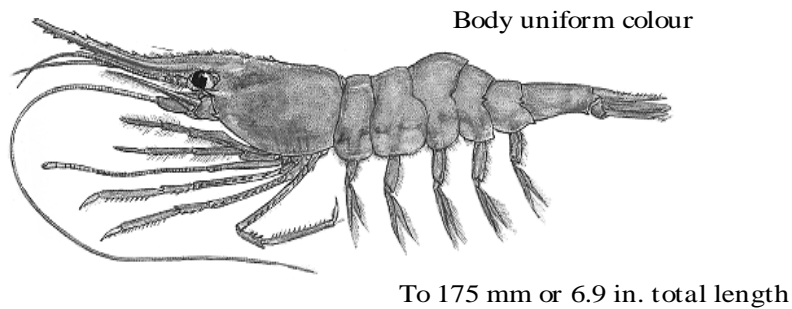
APPENDIX 5: IDENTIFICATION OF COMMERCIAL SHRIMP SPECIES



Pandalus eous (*P. borealis*)

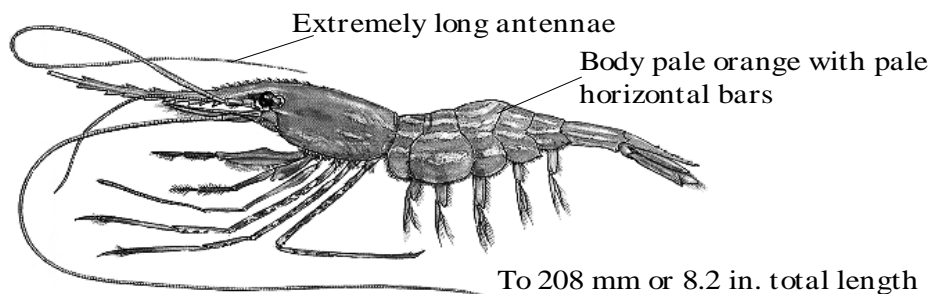


Pandalus goniurus

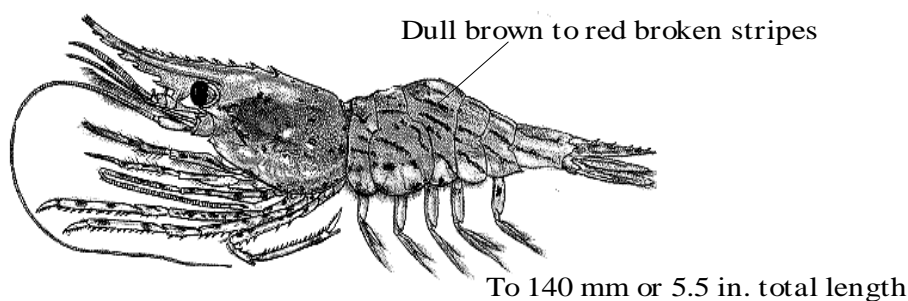


Pandalus jordani

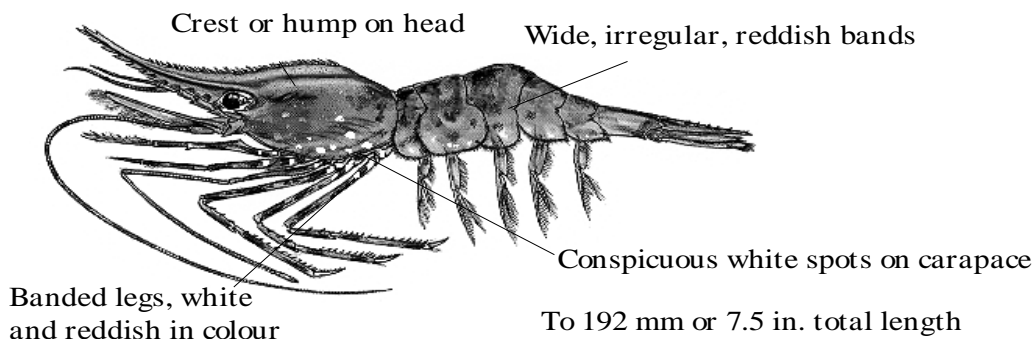
Pink Shrimp - Spiny, Flexed and Smooth



Pandalopsis dispar
Sidestripe Shrimp

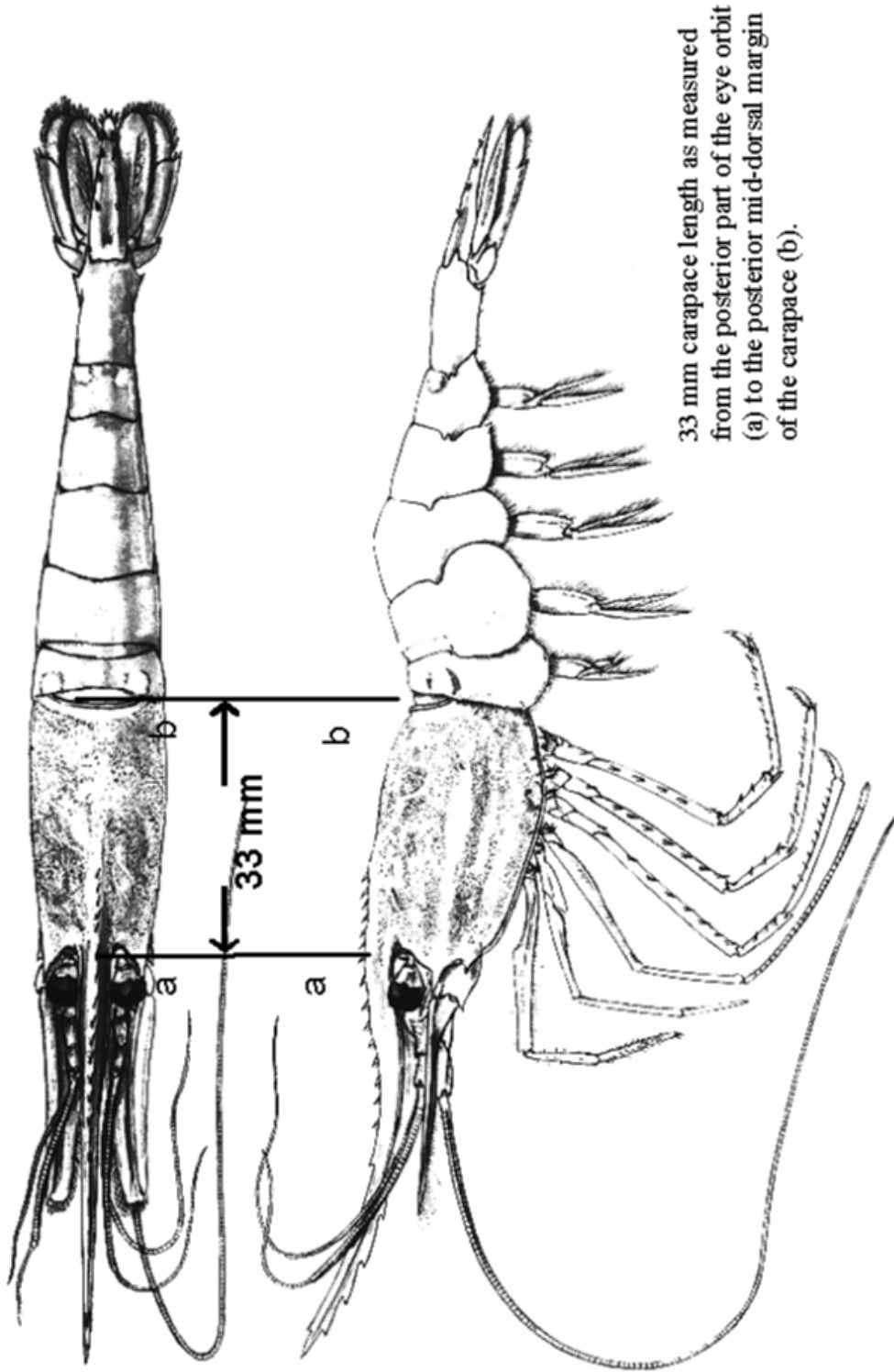


Pandalus danae
Coonstripe Shrimp (Dock)



Pandalus hypsinotus
Humpback Shrimp (King)

APPENDIX 7: PRAWN MINIMUM SIZE LIMIT



33 mm carapace length as measured from the posterior part of the eye orbit (a) to the posterior mid-dorsal margin of the carapace (b).

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

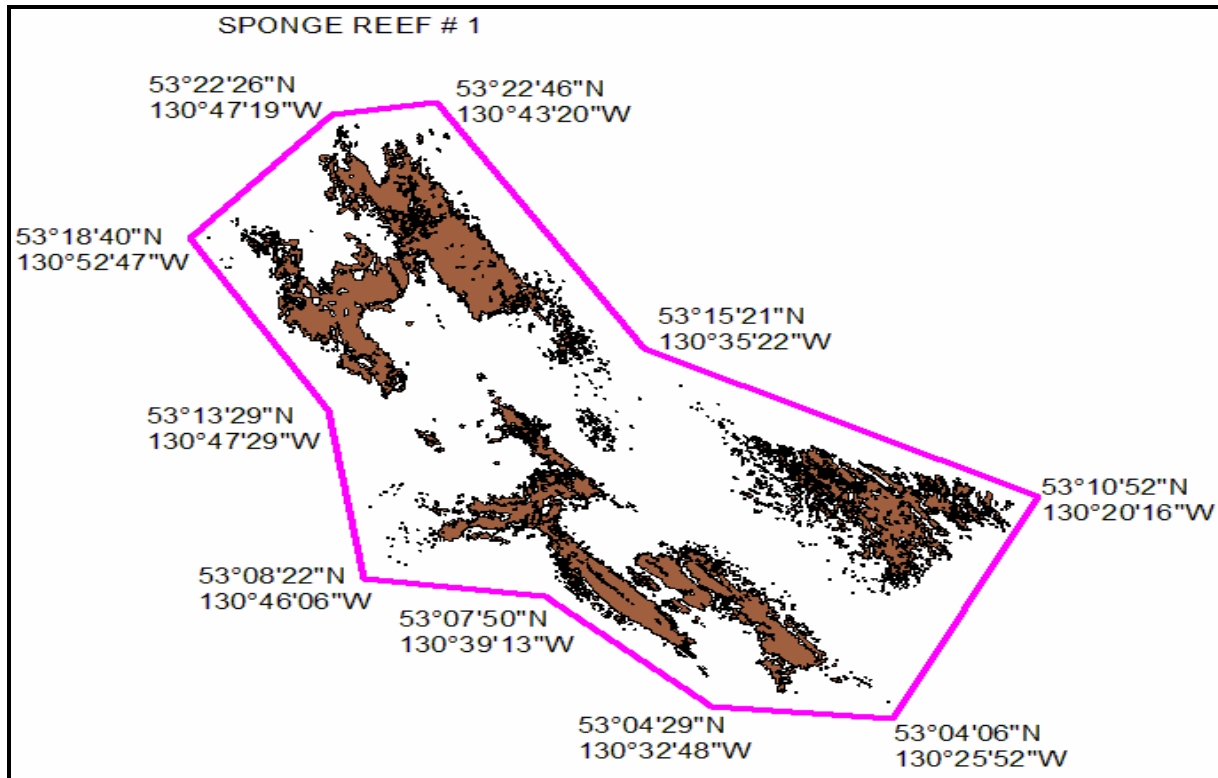
Four reef areas located in waters of the Eastern Queen Charlotte Sound and Hecate Strait are closed year round to all bottom trawling. The closures for the four reefs are defined in three closed areas. The following graphic illustrations of each closed area are for information purposes only.

The intent of these closures is to provide protection for the four unique sponge reef ecosystems. Fisheries and Oceans Canada will continue to monitor fishing activity in adjacent areas and should current measures not be providing needed protection further modifications to the closed areas or additional management measures may be considered.

Sponge Reef Number 1

Those waters of Subareas 105-2 and 106-1 that lie inside a line that:

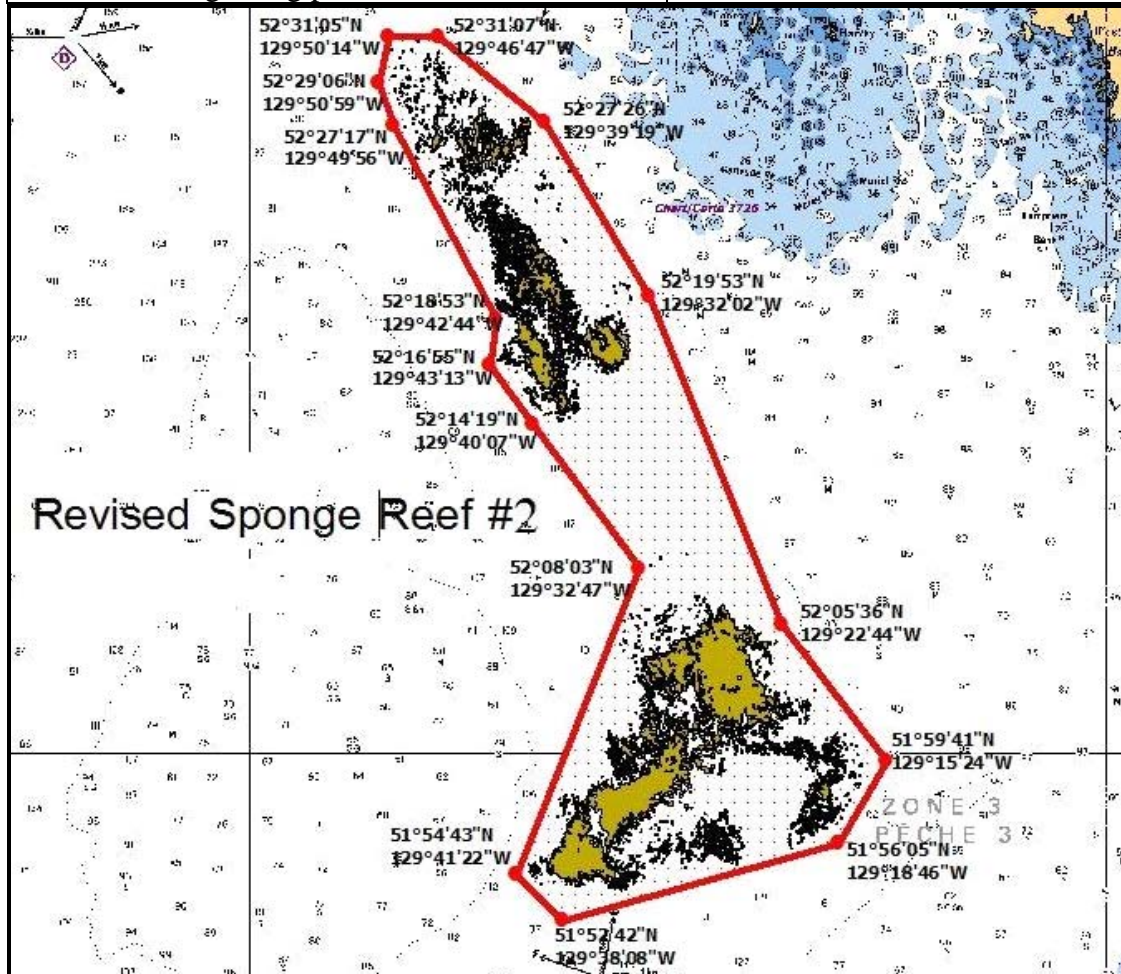
Begins at	53°18'40"N latitude	130°52'47"W longitude
Then southerly to	53°13'29"N latitude	130°47'29"W longitude
Then to	53°08'22"N latitude	130°46'06"W longitude
Then to	53°07'50"N latitude	130°39'13"W longitude
Then to	53°04'29"N latitude	130°32'48"W longitude
Then to	53°04'06"N latitude	130°25'52"W longitude
Then to	53°10'52"N latitude	130°20'16"W longitude
Then to	53°15'21"N latitude	130°35'22"W longitude
Then to	53°22'46"N latitude	130°43'20"W longitude
Then to	53°22'26"N latitude	130°47'19"W longitude
Then to the beginning point		



Sponge Reef Number 2

Those waters of Subareas 106-2, 107-1 and 107-2 that lie inside a line that:

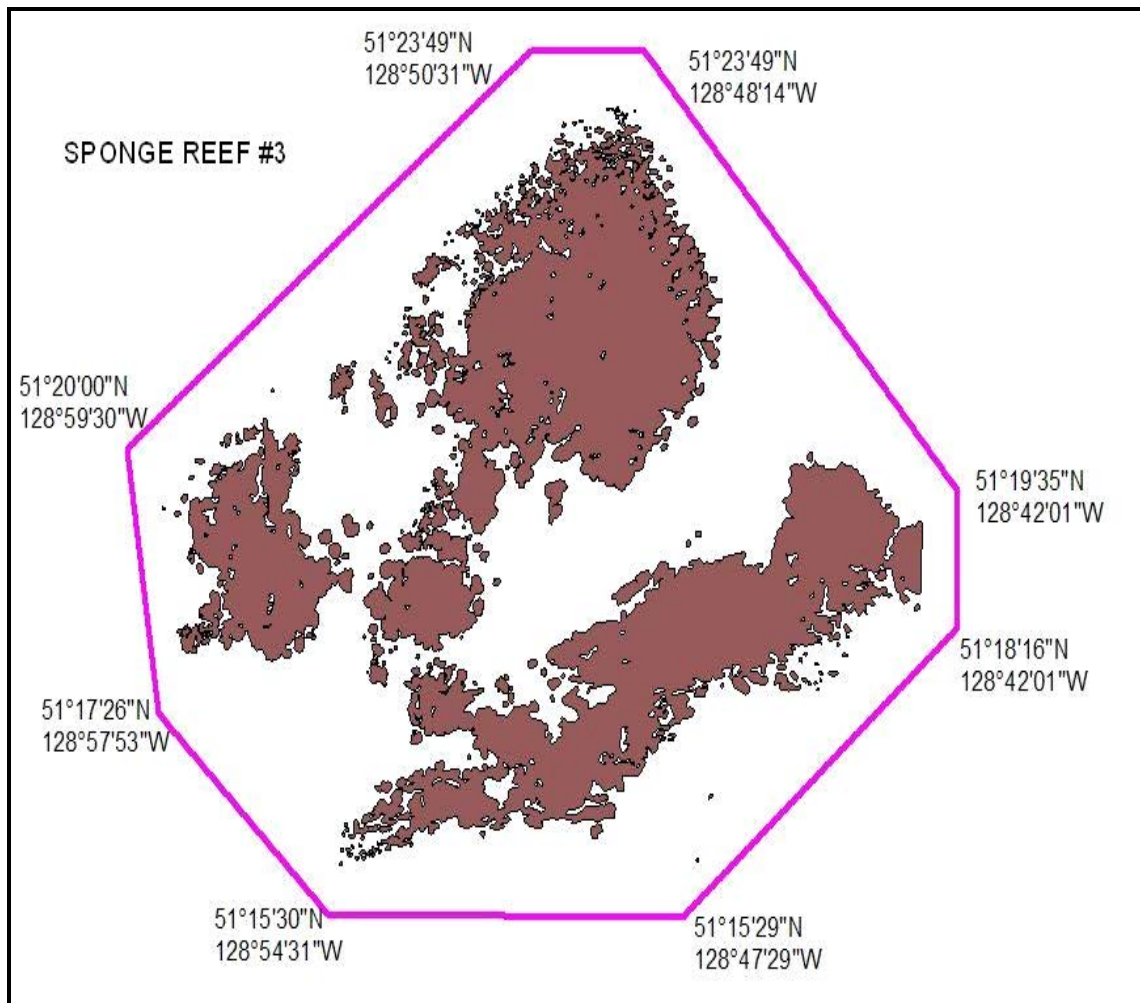
Begins at	52°31'05"N latitude	129°50'14"W longitude
Then southerly to	52°29'06"N latitude	129°50'59"W longitude
Then to	52°27'17"N latitude	129°49'56"W longitude
Then to	52°18'53"N latitude	129°42'44"W longitude
Then to	52°16'55"N latitude	129°43'13"W longitude
Then to	52°14'19"N latitude	129°40'07"W longitude
Then to	52°08'03"N latitude	129°32'47"W longitude
Then to	51°54'43"N latitude	129°41'22"W longitude
Then to	51°52'42"N latitude	129°38'08"W longitude
Then to	51°56'05"N latitude	129°18'46"W longitude
Then to	51°59'41"N latitude	129°15'24"W longitude
Then to	52°05'36"N latitude	129°22'44"W longitude
Then to	52°19'53"N latitude	129°32'02"W longitude
Then to	52°27'26"N latitude	129°39'19"W longitude
Then to	52°31'07"N latitude	129°46'47"W longitude
Then to the beginning point		



