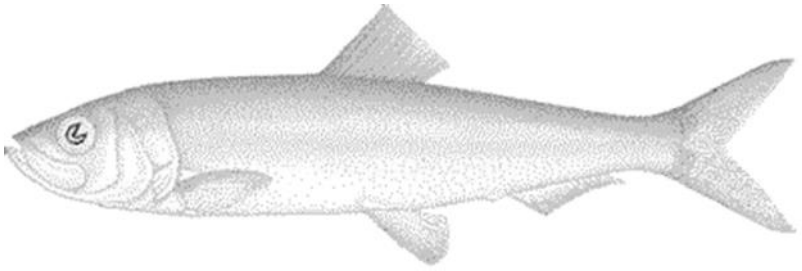
PACIFIC REGION

# INTEGRATED FISHERIES MANAGEMENT PLAN

## November 26, 2019 – November 6, 2020

PACIFIC HERRING



*Pacific Herring, Clupea pallasii*

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# DEPARTMENT CONTACTS

A more comprehensive list of contacts can be found online at:
http://www.pac.dfo-mpo.gc.ca/fm-gp/contacts-eng.html

**Fisheries and Oceans Canada – Pacific Region**

| | |
|---|---|
| Observe, Record, and Report | 1-800-465-4336 |
| National On-Line Licencing System (NOLS) | 1-877-535-7307 |

**Lead Fisheries Resource Managers**

| | | |
|---|---|---|
| Roe and Food & Bait Herring | James Meldrum | (250) 286-5823 |
| Spawn-on-Kelp | Steven Groves | (250) 627-3455 |
| Special Use Herring | Victoria Postlethwaite | (604) 666-7851 |

**Regional Headquarters**

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| Regional Director, Fisheries Management Branch | Andrew Thomson | (604) 666-0753 |
| Director, Resource Management, Program Delivery | Neil Davis | (604) 666-0115 |
| A/Regional Pelagics Coordinator | Brenda Spence | (250) 756-7329 |
| Regional Herring Officer | Victoria Postlethwaite | (604) 666-7851 |
| Director, Conservation and Protection | Mike Carlson | (604) 666-0604 |
| A/Director, Aboriginal Programs Directorate | Corey Jackson | (604) 666-6622 |
| SARA Marine Team Lead | Heather Brekke | (604) 666-2009 |
| Regional Manager, Marine Mammal Unit | Julia MacKenzie | (604) 666-8072 |

**Science Branch**

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| Regional Director, Science Branch | Carmel Lowe | (250) 756-7177 |
| Section Head, Quantitative Assessment Methods | Chris Rooper | (250) 756-7050 |
| Head, Herring Dynamics Program | Jaclyn Cleary | (250) 756-7321 |

**South Coast Area**

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|---|---|---|
| A/Area Director | Linda Higgins | (250) 756-7280 |
| A/Fisheries Management Coordinator - SOG/WCVI | Peter Hall | (250) 720-4445 |
| A/Fisheries Management Coordinator - J Straits | Christine Bukta | (250) 286-5880 |
| Fisheries Resource Manager - SOG gillnet | Terry Palfrey | (250) 756-7158 |
| Fisheries Resource Manager - SOG seine | James Meldrum | (250) 756-5823 |
| Fisheries Resource Manager - WCVI | Mike Spence | (250) 756-4448 |

**North Coast Area**

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|---|---|---|
| A/Area Director | Sandra Davies | (250) 627-3426 |
| Section Head – Invertebrate and Herring | Steven Groves | (250) 627-3455 |
| Fisheries Resource Manager – PRD gillnet | Corey Martens | (250) 627-3404 |
| Fisheries Resource Manager – PRD seine | Jennifer Gordon | (250) 627-3421 |

| | | |
|---|---|---|
| Assistant Fisheries Resource Manager – PRD | Jessica Ottley | (250) 627-3007 |
| Fisheries Resource Manager – Bella Coola SOK | Kristen Wong | (250) 799-5620 |
| Fisheries Resource Manager – Bella Coola | Brad Koroluk | (250) 627-3007 |
| Fisheries Resource Manager – Haida Gwaii | Patrick Fairweather | (250) 559-0039 |