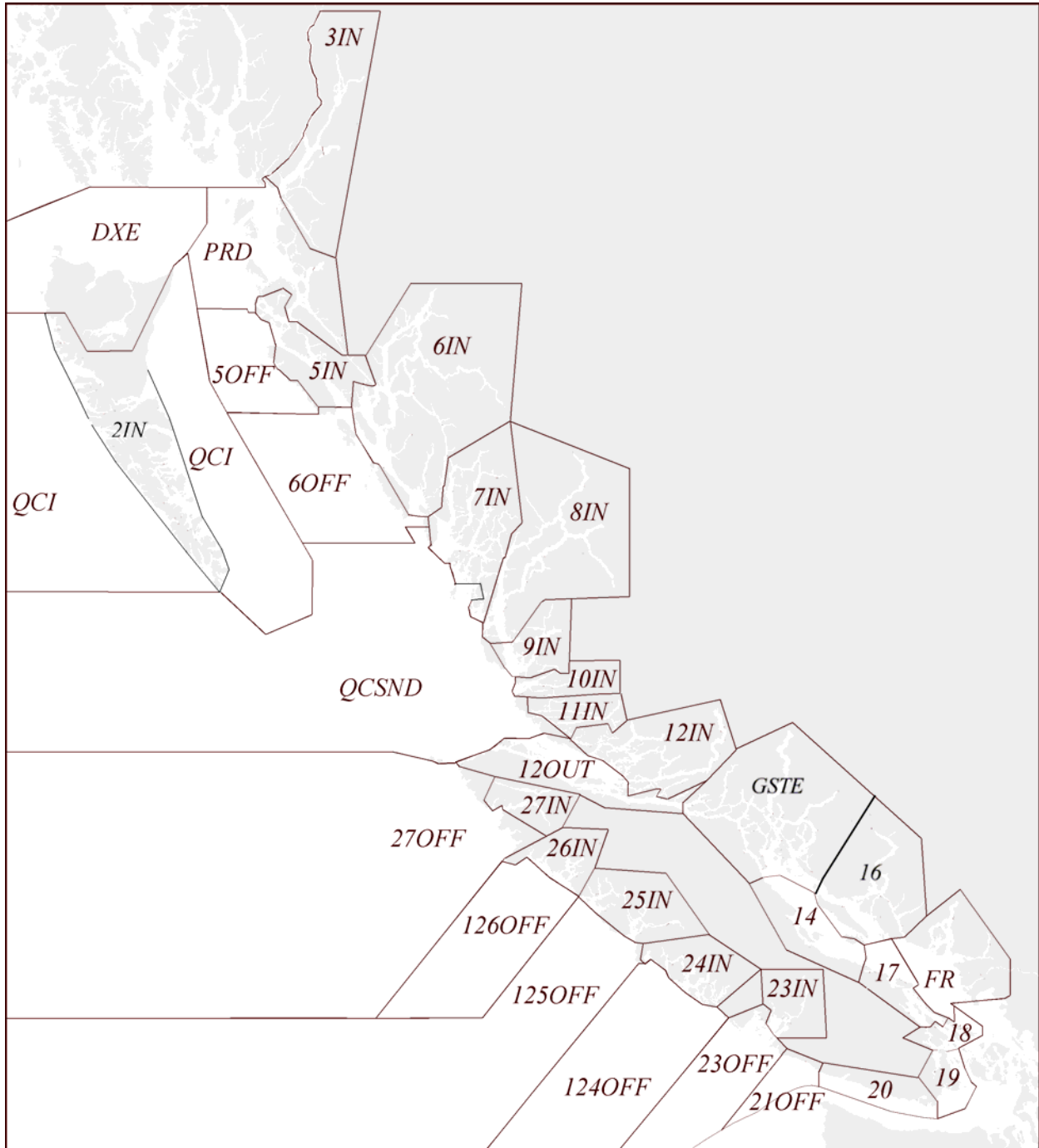
Sponge Reef Number 3

The waters of Area 110 that lie inside a line that:

Begins at	51°23'49"N latitude	128°50'31"W longitude
Then southerly to	51°20'00"N latitude	128°59'30"W longitude
Then to	51°17'26"N latitude	128°57'53"W longitude
Then to	51°15'30"N latitude	128°54'31"W longitude
Then to	51°15'29"N latitude	128°47'29"W longitude
Then to	51°18'16"N latitude	128°42'01"W longitude
Then to	51°19'35"N latitude	128°42'01"W longitude
Then to	51°23'49"N latitude	128°48'14"W longitude
Then to the beginning point		



APPENDIX 9: MAPS OF SHRIMP MANAGEMENT AREAS



Shrimp Management Areas of the British Columbia Coast

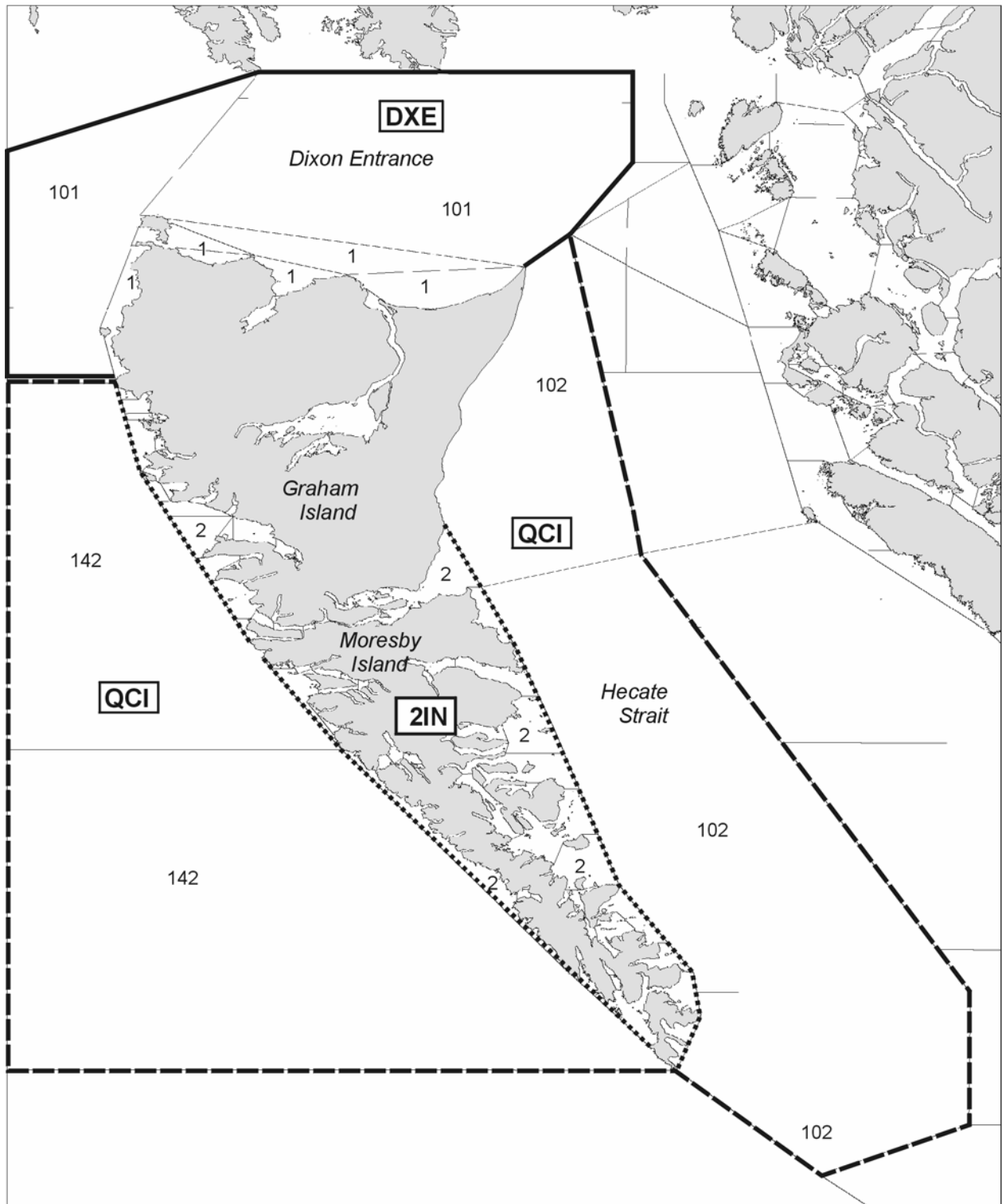


Figure 1: Shrimp Management Areas: DXE (Areas 1, 101), QCI (Areas 102, 142) and 2IN (Area 2).

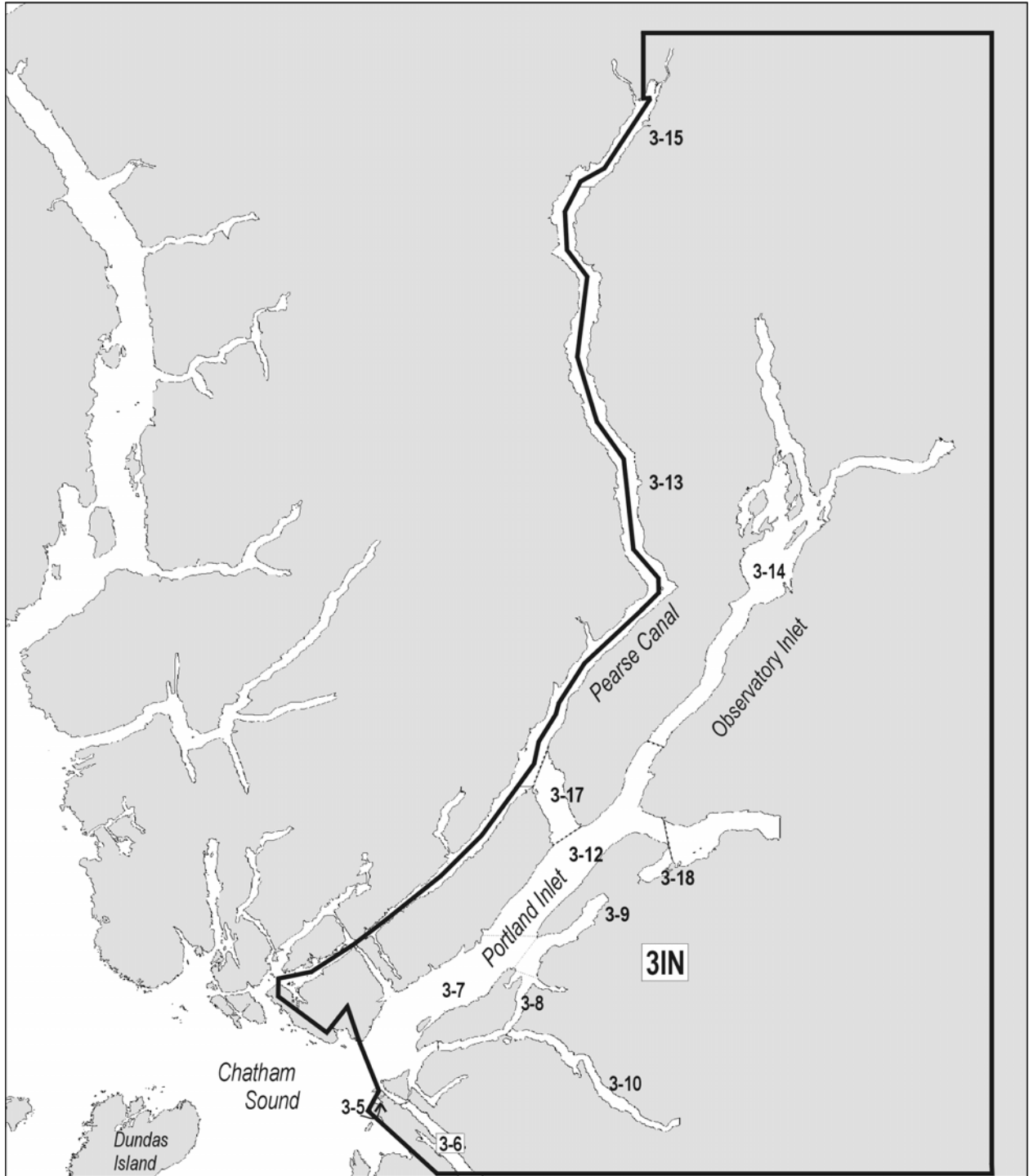


Figure 2: Shrimp Management Area: 3IN (Areas 3-5 to 3-18).

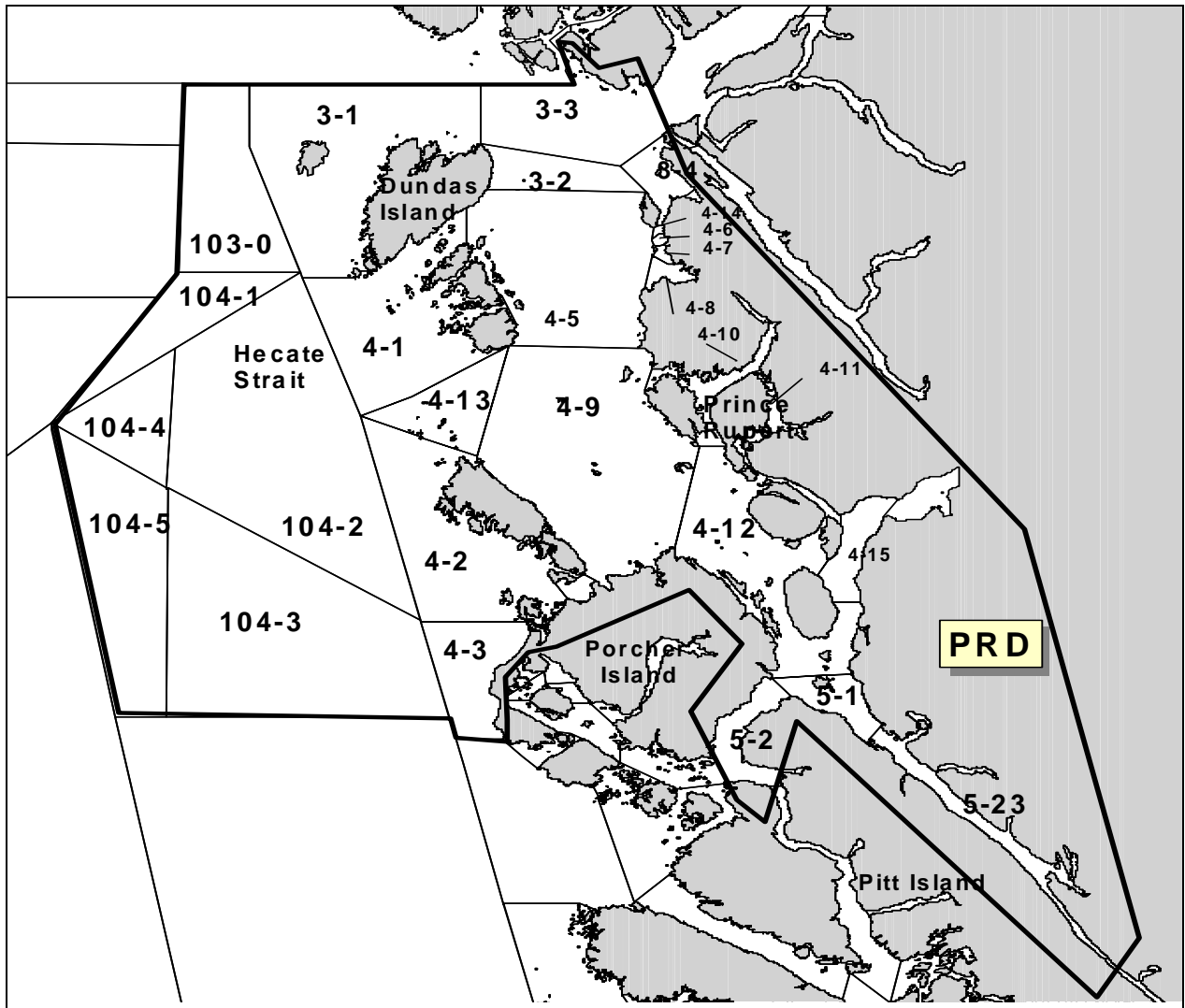


Figure 3: Shrimp Management Area: PRD (3-1 to 3-4, 103, 4-1 to 4-15, 104, 5-1, 5-2 and 5-23).

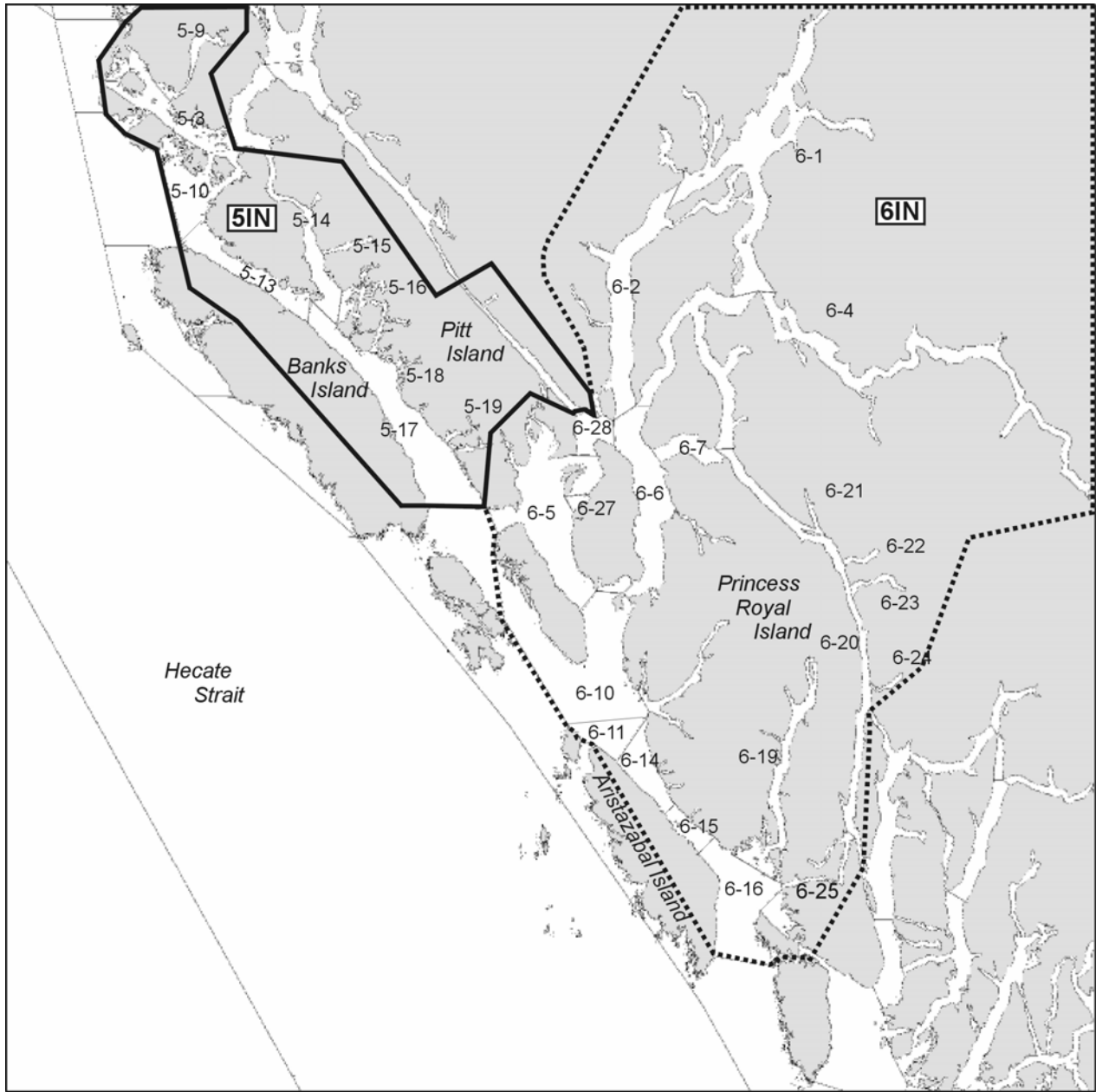


Figure 4: Shrimp Management Areas: 5IN (Areas 5-3 to 5-10, 5-12 to 5-19, 5-21, 5-24) and 6IN (Areas 6-1 to 6-8, 6-10 to 6-12, 6-14 to 6-16, 6-18 to 6-28).

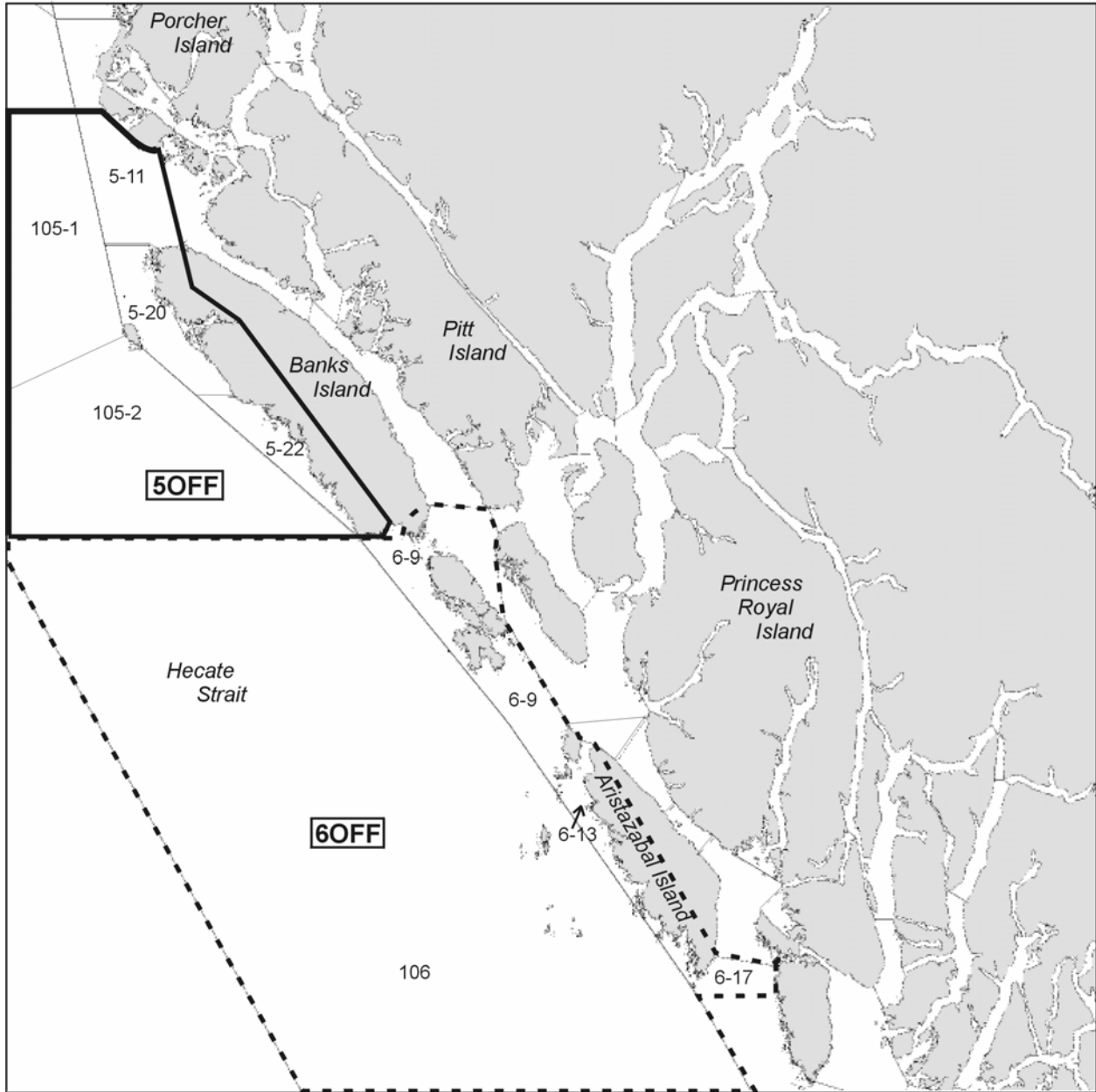


Figure 5: Shrimp management Areas: 5OFF (Areas 5-11, 5-20, 5-22, 105) and 6OFF (Areas 6-9, 6-13, 6-17, 106).

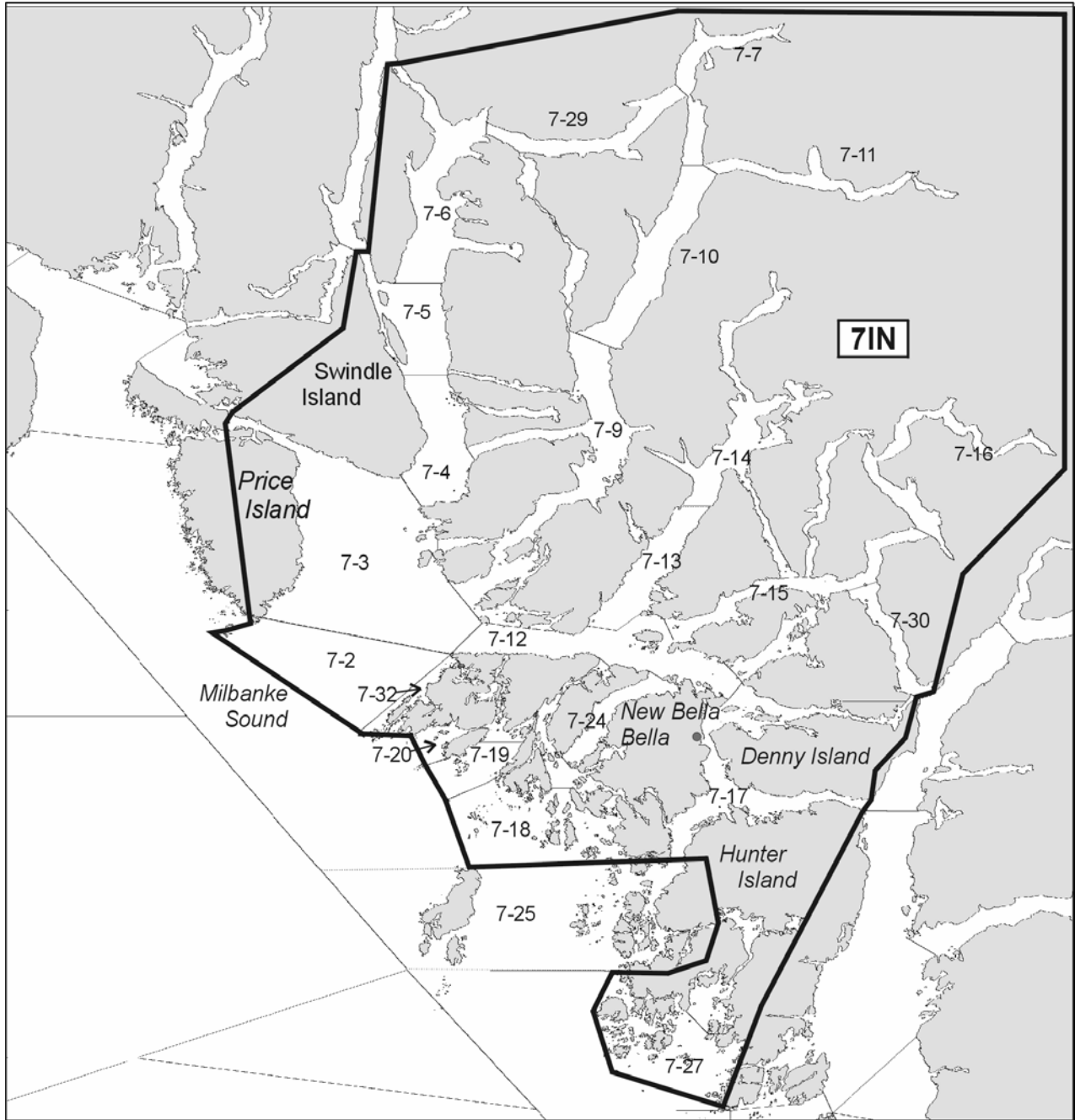


Figure 6: Shrimp Management Area: 7IN (Areas 7-2 to 7-24, 7-27 to 7-30).



Figure 7: Shrimp Management Areas: 8IN (Areas 8-2 to 8-16).

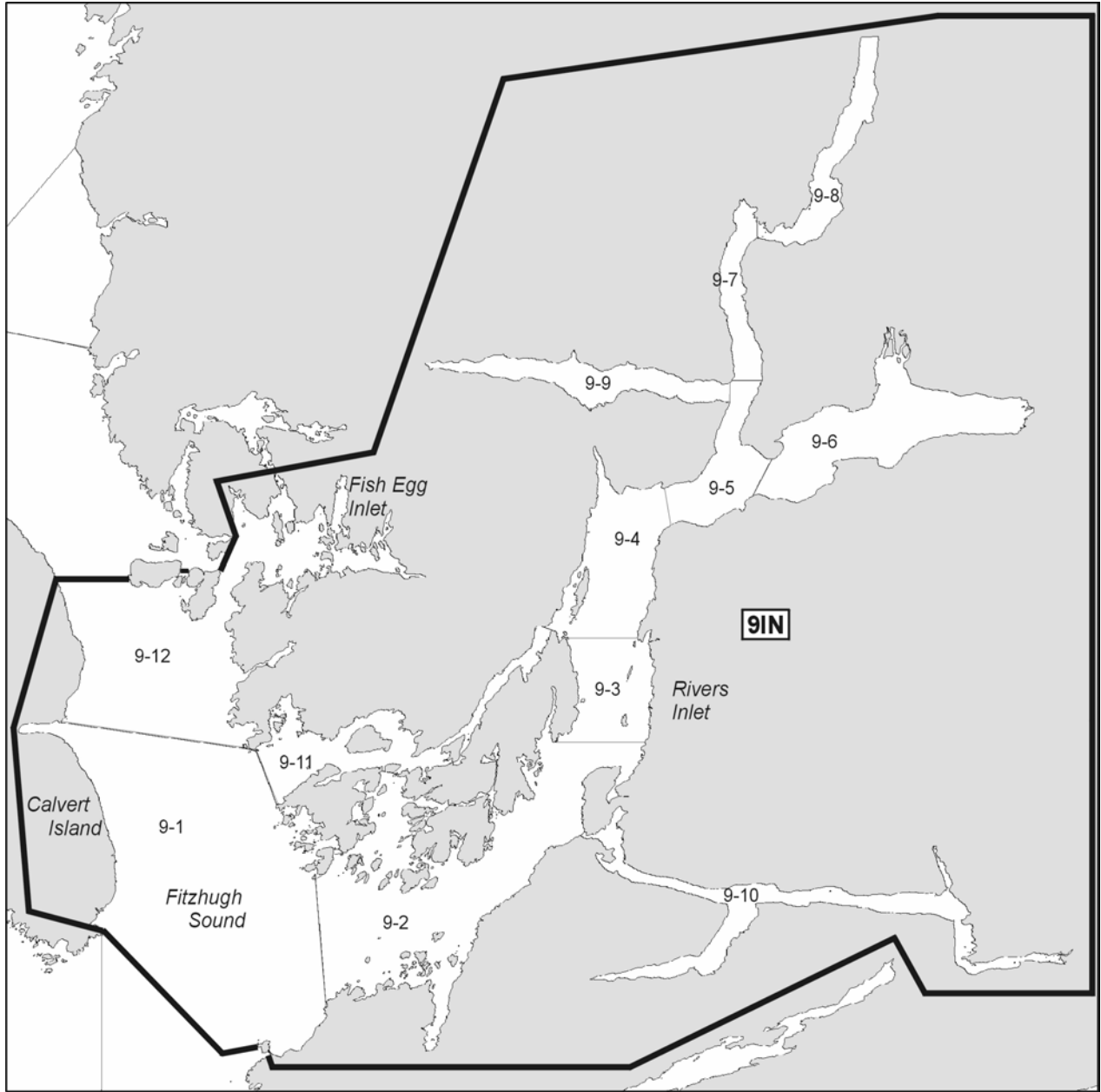


Figure 8: Shrimp Management Area: 9IN (Areas 9-1 to 9-12).

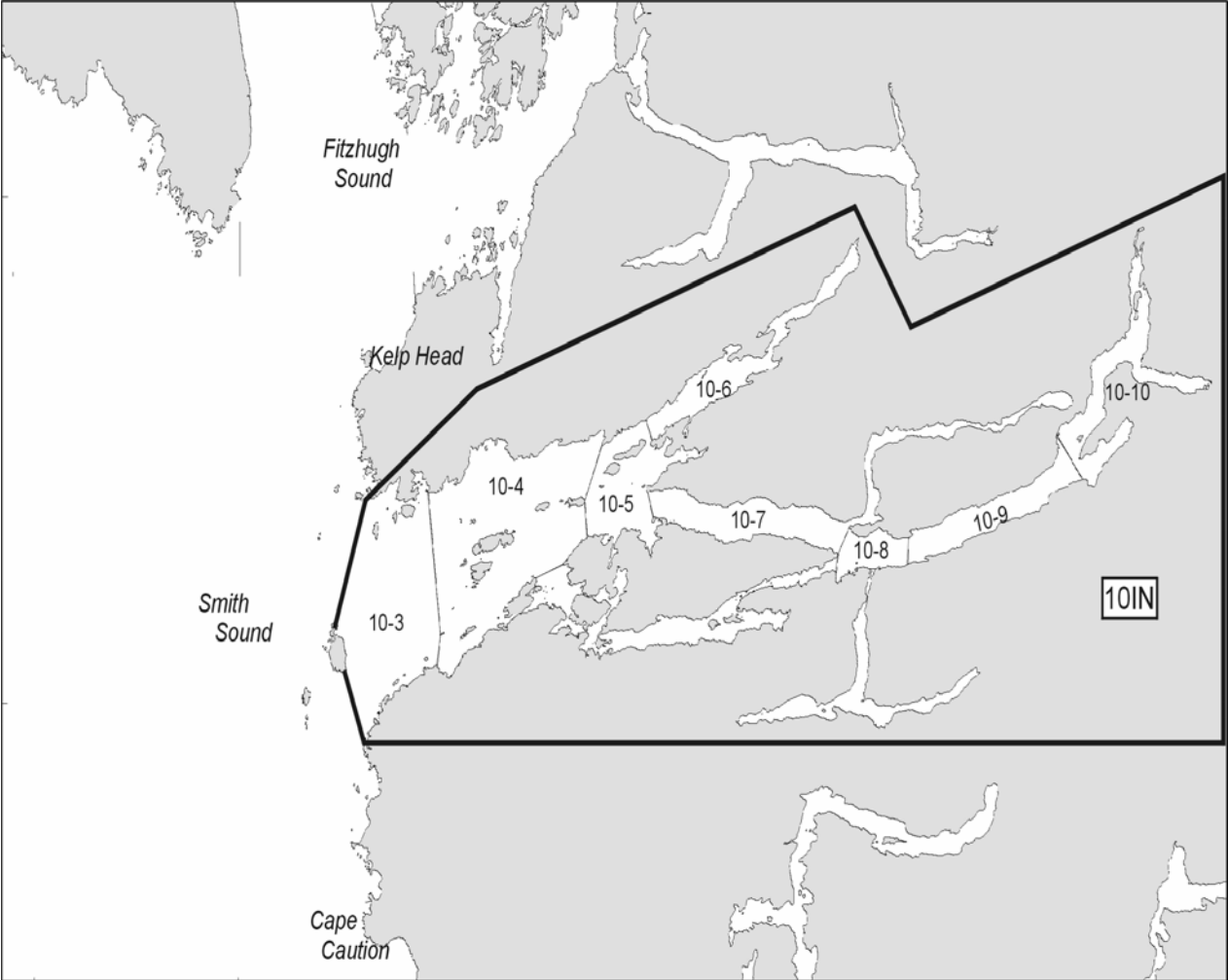


Figure 9: Shrimp Fishery Management Area: 10IN (Areas 10-3 to 10-12).

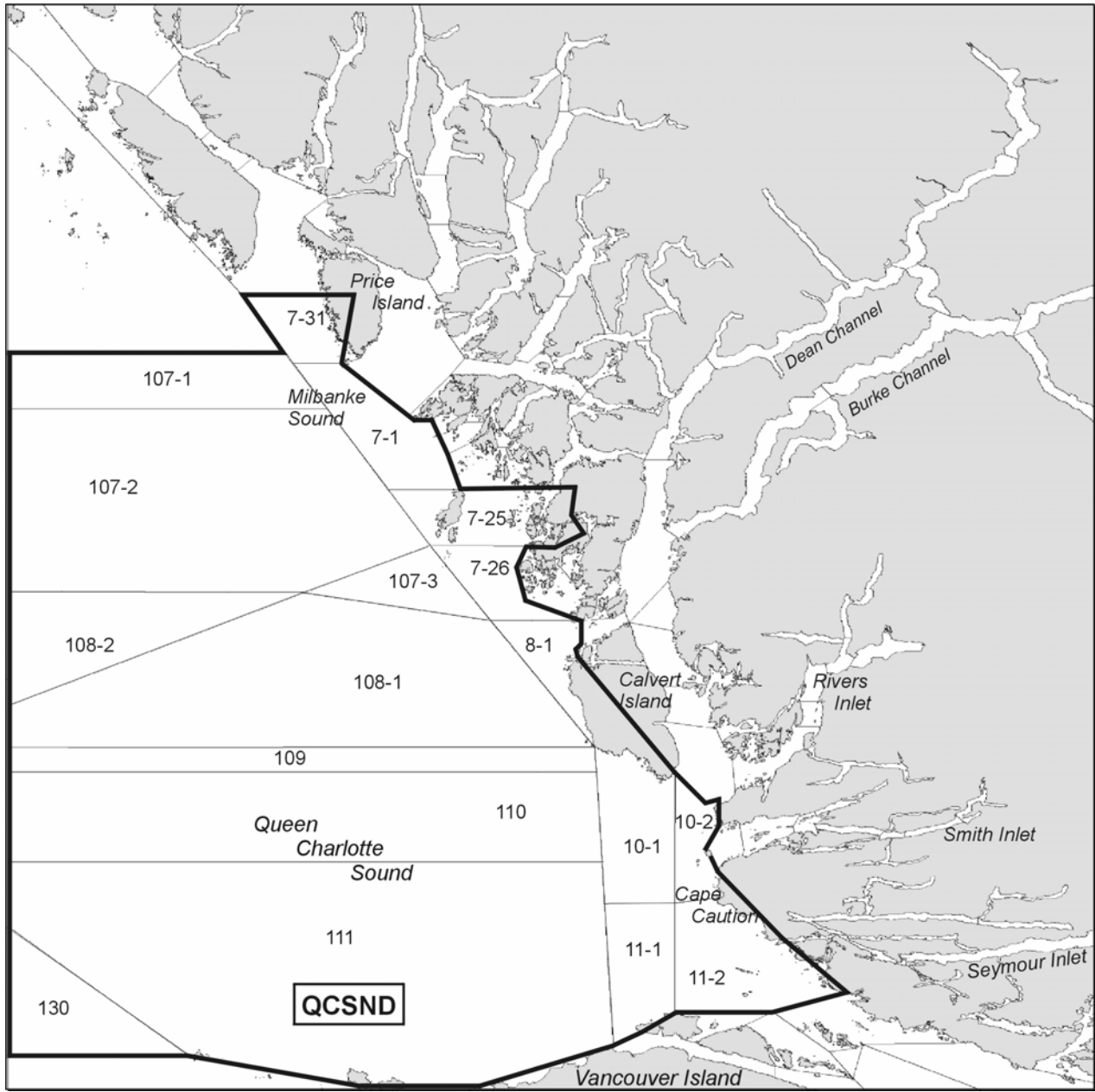


Figure 10: Shrimp Management Area: QCSND (Areas 107, 7-1, 7-25, 7-26, 7-31, 108, 8-1, 109, 110, 10-1, 10-2, 111, 11-1, 11-2, 130).