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http://www.dfo-mpo.gc.ca
Our Vision, Latest News, Current Topics
Twitter:
DFO Pacific: @DFO_Pacific
En Français: @MPO_Pacifique

### ACTS, ORDERS, AND REGULATIONS

https://www.dfo-mpo.gc.ca/acts-lois/regulations-reglements-eng.htm
Canada Shipping Act, Coastal Fisheries Protection Act, Department of Fisheries and Oceans Act, Financial Administration Act, Fish Inspection Act, Fisheries Act, Fisheries Development Act, Fishing and Recreational Harbours Act, Freshwater Fish Marketing Act, Navigation Protection Act, Oceans Act

### REPORTS AND PUBLICATIONS

http://www.dfo-mpo.gc.ca/reports-rapports-eng.htm
Administration and Enforcement of the Fish Habitat Protection and Pollution Prevention Provisions of the *Fisheries Act*, Audit and Evaluation Reports - Audit and Evaluation Directorate Canadian Code of Conduct for Responsible Fishing Operations, Departmental Performance Reports, Fisheries Research Documents, Standing Committee's Reports and Government responses, Sustainable Development Strategy.

### LIBRARY CATALOGUE

https://science-libraries.canada.ca/eng/fisheries-oceans/
Fisheries and Oceans Canada online library catalogue

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or http://www.dfo-mpo.gc.ca/fm-gp/aboriginal-autochtones/index-eng.htm
Aboriginal Fisheries Strategy (AFS) principles and objectives, AFS agreements, Programs, Treaty Negotiations

### AQUACULTURE MANAGEMENT

http://www.pac.dfo-mpo.gc.ca/aquaculture/index-eng.html
The new federal regulatory program for aquaculture in British Columbia, Program overview and administration, public reporting, and aquaculture science

## RECREATIONAL FISHERIES

http://www.pac.dfo-mpo.gc.ca/fm-gp/rec/index-eng.htm
Fishery Regulations and Notices, Fishing Information, Recreational Fishery, Policy and Management, Contacts, Current BC Tidal Waters Sport Fishing Guide and Freshwater Supplement, Rockfish Conservation Areas, Shellfish Contamination Closures, On-line Licencing

## COMMERCIAL FISHERIES

https://www.dfo-mpo.gc.ca/fisheries-peches/commercial-commerciale/index-eng.html
Links to Groundfish, Herring, Salmon, Shellfish and New and Emerging Fisheries homepages; Selective Fishing, Test Fishing Information, Fishing Areas, Canadian Tide Tables, Summary Fishery Management Plans, Commercial Fishery Notices (openings and closures).
Full Management Plans can be found at the Library website: https://science-libraries.canada.ca/eng/fisheries-oceans/

## FISHERIES NOTICES

http://www-ops2.pac.dfo-mpo.gc.ca/fns-sap/index-eng.cfm?
Want to receive fishery notices by e-mail? If you are a recreational sport fisher, processor, multiple boat owner or re-distribute fishery notices, register your name and/or company at the web-site address above. Openings and closures, updates, and other relevant information regarding your chosen fishery are sent directly to your registered email. It's quick, it's easy and it's free.

## LICENCING

http://www.pac.dfo-mpo.gc.ca/fm-gp/licence-permis/index-eng.html
Contact information; Recreational Licencing Information, Commercial Licence Types, Commercial Licence Areas, Licence Listings, Vessel Information, Vessel Directory, Licence Statistics and Application Forms

## NATIONAL ON-LINE LICENSING SYSTEM (NOLS)

https://fishing-peche.dfo-mpo.gc.ca
E-mail: fishing-peche@dfo-mpo.gc.ca
(Please include your name and the DFO Region in which you are located.)
Telephone: 1-877-535-7307
Fax: 613-990-1866
TTY: 1-800-465-7735

# PACIFIC REGION
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### PUBLICATIONS CATALOGUE

http://www.pac.dfo-mpo.gc.ca/publications/index-eng.html
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Science Divisions, Research Facilities, PSARC, International Research Initiatives