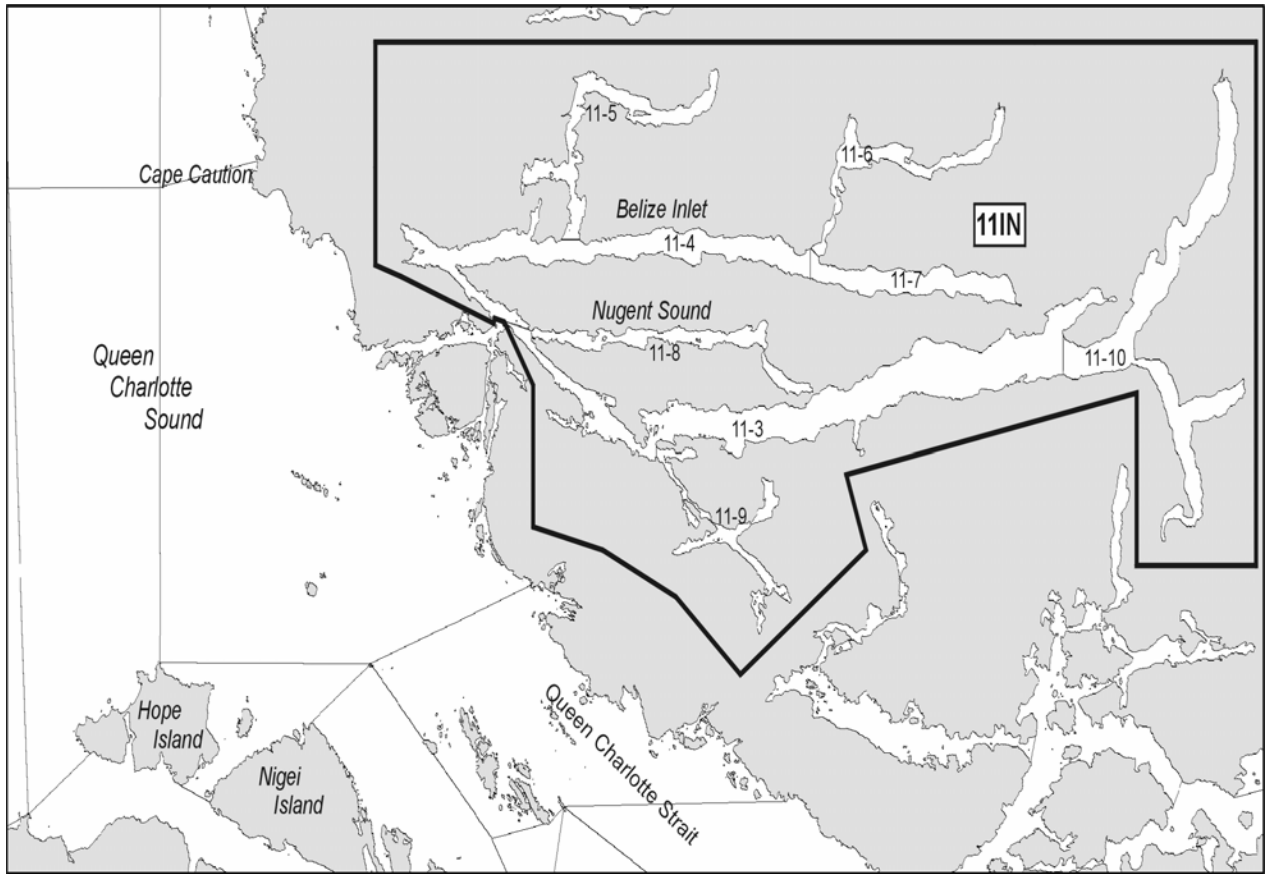


Figure 11: Shrimp Management Area: 11IN (Areas 11-3 to 11-10).

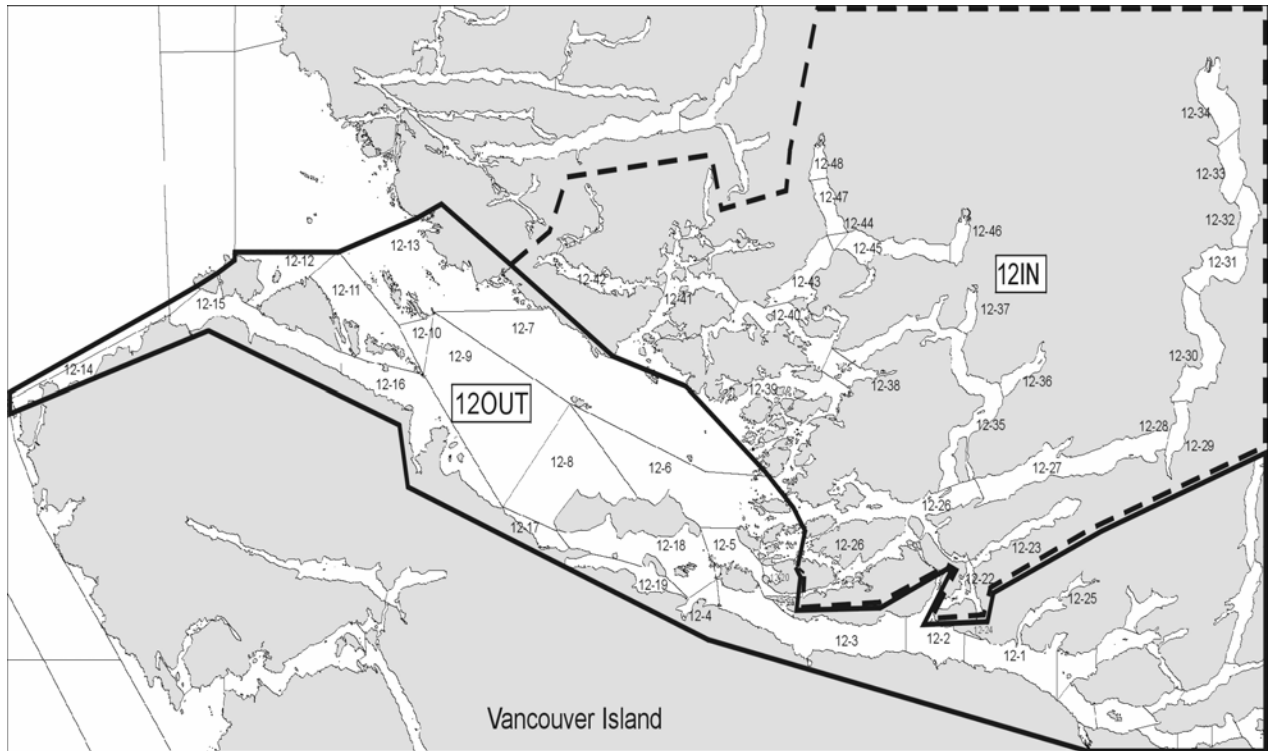


Figure 12: Shrimp Management Areas: 12IN (Areas 12-22, 12-23, 12-26 to 12-48) and 12OUT (Areas 12-1 to 12-21, 12-24, 12-25).

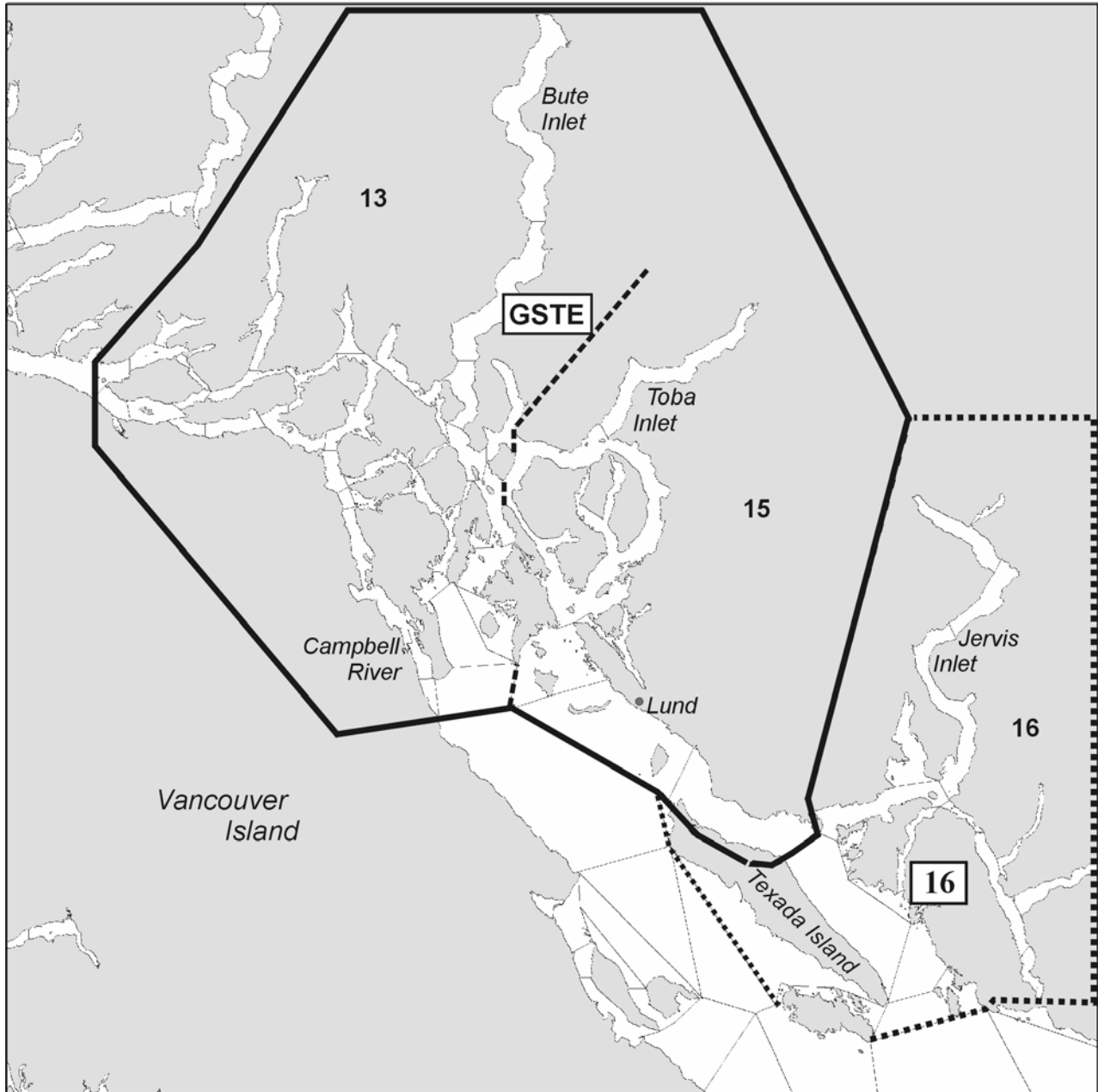


Figure 13: Shrimp Management Areas: GSTE (Area 13, except for 13-34 and Area 15) and 16 (Area 16).

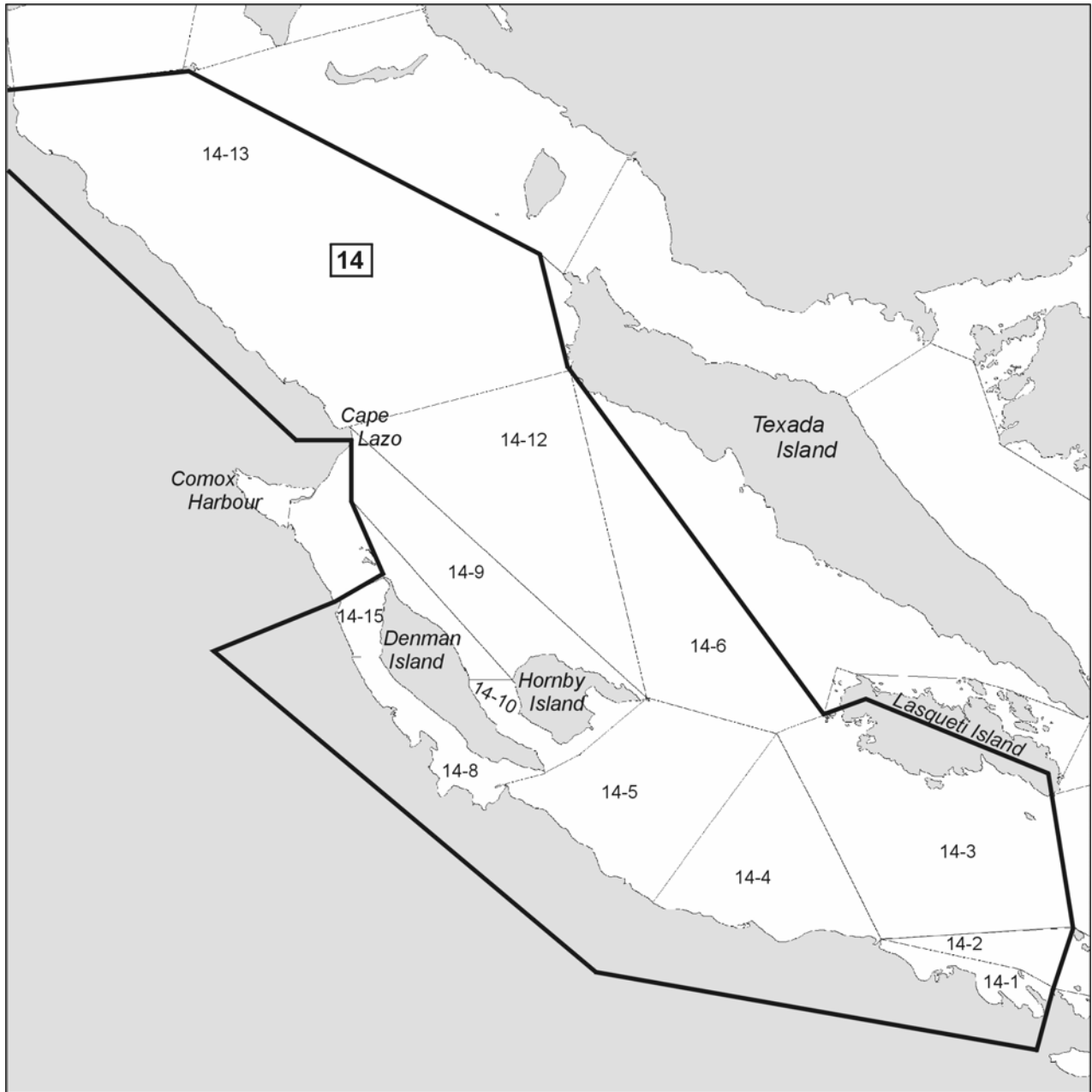


Figure 14: Shrimp Management Area: 14 (Subareas 14-1 to 14-7, 14-9, 14-10, 14-12 and 14-13).

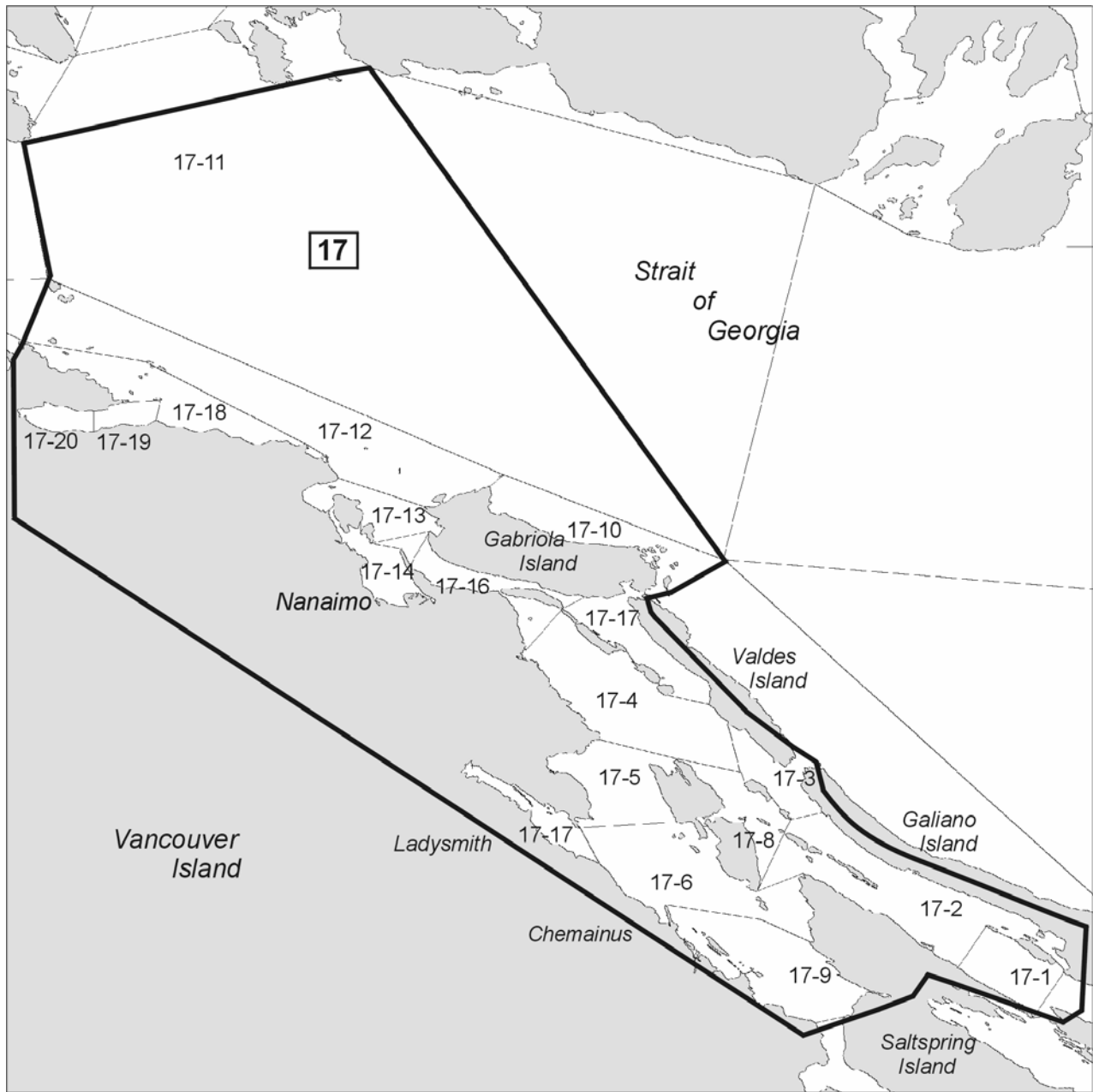


Figure 15: Shrimp Management Area: 17 (Subareas 17-1 to 17-6, 17-8 to 17-13 and 17-15 to 17-21).