# GLOSSARY AND LIST OF ACRONYMS

| | |
|---|---|
| Abundance | Number of individuals in a stock or a population. |
| AFS | Aboriginal Fisheries Strategy |
| Age Composition | Proportion of individuals of different ages in a stock or in the catches. |
| Area and Subarea | Defined in Section 2 of the Pacific Fishery Management Area Regulations. A map of Pacific Fishery Management Areas is available on the Department's Internet site at: http://www.pac.dfo-mpo.gc.ca/fm-gp/maps-cartes/areas-secteurs/index-eng.htm |
| Biomass | Total weight of all individuals in a stock or a population. |
| Bycatch | The unintentional catch of one species when the target is another. |
| Canadian Science Advice – Pacific (CSAP) | Formerly named PSARC, CSAP is the Pacific Regional body responsible for review and evaluation of scientific information on the status of living aquatic resources, their ecosystems, and on biological aspects of stock management. |
| Canadian Science Advisory Secretariat (CSAS) | Coordinates the peer review of scientific issues for DFO. |
| Catch Validation Program | A program designed to monitor, record, and verify catches. |
| Committee on the Status of Endangered Wildlife in Canada (COSEWIC) | Committee of experts that assess and designate which wild species are in some danger of disappearing from Canada. |

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| Communal Licence | A licence issued to Indigenous organizations under Section 4 of the Aboriginal Communal Fishing Licences Regulations, pursuant to the Fisheries Act, to carry out fishing and related activities. |
| Container | A bag, box, tray, tote, frozen block or anything that contains fish, but not a herring enclosure. |
| Cut-off | In Major Stock Assessment areas, the Cut-off levels were established at 25% of the unfished biomass, as determined by simulation analyses; these are associated with a harvest control rule that was in place in all major areas from 1986-2018. |
| Designated service provider | A private sector company authorized by the Department to collect and collate information for the purpose of assisting vessel masters in meeting their conditions of licence with regards to reporting of information. |
| DFO | Department of Fisheries and Oceans (Canada). |
| Dockside Monitoring Program (DMP) | A monitoring program that is conducted by a company that has been designated by the Department, which verifies the species composition and landed weight of all fish landed from a commercial fishing vessel. |
| Ecologically and Biologically Significant Area (EBSA) | An EBSA is an area that has particularly high Ecological or Biological Significance, and should receive a greater-than-usual degree of risk aversion in management of activities in order to protect overall ecosystem structure and function. |
| Ecosystem-Based Management | Taking into account of species interactions and the interdependencies between species and their habitats when making resource management decisions. |
| Encounter | An interaction between a marine mammal or sea bird and fishing gear (including herring enclosures). Encounters are described as a system breach, accidental drowning, or entanglement and must be reported as soon as an encounter is discovered to the DFO Reporting Hotline (1-800-465-4336). |

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| Entanglement | An entanglement occurs when a marine mammal or sea bird is caught, ensnared in the infrastructure (nets) of a herring enclosure or fishing gear which results in drowning. |
| Fishing Effort (Effort) | Quantity of effort using a given fishing gear over a given period of time. |
| Fishing Mortality | Death caused by fishing, often symbolized by the mathematical symbol F. |
| Food, Social and Ceremonial (FSC) | A fishery conducted by Indigenous groups for food, social and ceremonial purposes. |
| Harvest Control Rule | A rule applied in fisheries management that sets catch limits, and may also include how that catch is taken (e.g. timing). In the current MSE process, the HCR is comprised of variations in control points, catch caps, and harvest rates. |
| Harvest Quotas | A fixed amount of catch provided as an opportunity for harvest to a licensed party or vessel. |
| Herring Industry Advisory Board (HIAB) | An advisory body comprised of representatives from the commercial herring sector. |
| Herring Conservation and Research Society (HCRS) | A non-profit society formed to promote and enhance the conservation of herring stocks on the west coast of Canada. |
| Indigenous Traditional Knowledge (ITK) | Knowledge that is held by, and unique to Indigenous peoples. It is a living body of knowledge that is cumulative and dynamic and adapted over time to reflect changes in the social, economic, environmental, spiritual, and political spheres of the Indigenous knowledge holders. It often includes knowledge about the land and its resources, spiritual beliefs, language, mythology, culture, laws, customs and medicines. |