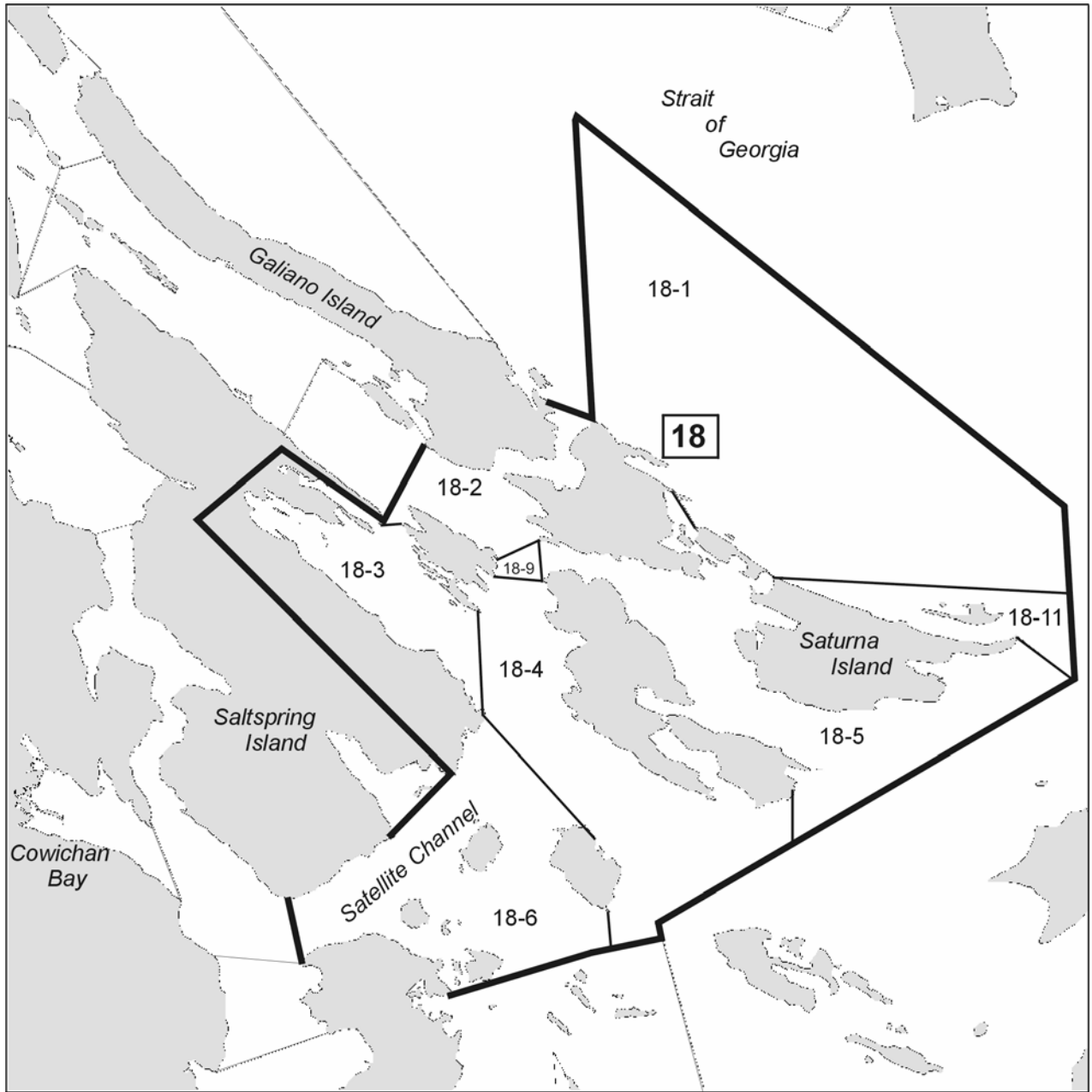


Figure 16: Shrimp Management Area: 18 (Subareas 18-1 to 18-6, 18-9 and 18-11).

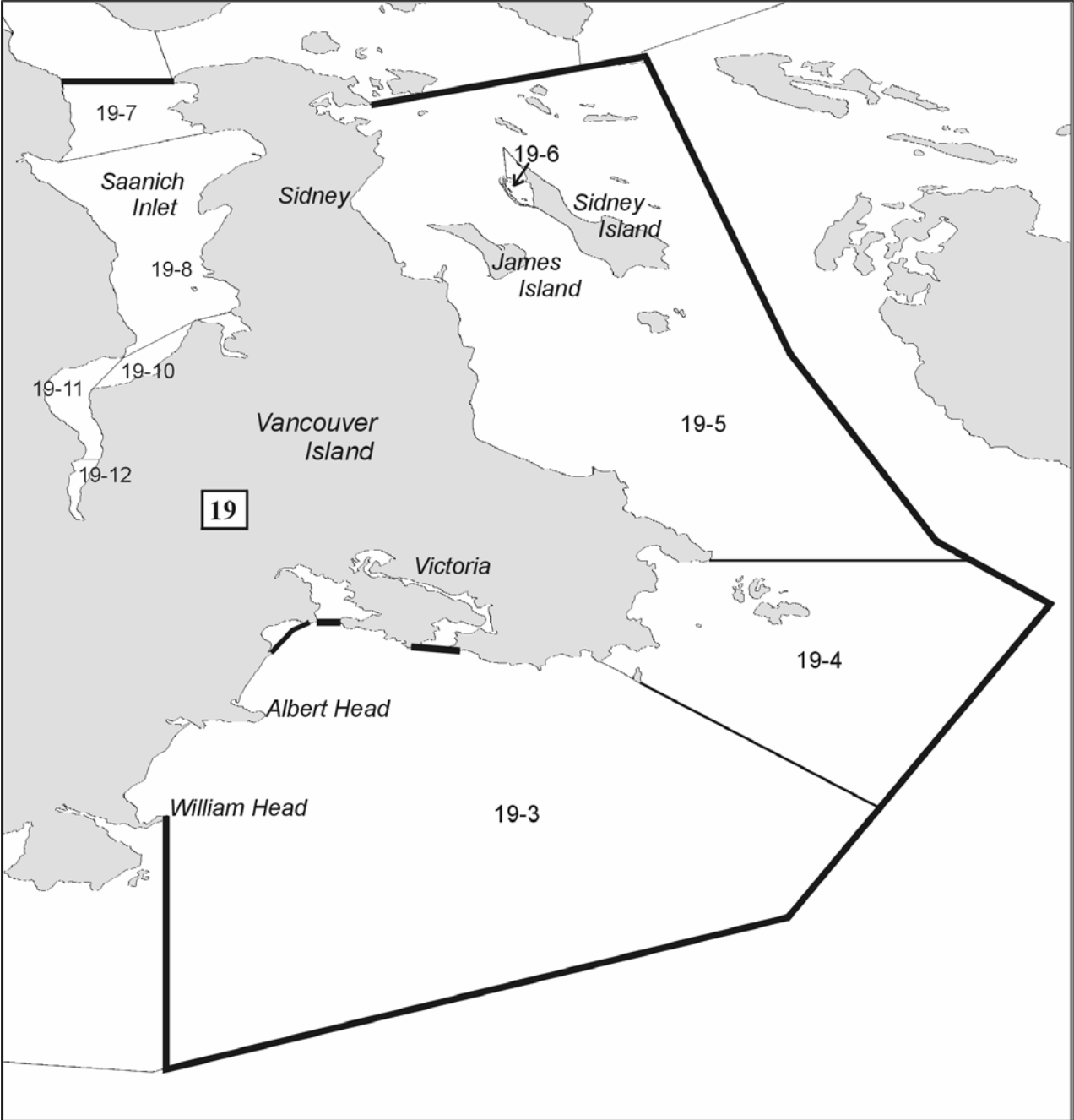


Figure 17: Shrimp Management Area: 19 (Subareas 19-3 to 19-5).



Figure 18: Shrimp Management Area: FR (Subareas 28-1 to 28-7, 28-9 and Subareas 29-1 to 29-6).

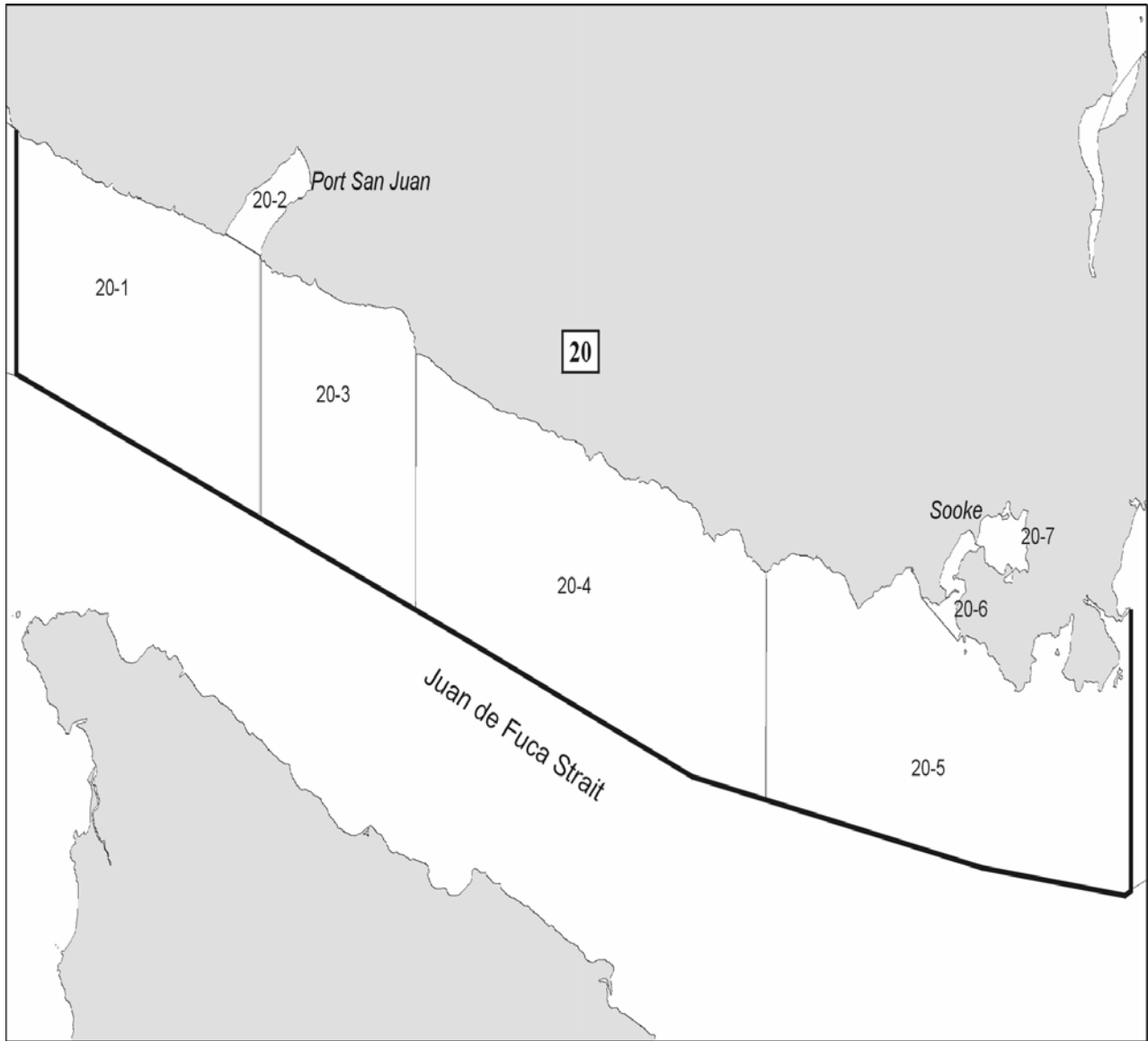


Figure 19: Shrimp Management Area: 20 (Subareas 1, 3, 4 and 5).

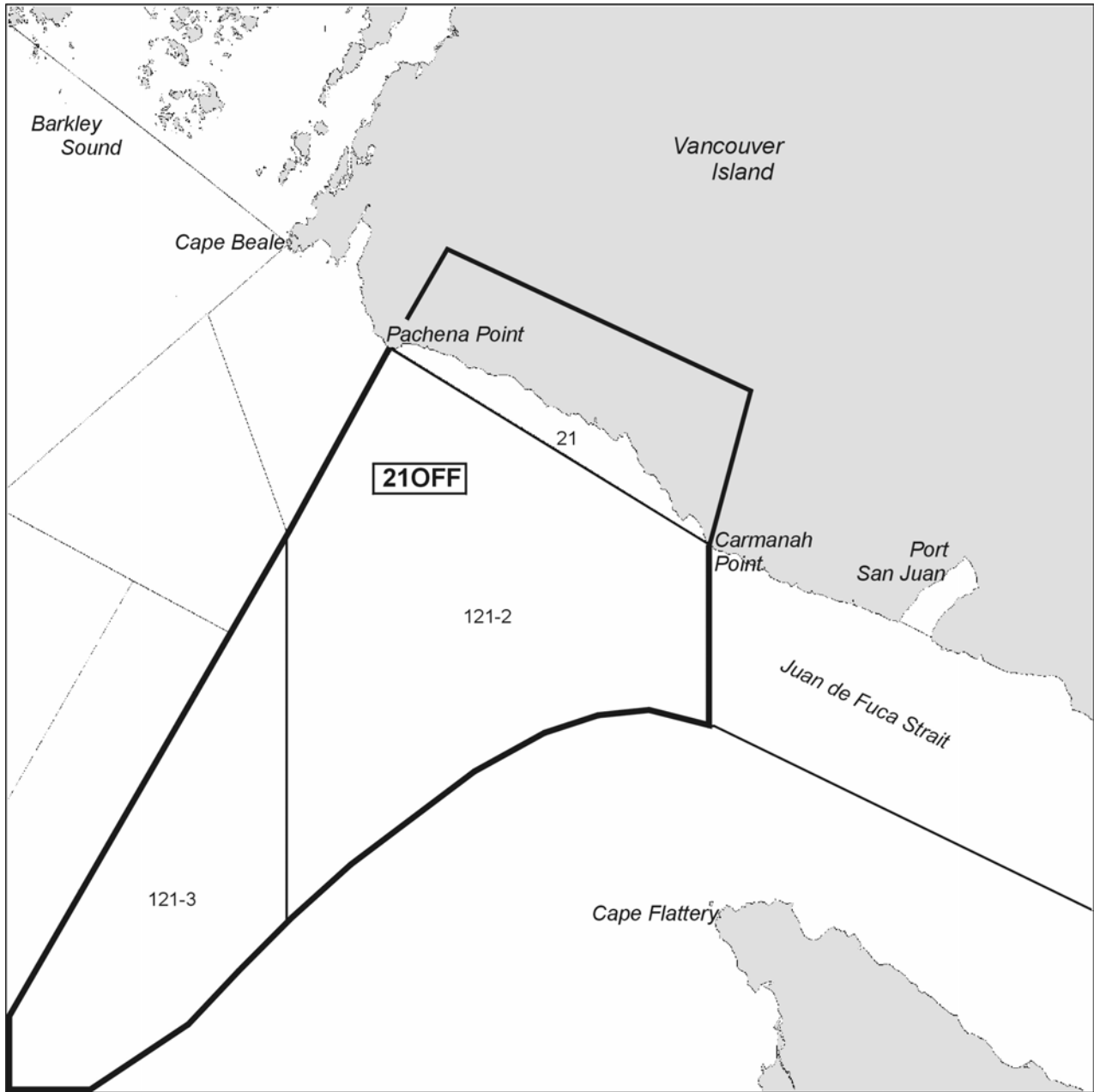


Figure 20: Shrimp Management Area: 21OFF (Areas 21, 121).

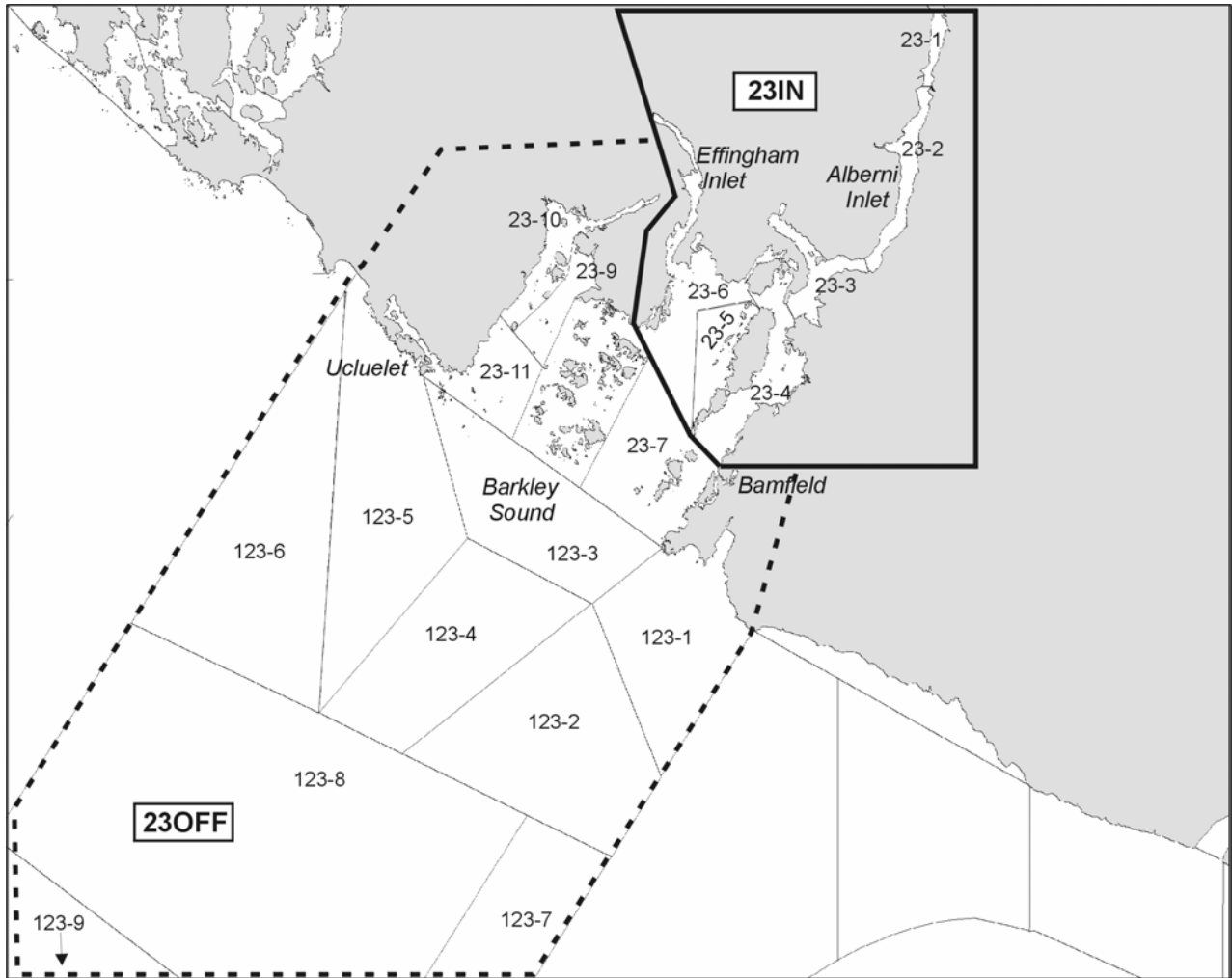


Figure 21: Shrimp Management Areas: 23IN (Areas 23-1 to 23-6 and 23OFF (Areas 23-7 to 23-11 and Area 123).