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| Integrated Herring Harvest Planning Committee (IHHPC) | A representative cross-sectoral advisory process for integrated harvest planning and post-season review. |
| Interaction | Incidental mortality and serious injury (usually refers to marine mammals). This includes entanglements and collisions. |
| Intertidal | The area of the ocean shoreline located between the highest high water and lowest low water tidal levels. |
| Landed Value | Value of the product when landed by the licensed vessel. |
| Landing | Quantity of a species caught and landed. Harvested animals transferred from a vessel to land. |
| lb | Imperial pound(s), which is equal to 0.45359237 kg. |
| Limit Reference Point (LRP) | Point of possible harm to a stock, currently established at $0.3SB_0$ (unfished spawning biomass) |
| Management Procedure | Repeatable processes for providing fisheries management advice. Comprised of assessment data, a particular assessment model, and harvest control rule. |
| Management Strategy Evaluation (MSE) | The systematic determination of the expected performance of a fishery management system against a set of specified objectives. Allows for longer term decision making with management procedures and objectives that can be tested through simulations. |
| Maximum Sustainable Yield (MSY) | Largest average catch that can continuously be taken from a stock. |
| MCMC | Markov Chain Monte Carlo |

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| Natural Mortality | Mortality due to natural causes, symbolized by the mathematical symbol M. |
| National Online Licensing System (NOLS) | The online licensing system that allows harvesters to complete licensing transactions with the Department over the Internet. This includes renewal of licences, payment of fees and printing of licence and licence conditions. |
| Observer | An individual who has been designated as an Observer by the Regional Director General for the Pacific Region of DFO pursuant to section 39 of the Fishery (General) Regulations and in the employ of a service provider company that has been certified by the Canadian General Standards Board (CGSB) for Dockside Monitoring. |
| Observer Coverage | When a licence holder is required to carry an officially recognized observer onboard their vessel for a specific period of time to verify the amount of fish caught, the area in which it was caught and the method by which it was caught. |
| Operational Control Point | A biomass point that indicates a catch level or harvest rate change |
| Pacific Fishery Licensing Unit (PFLU) | DFO unit that processes and issues fishery licence applications through the NOLS. For more information on the PFLU, please visit: http://www.pac.dfo-mpo.gc.ca/fm-gp/licence-permis/index-eng.htm |
| Pelagic | Living in the surface or middle depths of the sea. |
| Population | Group of individuals of the same species, forming a breeding unit, and sharing a habitat. |
| Precautionary Approach | In Fisheries Management, the principle of being cautious when scientific knowledge is uncertain, and not using the absence of adequate scientific information as a reason to postpone action or failure to take action to avoid serious harm to fish stocks or their ecosystem. |

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| Recruitment | Amount of individuals becoming part of the exploitable stock e.g. that can be caught in a fishery. The process whereby young animals are added to a fishable stock or population. |
| Research Survey | Survey at sea, on a research vessel, allowing scientists to obtain information on the abundance and distribution of various species and/or collect oceanographic data. E.g.: bottom trawl survey, plankton survey, hydroacoustic survey. |
| Sampling Program | A program in which representative samples of animals are collected for the calculation of parameter estimates that describe such things as weight, length or age within the general population. |
| Spawner | Sexually mature individual. |
| Spawning Stock/Biomass | Sexually mature individuals in a stock. |
| Species at Risk Act (SARA) | The Act is a federal government commitment to prevent wildlife species from becoming extinct and secure the necessary actions for their recovery. It provides the legal protection of wildlife species and the conservation of their biological diversity. |
| Stakeholders | Individuals or groups with an interest in a particular fishery or activity. |
| Stock | Describes a population of individuals of one species found in a particular area, and is used as a unit for fisheries management. |
| Stock Assessment | Scientific evaluation of the status of a species belonging to a same stock within a particular area in a given time period. Results of analyses of fisheries and research data used to evaluate the effects of fishing on a stock or population and to predict the reactions of populations to alternative management choices. |