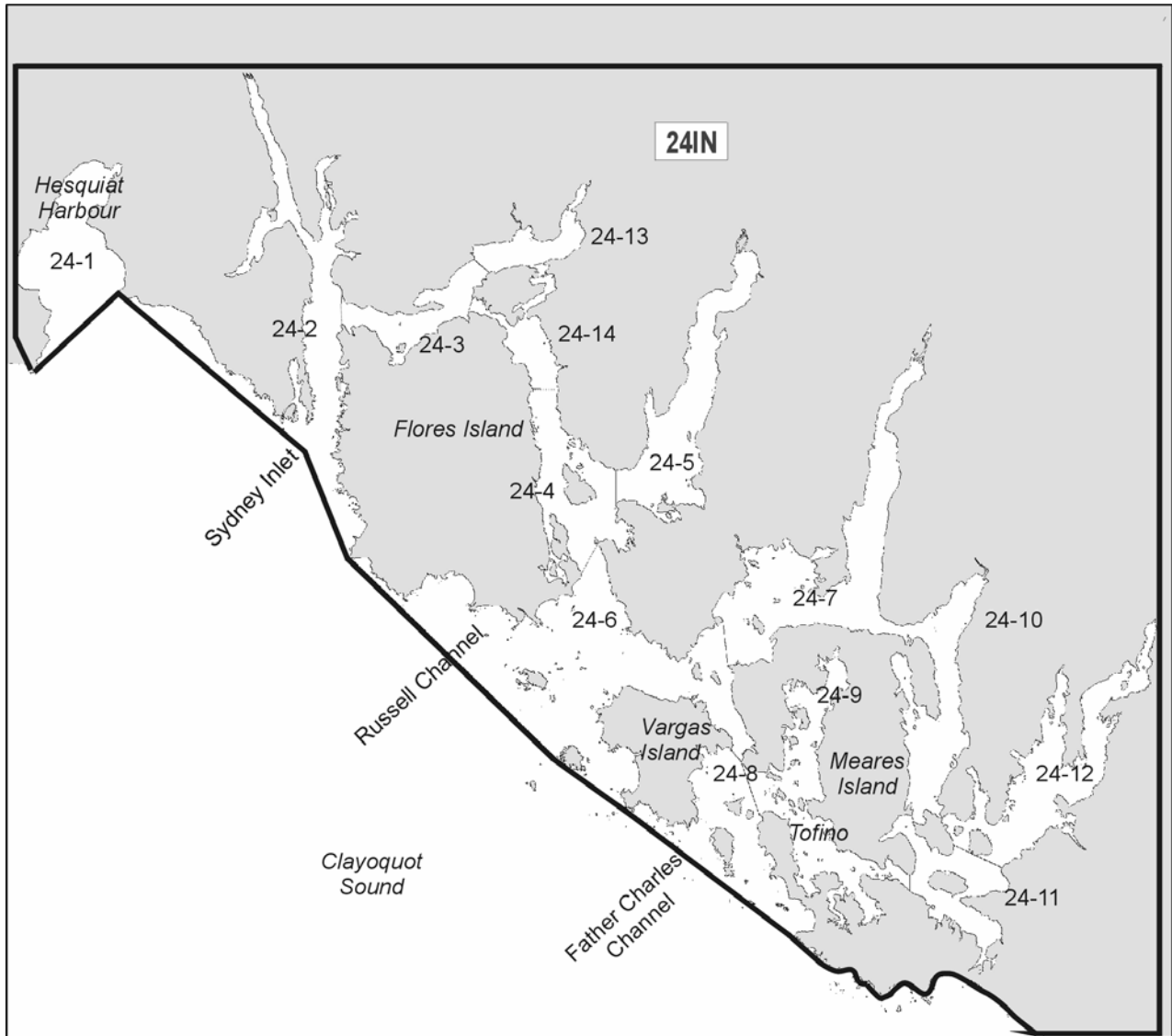


Figure 22: Shrimp Management Area: 24IN (Area 24).

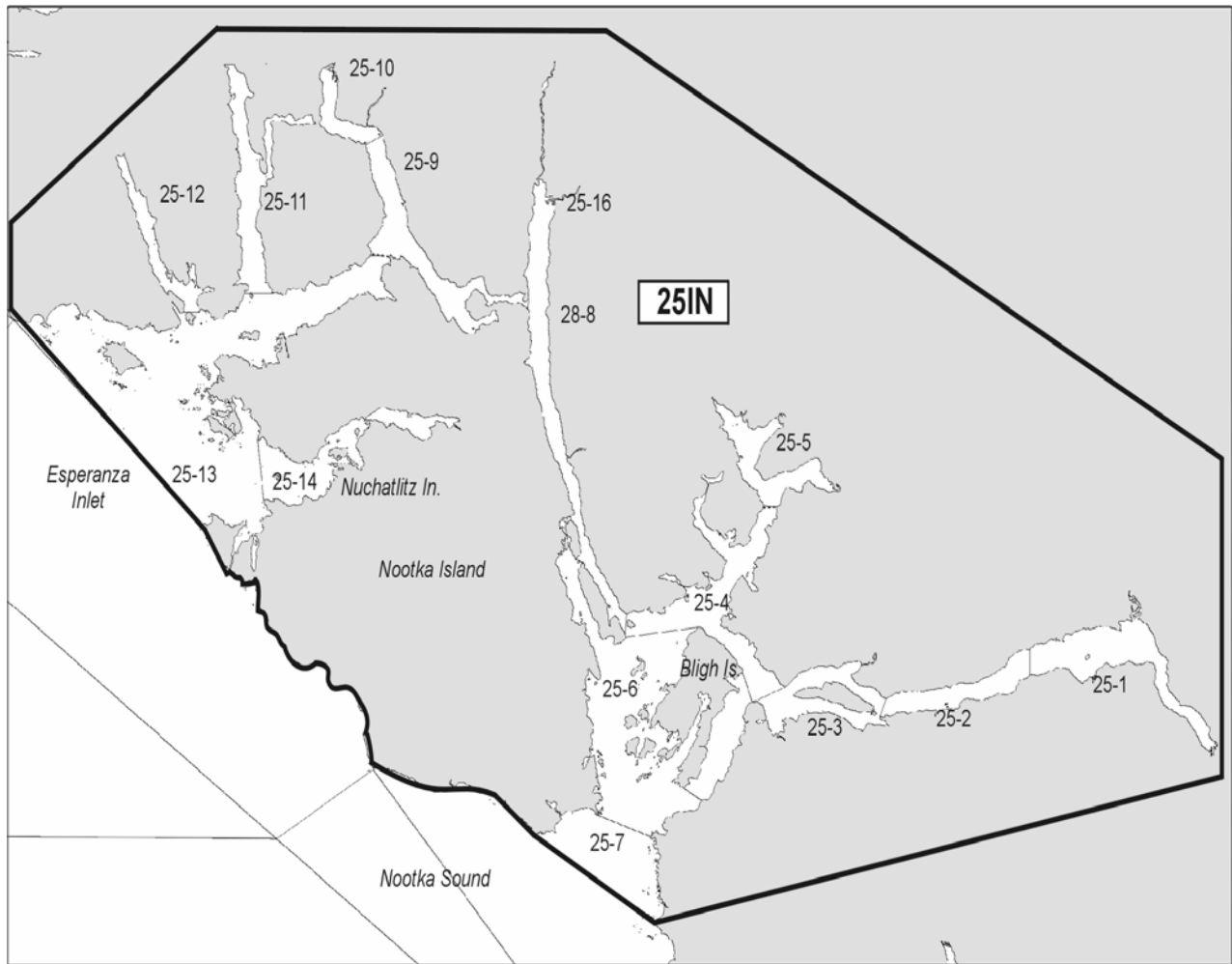


Figure 23: Shrimp Management Area: 25IN (Area 25).

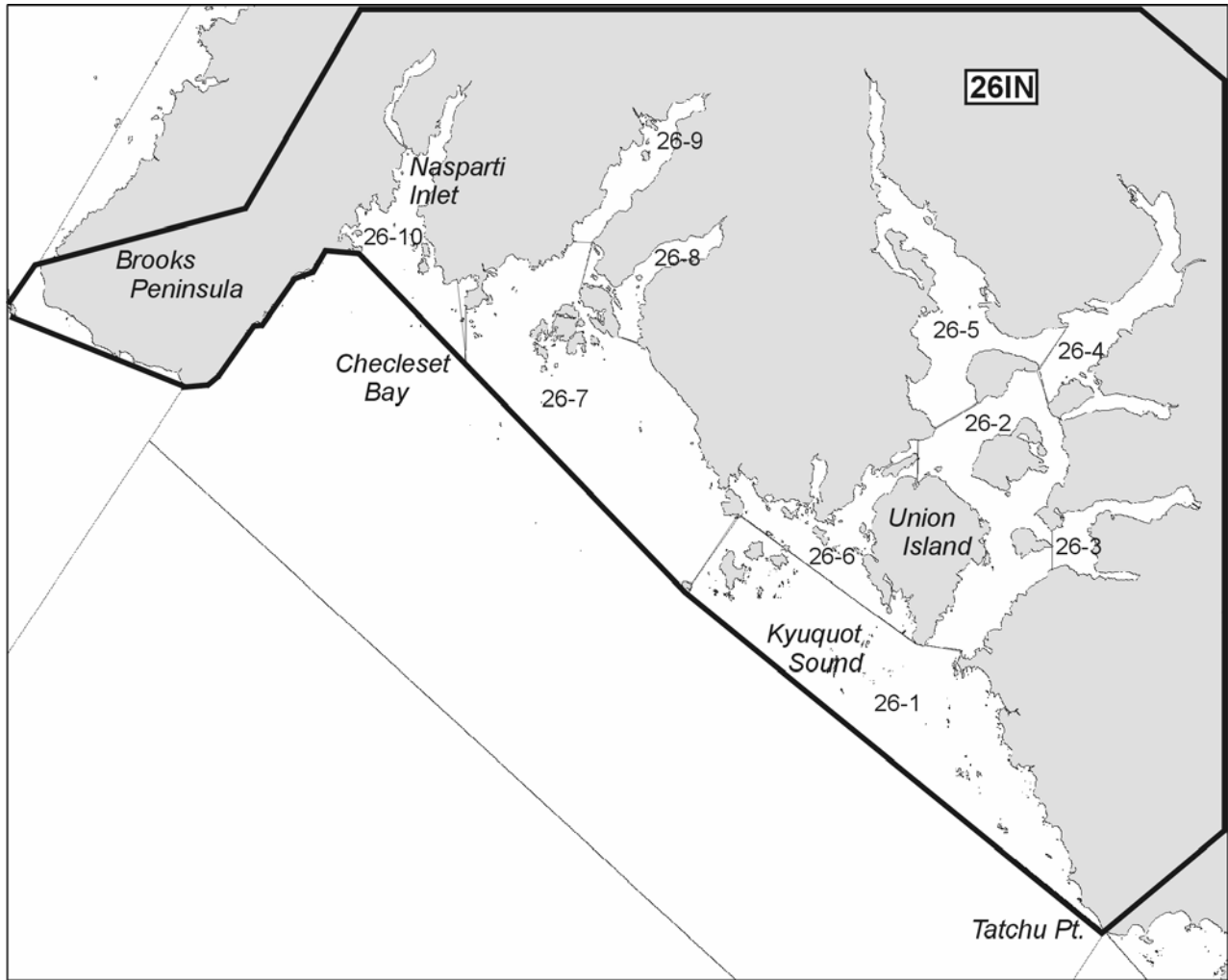


Figure 24: Shrimp Management Area: 26IN (Area 26).

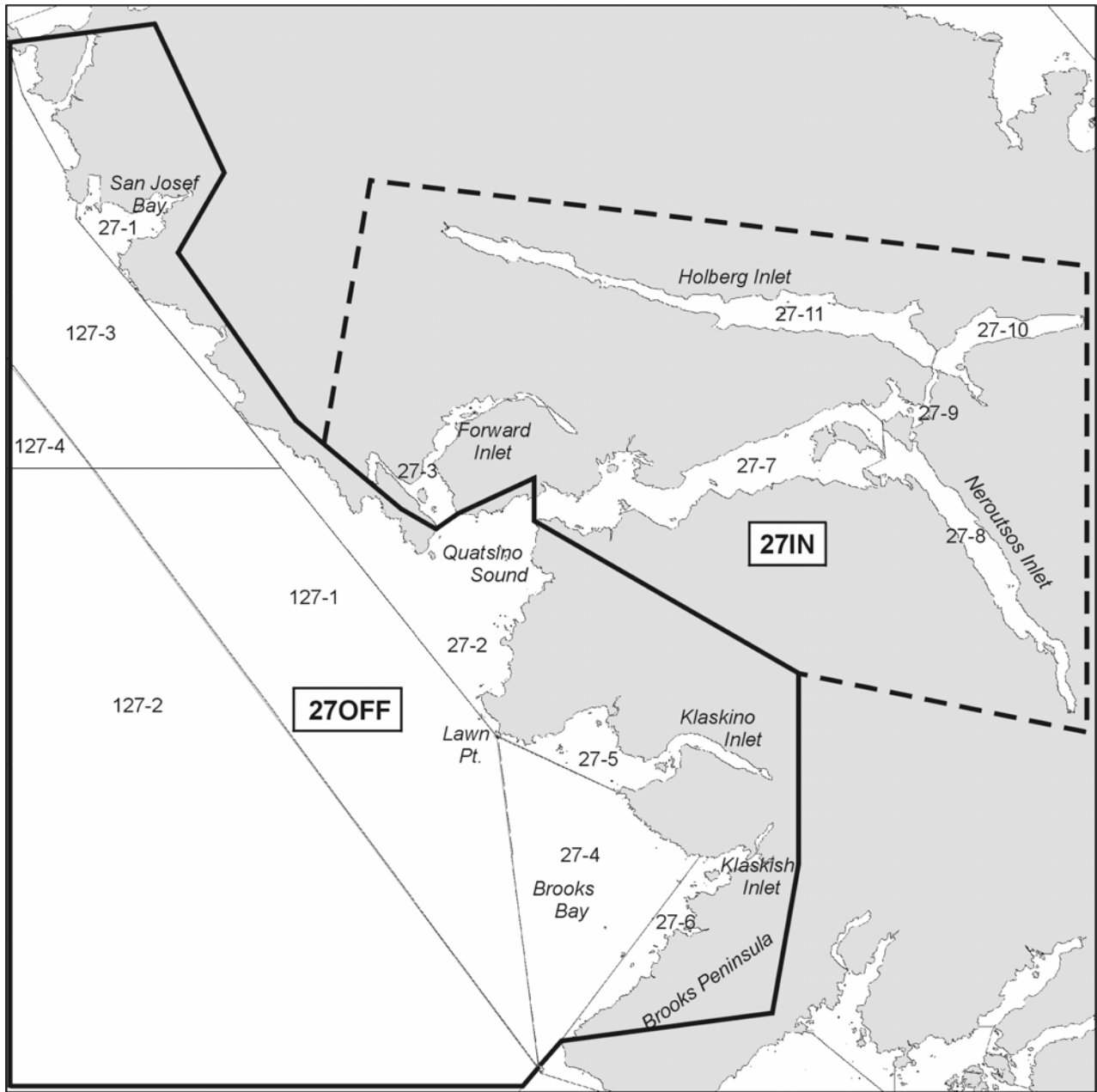


Figure 25: Shrimp Management Areas: 27IN (Areas 27-3, 27-7 to 27-11) and 27OFF (Areas 27-1, 27-2, 27-4 to 27-6, 127).

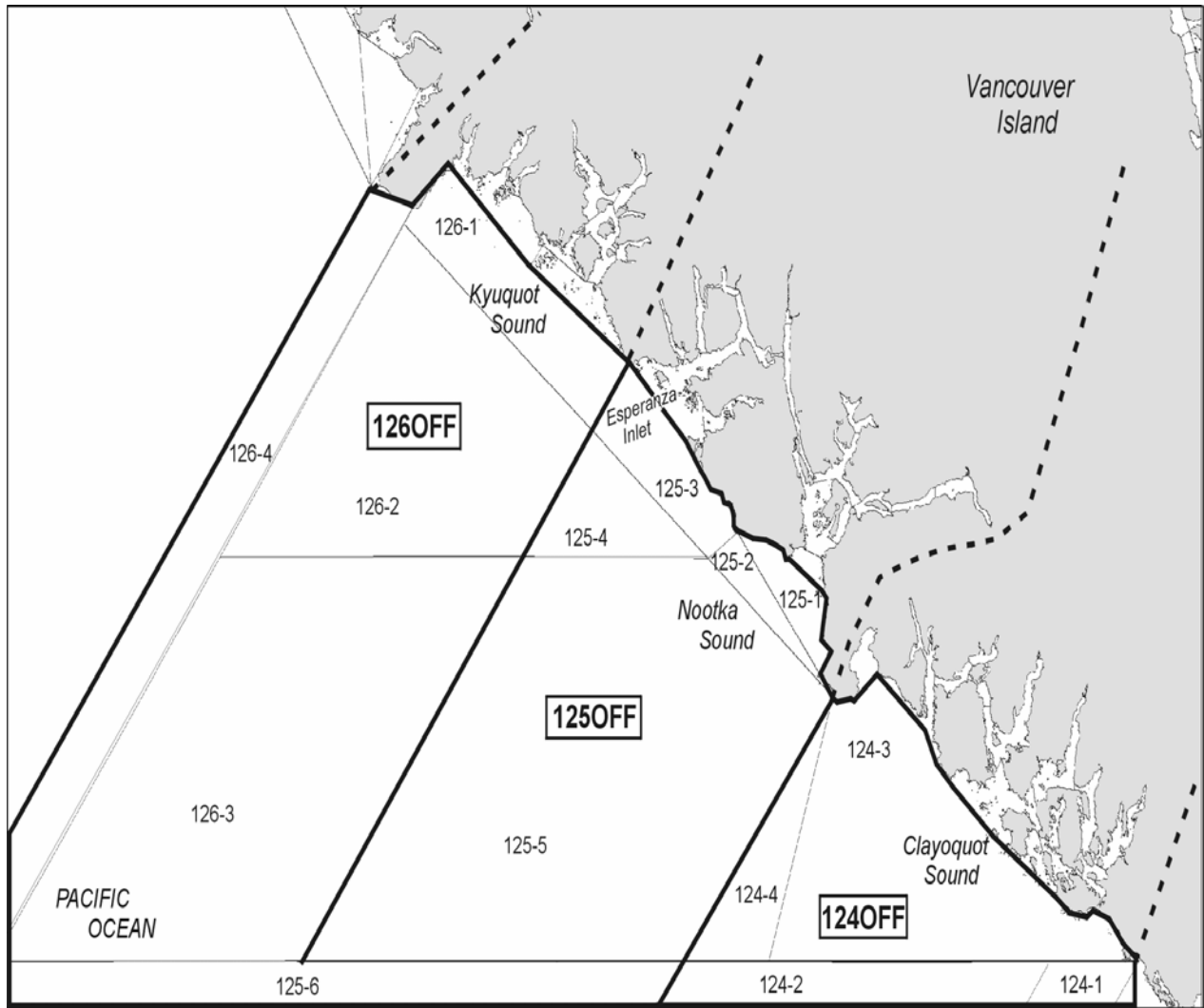


Figure 26: Shrimp Management Areas: 124OFF (Area 124), 125OFF (Area 125) and 126OFF (Area 126).

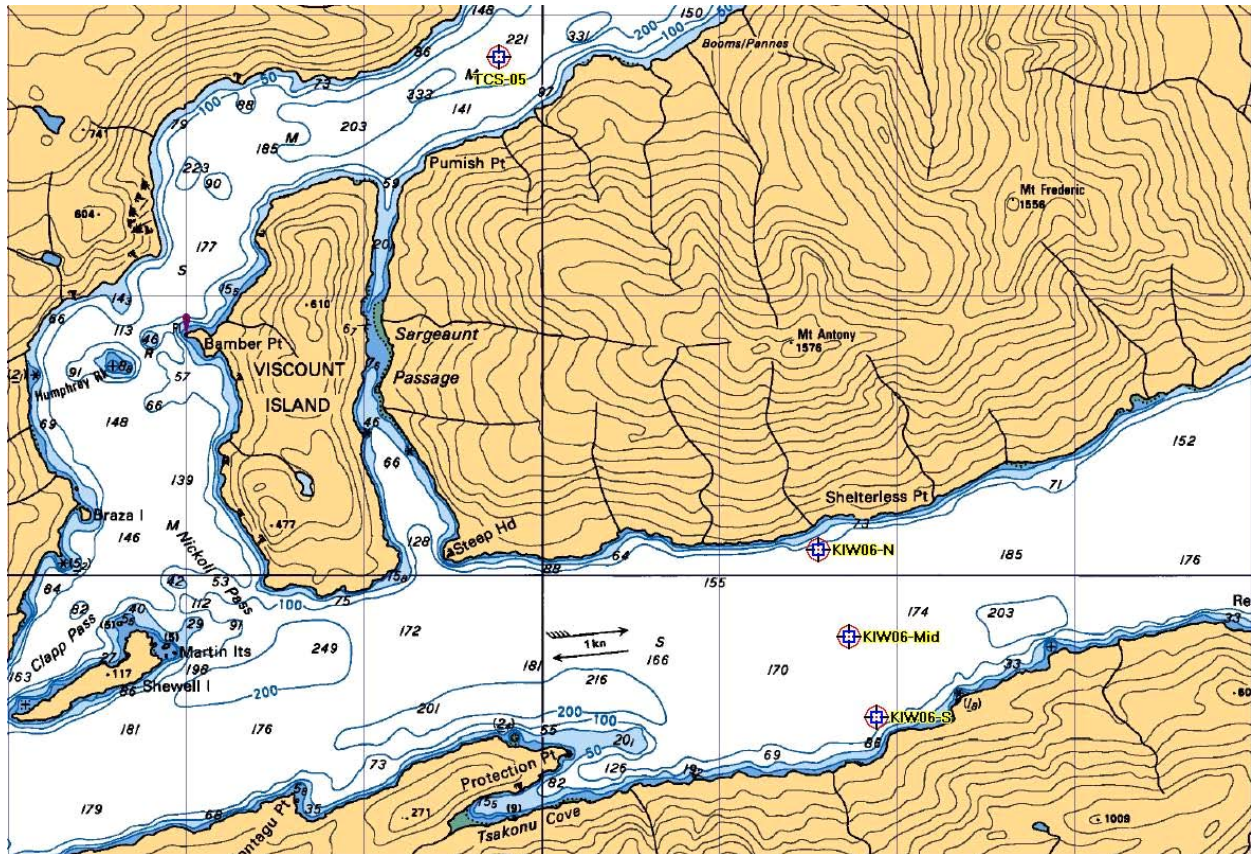
APPENDIX 10: FISHING HAZARD ADVISORY – CURRENT METERS, AREA 12

Location of current meters in Tribune Channel ($50^{\circ} 43.700'N$ $126^{\circ} 10.479'W$) subarea 12-35, and the others in Knight Inlet subarea 12-26:

Northern buoy $50^{\circ} 40.185' N$ $126^{\circ} 06.876' W$

Mid Channel $50^{\circ} 39.567' N$ $126^{\circ} 06.535' W$

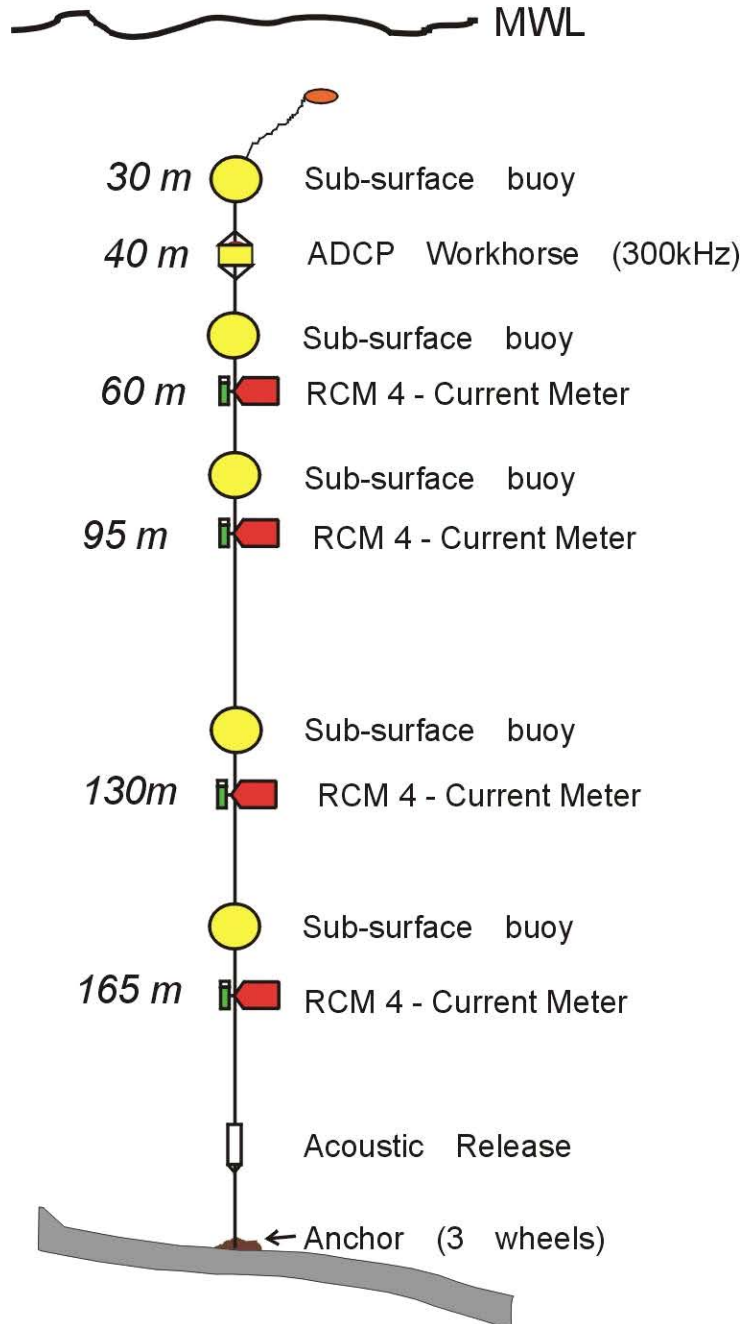
Southern buoy $50^{\circ} 38.988' N$ $126^{\circ} 06.222' W$



Current Meter Mooring Knight Inlet (Mid-Channel)

KIW-06-Mid

Lat: 50° 39.567' N
Long: 126° 06.535' W
Depth: 175m (Chart Datum)



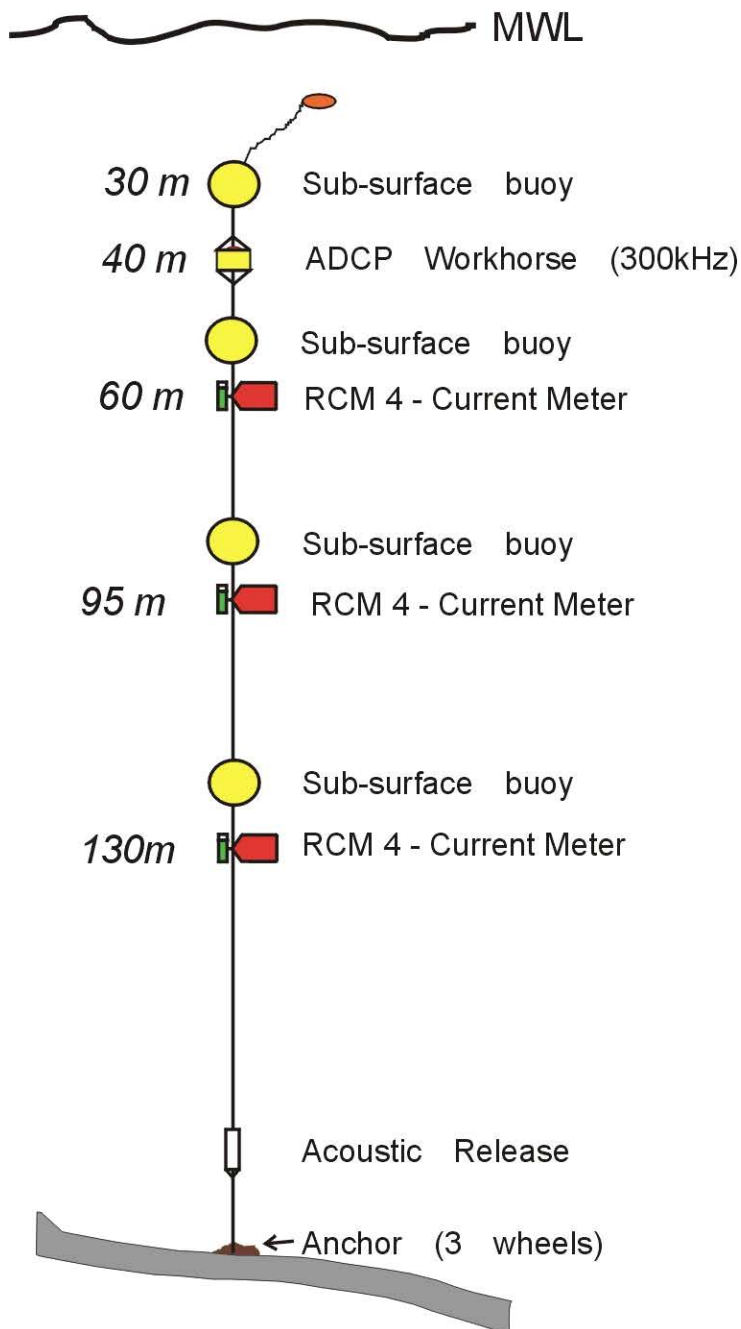
Current Meter Mooring Knight Inlet (North Shore)

KIW-06-N

Lat: 50° 40.185' N

Long: 126° 06.876' W

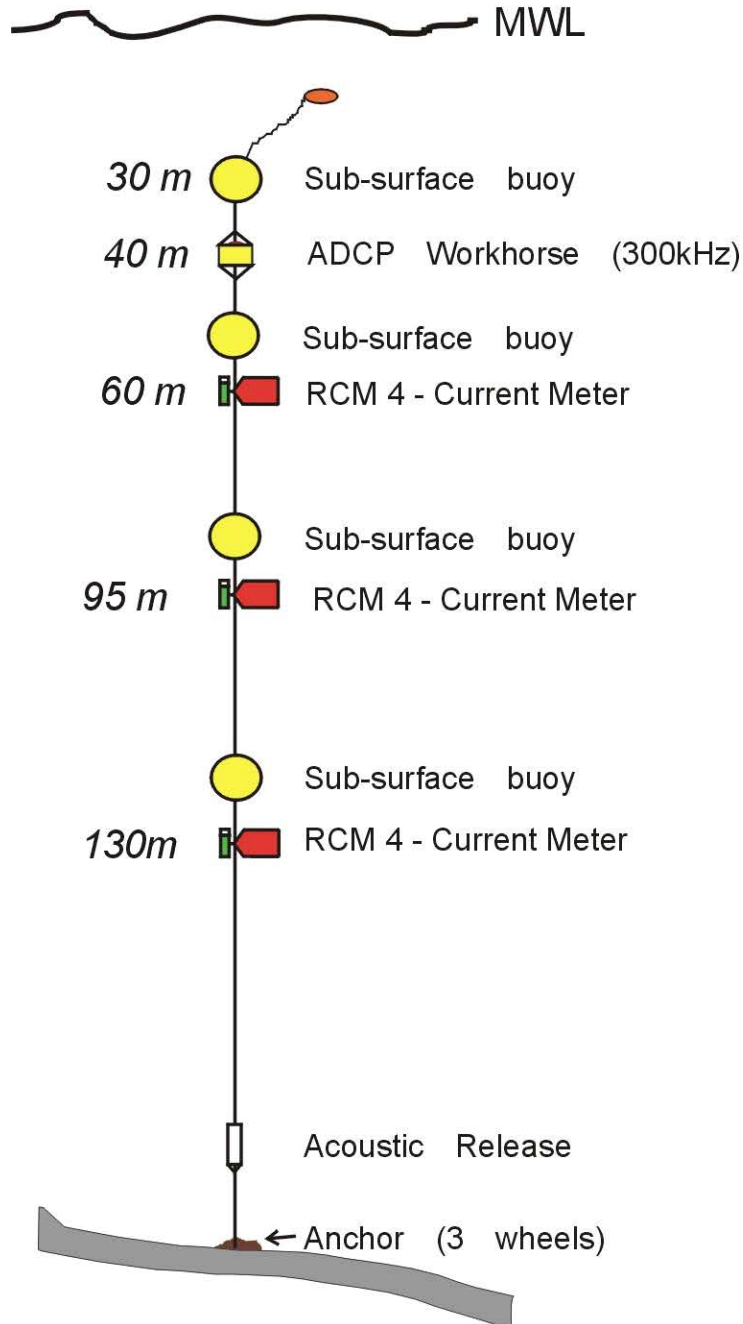
Depth: 160m (Chart Datum)



Current Meter Mooring Knight Inlet (South Shore)

KIW-06-S

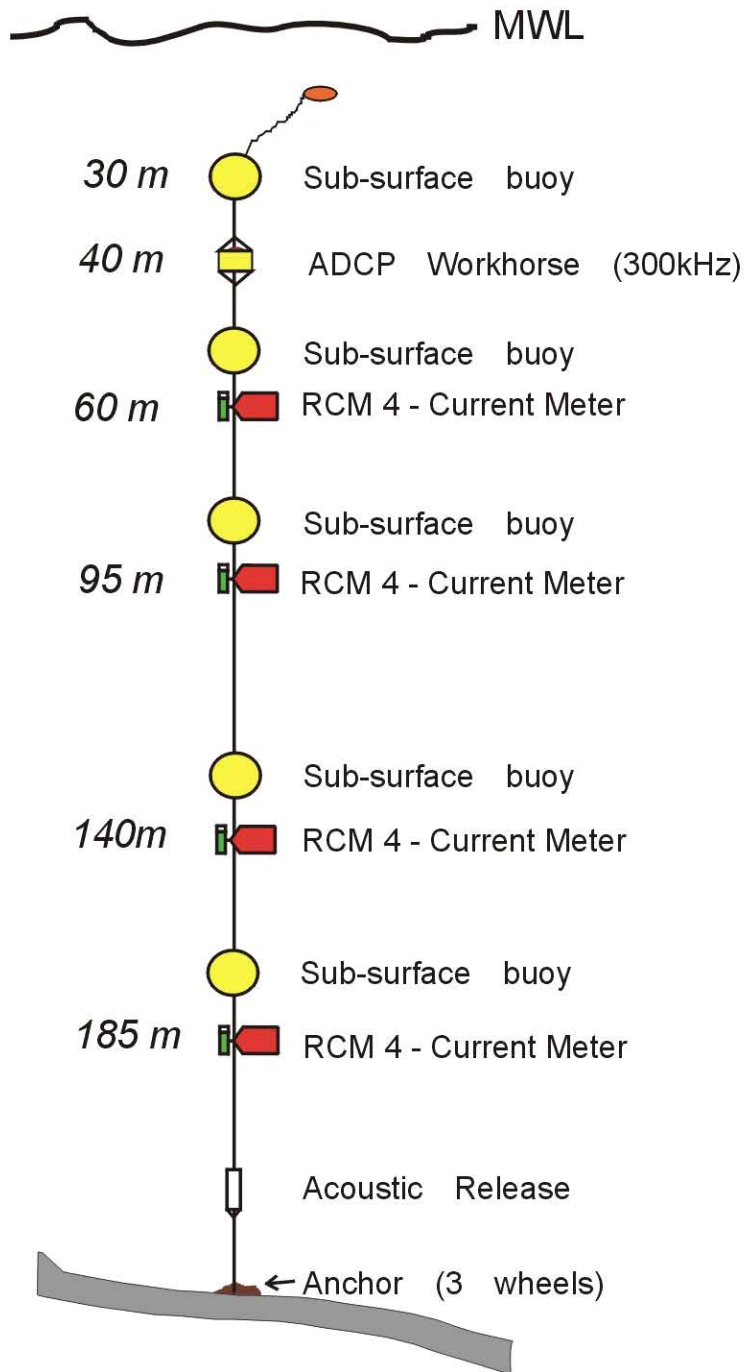
Lat: 50° 38.988' N
Long: 126° 06.222' W
Depth: 160m (Chart Datum)



Tribune Channel South Current Meter Mooring

TCS-06

Lat: 50° 43.700' N
Long: 126° 10.479' W
Depth: 219m (Chart Datum)

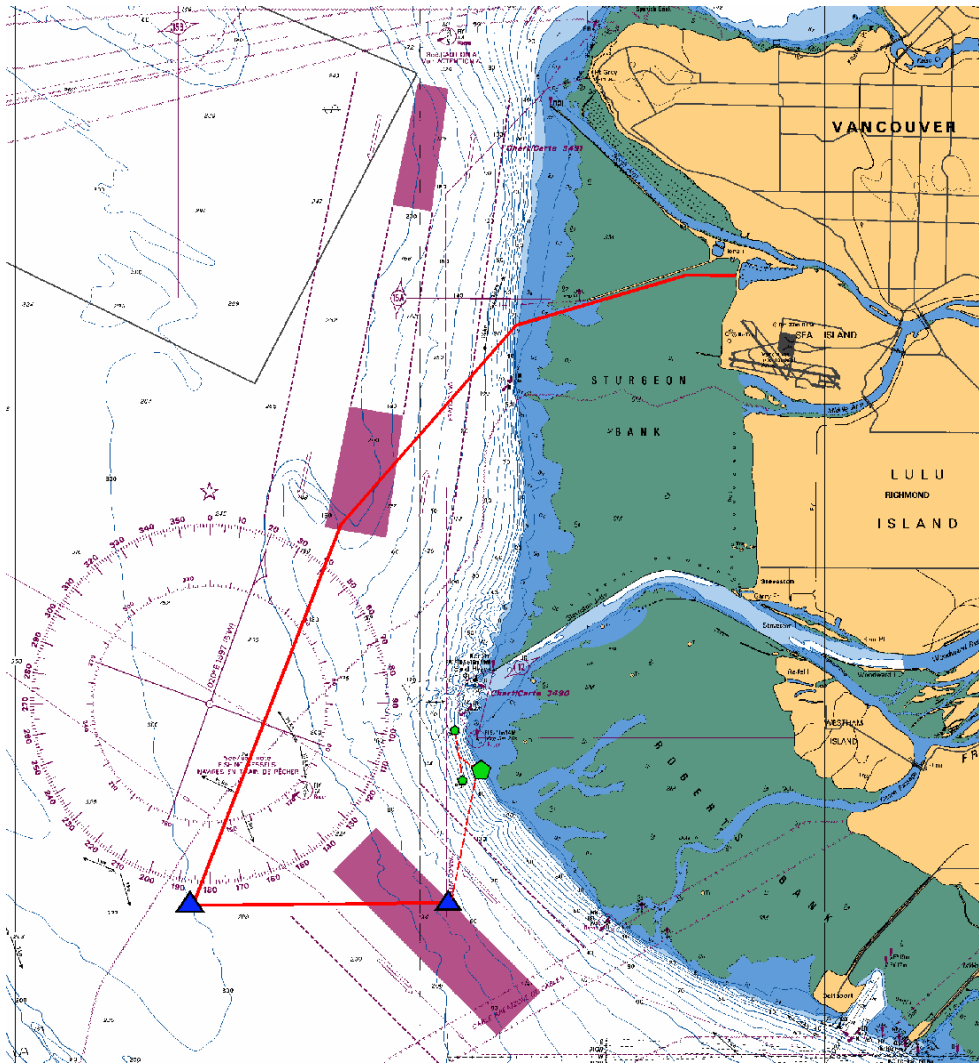


APPENDIX 11: FISHING HAZARD ADVISORY - VENUS GEORGIA STRAIT NODE, AREA 29

The Victoria Experimental Network Under the Sea (VENUS) project includes a shallow water installation that may pose a hazard to trawl fishing. Installation location for major platforms are:

<u>ID</u>	<u>Lat.</u>	<u>Long.</u>	<u>Depth</u>	<u>Name</u>
VSG01	49° 02.12' N	123° 25.55' W	308m	Node Deep
VSG02	49° 02.50' N	123° 19.20' W	170m	Node Shallow
VSG03	49° 5.01' N	123° 18.93' W	35m	SED Lab

For more details see the internet website at www.venus.uvic.ca.



APPENDIX 12: FISHING HAZARD ADVISORY - NEPTUNE NODE, WEST COAST VANCOUVER ISLAND

The NEPTUNE Canada Ocean Observatory is a scientific cabled ocean observatory that was installed on the seafloor in the waters off the West Coast of Vancouver Island. The main network cable ring has been installed. The remaining infrastructure in will be installed in 2008. The Observatory will consist of a ring of powered telecommunications cable laid on the seafloor down the centre of Alberni Inlet and Trevor Channel across the continental shelf and out to approximately 160 nautical miles offshore (2500 meters water depth). The instruments on the observatory will provide scientists with an unprecedented year-round view of ocean processes.