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| Stock Assessment Area | Stock assessment groupings used since 1993 by the PSARC to monitor, assess, forecast and harvest herring. |
| Substrate | The ground (often the ocean bottom) and its composition, in or on which animals live. |
| Sub tidal | A portion of the bottom of the ocean that is not exposed at low tide stages. The ocean bottom at elevations below low water or chart datum. |
| Ton | Short ton, 2000 lb., traditionally used as a unit of measure by fish harvesters in British Columbia. |
| Tonne | Metric tonne, which is 1000kg or 2204.6 lb. |
| Total Allowable Catch (TAC) | The amount of catch that may be taken from a stock, determined by analytical procedures, to achieve management objectives. |
| Total Validated Landings | The sum of all landed herring which have been validated by the Validation Program. |
| Traditional Ecological Knowledge (TEK) | A cumulative body of knowledge and beliefs handed down through generations by cultural transmission, about the relationship of living beings (including humans) with one another and with their environment. |
| Validation | The verification, by an observer, of the weight of fish landed. |
| Year-class | Individuals of a same stock born in a particular year. Also called "cohort". |

# FOREWORD

The purpose of this Integrated Fisheries Management Plan (IFMP) is to identify the main objectives and requirements for the Pacific Herring fishery in the Pacific Region, as well as the management measures that will be used to achieve these objectives. This document also serves to communicate the basic information on the fishery and its management to Fisheries and Oceans Canada (DFO, the Department) 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.

# 1 OVERVIEW

## 1.1 Introduction

This Integrated Fisheries Management Plan (IFMP) for Pacific Herring covers the period from November 26, 2019 to November 6, 2020.

This IFMP provides a broad context to the management of the Pacific Herring fisheries and the interrelationships of all fishing sectors involved in these fisheries. Section 2 considers stock assessment, science and traditional knowledge, while Sections 3 and 4 consider the social, cultural, and economic values and performance of the fishery, as well as broader management issues and initiatives. Section 5 and 6 describe allocation and management procedures. Section 7 highlights key shared stewardship arrangements with First Nations and other organizations, and then Sections 8 and 9 describes the Fisheries Management objectives for Pacific Herring and the performance criteria for the Resource Management branch.

The Appendices provided with the IFMP provide the post season review, stock assessment results, expected use table, fishing plans by sector and by fishery, information on vessel safety and compliance, and catch monitoring risk assessments.

## 1.2 History

The commercial Pacific Herring fishery started in British Columbia in the 19th century for the local food market, and quickly expanded into a dry salt fishery for Asia. In 1937, a reduction fishery was also established to produce fish meal and fish oil (Hourston and Haegele, 1980). After the collapse of Pacific Sardine in the late 1940s, Pacific Herring became the major fishery off Canada's Pacific coast, and catches steadily increased to over 200,000 tons in the early 1960s (Beamish et al. 2004). This fishery was unsustainable and by 1965 most of the older fish had been removed from the spawning population by a combination of over fishing, a sequence of weak year-classes attributed to unfavourable environmental conditions, and a low spawning biomass. As a result, the commercial fishery collapsed in 1967 and was closed to rebuild the stock. Following the fishery closure, a series of above average year-classes in the early 1970s quickly rebuilt the stocks and the fishery was re-opened in 1973 (DFO 2008).

During the closure from 1967-1971, small fisheries continued locally for food and bait (Hourston and Haegele, 1980). At this time there was a growing interest to harvest roe herring for export to Japan. A small experimental roe harvest began in 1971, and limited entry licences were introduced in 1974. This fishery expanded rapidly, and in 1983 fixed quotas were introduced to regulate the catch (DFO 2008) and to address the difficulty of managing a large fishing fleet. Today most Pacific Herring are fished for roe, which is sold in Japan. The remainder of the

commercial fisheries is divided between spawn on kelp production and the food and bait market.

## 1.3 Type of Fishery and Participants

### 1.3.1 Indigenous People of British Columbia

In the 1990 Sparrow decision, the Supreme Court of Canada found that where an Aboriginal group has an Aboriginal right to fish for food, social and ceremonial (FSC) purposes, it takes priority, after conservation, over other uses of the resource. Fisheries are authorized via a Communal Licence issued by the Department under the *Aboriginal Communal Fishing Licences Regulations*.

In addition to fishing opportunities for FSC purposes and domestic purposes for treaty rights for the Maa-nulth First Nation (as of April 1, 2011) and the Tla'amin First Nation (as of April 5, 2016), Five Nuu-chah-nulth First Nations located on the West Coast of Vancouver Island - Ahousaht, Ehattesaht, Hesquiaht, Mowachaht/Muchalaht, and Tla-o-qui-aht (the T'aaq-wiihak First Nations) - have aboriginal rights to fish for any species of fish, with the exception of Geoduck, within their Fishing Territories and to sell that fish. In addition, the Heiltsuk Nation has established an Aboriginal right to commercially fish herring spawn-on-kelp.