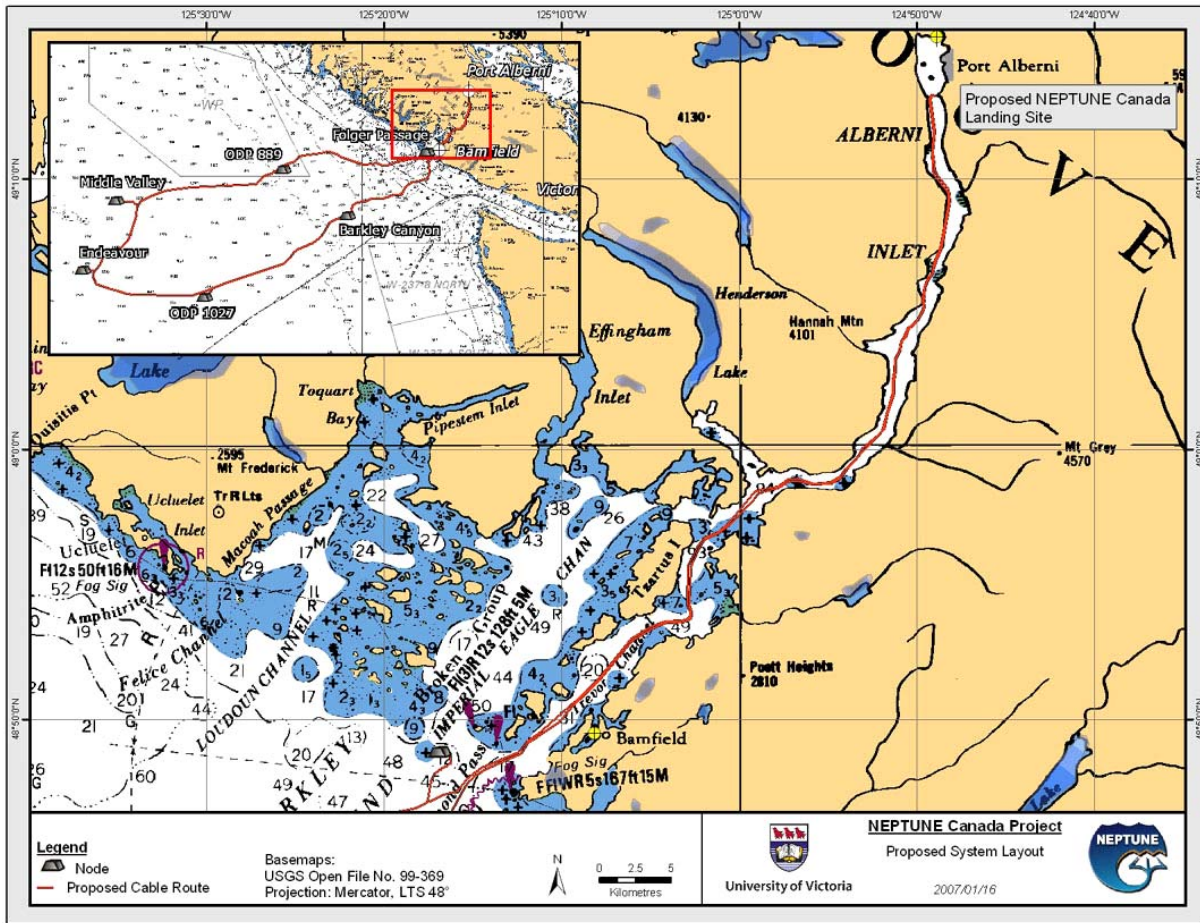
The proposed system layout has been detailed in the included figure. The cables that will be installed in Alberni Inlet and Trevor Channel will be 28mm in diameter and will be surface laid. Burial of the cables will start as they exit Trevor Channel.

A science instrument site is planned for installation within the Folger Passage Rockfish Conservation area. This site will include a connection point for a series of instruments be positioned on the seafloor within 200 meters of the connection point.

Many of the physical details of NEPTUNE will be similar to that of the VENUS, Victoria-Experimental-Network-Under-the-Sea, and can be found at their web site at www.venus.uvic.ca.

To download the cable route details and further information please go to www.neptunecanada.ca or send an email to NEPTUNE at facnc@uvic.ca.

LOCATION OF THE NEPTUNE NODE – WEST COAST VANCOUVER ISLAND



APPENDIX 13: TERMS OF REFERENCE OF THE SHRIMP TRAWL SECTORAL COMMITTEE

1. MANDATE

The Shrimp Trawl Sectoral Committee provides a forum for the exchange of information and views between the people involved with the industry and the Department of Fisheries and Oceans (DFO) on issues important to the management of the fishery. It should be noted that DFO's primary mandate remains the conservation and protection of stocks to ensure long-term, sustainable harvest. The Sectoral Committee is not voting body; the intent is for DFO to receive a broad range of advice from stakeholders and other concerned parties. DFO, however, remains the decision making authority. The purpose of the sectoral committee is to act as a vehicle for positive change. It is essential that members assume the responsibility of keeping themselves informed to achieve effective and productive meetings.

1.1. The Sectoral Committee has the following goals.

- 1.1.1. Allow the exchange of information between the stakeholders (native, commercial, and recreational) and DFO.
- 1.1.2. Advise on the development of annual Management Plans for the fishery.
- 1.1.3. Develop cooperative programs, joint projects, and partnerships to develop long-term management strategies for the fishery, including:
- 1.1.4. Provide information and advice regarding stock assessment and biological research for the fishery.
- 1.1.5. Develop means to reduce by-catch in the shrimp trawl industry
- 1.1.6. Advise the Minister of Fisheries and Oceans on the use of discretionary penalties against harvesters caught violating the rules and regulations of the fishery.
- 1.1.7. Recommend representatives to other advisory bodies, as required.

2. ORGANIZATION

Advisors will be selected to represent the following stakeholders and will be responsible for keeping their constituents informed:

Licence holders	Up to 6 advisors, selected by S licenced vessel owners to represent current licence holders
Processors	Up to 4 advisors, selected to represent active buyers and processors
Aboriginals	1+ advisors, selected to represent aboriginal interests
Other representatives	1+ advisors, if necessary, selected to represent other significant interests in the fishery (e.g., recreational harvesters, aquaculture, crew)

Licence holder representatives will be selected either by a vote conducted by DFO of the licence holders of record or by organisations representing the licence holders. DFO may appoint additional advisors to ensure representation from all geographic areas and gear groups.

Processors will be selected by DFO to represent all active buyers and processors in the fishery.

Aboriginal representatives will be appointed by the Aboriginal Fisheries Division of DFO in consultation with Aboriginal groups.

Advisors will be elected or appointed for a three year term. Licence holders may select another current advisor to represent them during the three years. Advisors will not be added unless the Committee provides unanimous consent.

Each advisor will identify an alternate, who may attend all meetings but only participate if the advisor is absent.

The Ministry of Agriculture, Fisheries, and Food, and, if necessary, other Ministries, will represent the Province of B.C. on the Committee.

DFO will chair the Committee meetings. Other DFO staff will attend as appropriate.

The Committee can invite other people to participate when appropriate.

3. PROCEDURES

Minutes of all meetings will be taken. They will be distributed to all advisors for approval, then made available to the public. The information will be available on the internet following links from the Shellfish Consultations webpage at:

<http://www.pac.dfo-mpo.gc.ca/consultation/fisheries-peche/shell-inv/crev-trawl/index-eng.htm> .

Committee recommendations will only be made with the agreement of all advisors. When complete agreement cannot be reached, all consenting and dissenting opinions will be recorded in the minutes.

- All Sectoral Committee meetings can be attended by observers, subject to prior approval by the chairperson. These observers cannot participate in the meeting unless approved by the chairperson.
- The chairperson can appoint subcommittees to report on specific tasks. The subcommittee will require clear objectives, members identified (including the chairperson), and set deadlines.
- There must be at least one meeting a year to consider the annual management plan. The chairperson can call other meetings as required. The chairperson will prepare an agenda and circulate it to all advisors before the meeting.
- The Sectoral Committee will consider developing a code of conduct that, if violated, provides the basis for dismissal from the Committee. Repeated absence from meetings and blatant violations against the Fisheries Act or Regulations would be considered adequate grounds for dismissal.

APPENDIX 14: EXAMPLE CONDITIONS OF LICENCE SHRIMP TRAWL 2010/2011

EXAMPLE CONDITIONS OF SHRIMP BY TRAWL LICENCE

Licence Period: April 1, 2010 to March 31, 2011

Authority

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

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

Also, it is the responsibility of individual fish harvesters to be informed of, and comply with, the *Fisheries Act* and the regulations made thereunder, in addition to these conditions.

For information on management of the shrimp-by-trawl fishery obtain a copy of the current Integrated Fisheries Management Plan for Shrimp by Trawl from a Pacific Fishery Licensing Unit Office. The Management Plan is intended for general information purposes only. Where there is a discrepancy between the Plan and the *Fisheries Act* and regulations or these conditions, the *Fisheries Act* and regulations and these conditions prevail.

PART 1

Application

This Part applies to fishing for shrimp, opal squid and octopus by means of trawl gear.

Definitions

“Area” and “Subarea” have the same meanings as in section 2 of the *Pacific Fishery Management Area Regulations, 2007*.

“beam trawl” means a bag shaped net that is dragged through the water by a vessel for the purpose of catching shrimp, in which the mouth of the net is held open by a single rigid beam of wood or metal.

“Department” means the Department of Fisheries and Oceans.

“fishing trip” means a voyage that commences at the time a fishing vessel leaves a port, dock or other permanent anchorage to engage in fishing and terminates at the time any fish caught during that period are offloaded.

“landed” or “landing” means the transfer of any quantity of shrimp from a vessel to land including docks and wharves at the end of a fishing trip.

“observer” means a person who has been designated as an observer by the Regional Director-General for Pacific Region pursuant to section 39 of the *Fishery (General) Regulations*.

“offloading” means the landing or removal of catch from the vessel.

“otter trawl” means a bag shaped net dragged through the water by a vessel for the purpose of catching shrimp, in which the mouth of the net is held open by “otter” boards (or commonly known as “doors”) of wood and/or metal.

“Shrimp Management Areas” are described in the current “Integrated Fisheries Management Plan for Shrimp by Trawl”.

“vessel registration number” or “VRN” means the number assigned to a vessel by the Department at the time the vessel is registered as a fishing vessel.

“WCVI” (West Coast of Vancouver Island) is comprised of Areas 123 to 126 and Subareas 23-7 to 23-11.

1. Species, quantity, and size of fish permitted to be taken:

(1) The following shrimp species may be caught and retained:

- Northern pink shrimp (*Pandalus borealis*);
- Pink shrimp (*Pandalus jordani*);
- Sidedstripe shrimp (*Pandalopsis dispar*);
- Flexed shrimp (*Pandalus goniurus*);
- Coonstripe shrimp (*Pandalus danae*); and
- Humpback shrimp (*Pandalus hypsinotus*).

(2) Prawn shrimp (*Pandalus platyceros*) caught incidentally while fishing for those species of shrimp set out in subsection 1(1) may be retained in a quantity that does not exceed 100 individual whole, in the shell, prawn shrimp, provided that the area is open for fishing for prawn shrimp by means of trawl gear.

(3) The minimum size limit for prawns is 33 mm carapace length, measured from the posterior-most part of the eye orbit to the posterior mid-dorsal margin of the carapace.

(4) Opal squid (*Loligo opalescens*) caught incidentally while fishing for those species of shrimp set out in subsection 1(1) may be retained in a quantity that does not exceed 2% of the total weight of shrimp on board the vessel.

(5) Octopus (*Octopus dofleini*) caught incidentally while fishing for those species of shrimp set out in subsection 1(1) may be retained.

2. Waters where fishing is permitted:

All Areas and Subareas, except Areas 2, 107 to 111 and 130 and Subareas 7-1, 7-25, 7-26, 7-31, 8-1, 10-1, 10-2, 11-1 and 11-2.

3. Fishing gear permitted to be used:

(1) An otter trawl net or beam trawl net modified to reduce by-catch of species other than shrimp in the manner described in subsections 3(2) and 3(3). Refer to the current Integrated Fisheries Management Plan for Shrimp by Trawl for further information.

(2)(a) Each trawl net used under this licence shall have a rigid grid (e.g. aluminum, PVC), sometimes called a Nordmore grate, inserted into the forward end of the cod end of the trawl net at an angle so that it entirely blocks access to the cod end, except for the spaces between the bars.

(b) The bars of the grid shall be no greater than 44.5 mm (1.75 inches) apart.

(c) The netting directly above the grid shall have a triangular opening (“escape hole”) the full width of the grate. The sides of the opening shall be reinforced so that the opening remains unobstructed and maintains its shape while the net is being towed through the water.

(3) In addition, the top (hood or upper belly) of each otter trawl net used under this licence shall contain a minimum 4.4 square m panel of plastic lattice with minimum 4 cm square openings, such as is found in snow-fencing.

(4) Mechanized devices that automatically separate by-catch from shrimp (e.g. “smelt belts”) are not permitted to be used.

(5) On-board shrimp sorting devices are allowed to separate shrimp by size, but discarding of shrimp is not allowed. All shrimp (other than prawns and other species when areas are closed) that are caught must be retained and reported in logbooks and hailed as landed catch.

4. The segregation of species on board the vessel:

(1) All prawn shrimp shall be segregated on board the vessel from all other species of shrimp.

(2) Undersize prawn and by-catch other than shrimp or those species for which the vessel has a licence must be returned to the water immediately and in the manner that causes the least harm.

(3) From May 1, 2009 to June 30, 2009, any prawn carrying more than 200 eggs externally on the underside of the tail shall be returned to the water immediately and in the manner that causes the least harm. Eggs may not be removed from prawns carrying eggs.

5. If vessel is licenced for fishing for shrimp by means of trap gear:

Where the vessel named in this licence holds a shrimp-by-trap commercial fishing licence, any shrimp caught under authority of that licence shall be offloaded prior to the vessel fishing under authority of this licence.

6. Fishing Activity Reports:

(1) Prior to commencing fishing:

Prior to commencing fishing and at least 24 hours prior to leaving port, the vessel master shall:

- (a) obtain a Fishing Hail Number; and
- (b) record the Fishing Hail Number in the Shrimp Trawl Fishing Log.

To obtain a Fishing Hail Number, contact the service provider at 1-866-377-1400 (08:00 h to 17:00 h only) and provide the following information:

- vessel name, vessel registration number, vessel master's name and contact telephone number, autotel or cellular phone number of vessel, and gear type (beam or otter trawl); or a shrimp fish harvester identification number assigned by the service provider;
- Subarea or Shrimp Management Area to be fished;
- anticipated date and time fishing will begin;
- anticipated number of fishing days for the fishing trip;
- target shrimp species, i.e. which species the vessel master will direct the fishing effort towards;
- type of product to be produced, i.e. fresh, live, frozen at sea, etc.;
- anticipated date and time of offloading at the end of the fishing trip; and
- anticipated port and location of offloading at the end of the fishing trip.

(2) Prior to changing area:

In the event of a change in the Subarea or Shrimp Management Area to be fished as reported under subsection 6(1), the vessel master shall notify the service provider at 1-866-377-1200 (24 hours per day) or at 1-866-377-1400 (08:00 h to 17:00 h only) and provide the following information:

- Fishing Hail Number which applies to the current fishing trip;
- new Subarea or Shrimp Management Area to be fished;

- the total weight of each species of shrimp as set out in subsection 1(1), on board the vessel from each Shrimp Management Area fished;
- anticipated number of fishing days in the new Subarea or Shrimp Management Area;
- target shrimp species, i.e. which species the vessel master will direct the fishing effort towards;
- type of product to be produced, i.e. fresh, live, frozen at sea etc.; and
- anticipated port of landing at the end of the fishing trip.

1.1. (3) Fishing trips longer than seven days

Every seven days, the vessel master shall contact the service provider at 1-866-377-1200 (24 hours per day) or at 1-866-377-1400 (08:00 h to 17:00 h only) and provide the following information:

- Fishing Hail Number which applies to the current fishing trip;
- the Shrimp Management Area or Subarea in which fishing occurred; and
- the total weight of each species of shrimp as set out in subsection 1(1), on board the vessel from each Shrimp Management Area fished.

(For example, if the Fishing Hail Report is made on Monday, then an update of catch information is required every Monday for the duration of the fishing trip.)

(4) Prior to landing catch:

Prior to landing catch at the end of a fishing trip, the vessel master shall:

- (a) obtain a Landing Hail Number; and
- (b) record the Landing Hail Number in the Shrimp Trawl Fishing Log.

To obtain a Landing Hail Number, contact the service provider at 1-866-377-1200 (24 hours per day) or at 1-866-377-1400 (08:00 h to 17:00 h only) and provide the following information:

- Fishing Hail Number which applies to the current fishing trip;
- vessel name, vessel registration number, vessel master's name, or shrimp fish harvester identification number;
- date fishing began;
- date of offloading;
- time of offloading;
- port and location of offloading;
- buyer;
- the Shrimp Management Area(s) or Subarea(s) in which fishing occurred;
- the total hours towed for each Shrimp Management Area fished; and
- the total weight of each species of shrimp*, as set out in subsection 1(1), on board the vessel from each Shrimp Management Area fished.

* Northern pink shrimp (*Pandalus borealis*) and pink shrimp (*Pandalus jordani*), may be reported as “pink shrimp”.

(5) Should the vessel master decide not to fish after obtaining a Fishing Hail Number, the vessel master shall obtain a Landing Hail Number by contacting the service provider at 1-866-377-1200 (24 hours per day) or at 1-866-377-1400 (08:00 h to 17:00 h only) and indicating that no fishing occurred.

7. Transporting shrimp:

A copy of the fish slip (see section 11) must be given to any person transporting shrimp or incidental catch caught under the authority of this licence and shall accompany the shrimp or incidental catch in transit, including shrimp or incidental catch for personal use. This provision allows persons to transport shrimp caught under the authority of their own licence and provides a record of licensed catch.

8. Records – Harvest Logs and fishing location information: (see explanatory note after section 11)

(1) The vessel master shall maintain a log of all harvest operations and provide this information in both hard (paper) copy and electronic copy to the Department. The content and format of this log (paper and electronic) shall meet the requirements as defined by the Fisheries and Oceans Canada Shellfish Data Unit, Stock Assessment Division for this licence period.

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

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

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

(5) The log shall be produced for examination on demand of a fishery officer.

(6) The vessel master shall enter latitude and longitude co-ordinates in the appropriate location in the log for each catch location.

(7) The completed log pages (original copy) and an electronic copy of the log including latitude and longitude co-ordinates shall be forwarded no later than 28 days, and sooner if possible, following the end of each month in which fishing occurred to:

Fisheries and Oceans Canada
Shellfish Data Unit
Marine Ecosystem and Aquaculture Division
Pacific Biological Station

3190 Hammond Bay Road
Nanaimo BC V9T 6N7
Tel: (250) 756-7022 or (250) 756-7306

9. Requirement to take an Observer

All vessels are required to take on board an observer when requested to do so by the Regional Director-General for the Pacific Region.

10. Requirement for Dockside Observations

The vessel master shall arrange for a minimum of 2 days of observer coverage from April 1, 2009 to March 31, 2010 at the time of offloading.

When the observer is present at the offload:

- (1) The weight of all fish shall be verified by the observer.
- (2) When any fish taken under the authority of this licence are landed, all fish on board the vessel shall be landed at the same time.
- (3) The vessel master shall provide to the observer, or fishery officer attending the landing, access to the vessel's fish holds, freezers and other fish storage locations at any time during the landing or at the conclusion of the landing.

11. Reporting catch on fish slips

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

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

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

Explanatory Note – Fishing Activity Reports, Harvest Log Data, and Dockside Observations: The Pacific Coast Shrimpers' Cooperative Association has contracted a service provider to

provide, for a fee, the activity reports, harvest log coding and keypunching and validation services meeting the requirements of Fisheries and Oceans Canada.

Fish harvesters who do not use the Harvest Log, coding and keypunch services provided by a service company must contact the Shellfish Data Unit at (250) 756-7306 or (250) 756-7022 in order to obtain the information necessary to fulfil these requirements.

PART 2

Schedule 2 (common to all primary licences).