Additionally, the Department works collaboratively with Indigenous people on communication regarding herring stocks and spawning locations for FSC fishery planning and information on FSC activities. During the fishing season, requirements to avoid specific locations to support FSC harvest may be implemented. Indigenous people are encouraged to contact the respective Area Resource Managers to provide information on placement of boughs or locations of other FSC harvests so that the commercial fleets can be directed to avoid these areas.

### 1.3.2 Recreational

Recreational harvest may occur coast wide, however fishing effort and catch is very minimal.

### 1.3.3 Commercial

There are four commercial herring fisheries:

**Roe:** Licence eligibilities are party based and limited; there are 252 seine licences and 1,267 gillnet licences.

**Spawn on Kelp:** Licence eligibilities are party based and limited; there are 46 licences. Sixteen First Nations organizations operate 26 of the licence eligibilities, while 20 are held by individual eligibility holders.

**Food and Bait:** Licence eligibilities are party based and access is provided to the 252 roe seine licence holders on an equal share basis for the 2019/2020 season.

**Special Use:** Licence eligibilities are party based and are open access on a first come first serve basis. There are several fishery participants who hold unique quotas for specific purposes.

# 1.4 Location of Fisheries

### 1.4.1 Indigenous People of British Columbia

Indigenous people harvest whole herring, spawn on kelp, and spawn on boughs for FSC purposes according to their customs, laws, and/or treaties within their traditional territory, while engaging in protocols with other communities to harvest in other areas outside established boundaries. The harvest by Indigenous communities occurs coast wide, subject to appropriate licensing and area closures. There are also treaty and Indigenous commercial fisheries occurring in some management areas.

### 1.4.2 Recreational

Recreational harvest of Pacific Herring may also occur coastwide, subject to appropriate licensing and area closures.

### 1.4.3 Commercial

With the exception of permanent closures for various purposes and annual area closures based on advice received from the Canadian Science Advisory Secretariat (CSAS) stock assessment process, Pacific Herring commercial fisheries occur coast wide in units described as Major Stock Assessment Areas, Minor Stock Assessment Areas, and in other management areas and subareas. Areas and subareas, as described in the *Pacific Fishery Management Area Regulations*, are referenced in describing Major and Minor Stock Assessment Areas.

# 1.5 Fishery Characteristics

### 1.5.1 Indigenous People of British Columbia

Indigenous people fish for whole herring and herring roe for FSC purposes. Whole herring are fished by seine, gillnet, rake, dip net, and jig, and herring eggs are collected as spawn on kelp or other seaweed, or spawn-on-tree boughs. Treaty and Indigenous commercial fisheries may occur in some specific management areas. The importance of the herring fishery to Indigenous people is detailed in Section 3.2.

### 1.5.2 Recreational

Whole herring may be fished for recreational purposes with no closed times. The daily maximum limit for herring is 20 kg, with a two day possession limit of 40 kg. Recreational harvesting may occur by means of dip net, herring jig, herring rake, or cast net.

### 1.5.3 Commercial

The gear type, commercial licence year, and fishing period varies for each of the four commercial herring fisheries. Details on each fishery are provided in Appendices 7-10.

A range of fixed and mobile gear is used, depending on the fishery. Whole herring commercial fisheries use seine nets and gillnets and the Spawn-on-Kelp (SOK) and Special Use fisheries also use enclosures. Rakes, dip nets, gill nets and hoop nets may be used in the Special Use fishery.

All herring licences are party based, and quota related to Total Allowable Catch (TAC) or specific allocations is distributed across the four commercial fisheries. All commercial fisheries licences are limited entry, with the exception of the Special Use fishery, which is open access.

## 1.6 Governance

Management of Pacific Herring is directed by the *Fisheries Act* and other acts and regulations including:

- Areas and Subareas, as described in the *Pacific Fishery Management Area Regulations*, are referenced in describing Pacific Herring Management Areas;
- The *Fishery (General) Regulations* (i.e. Conditions of Licence) and the *Pacific Fishery Regulations*, 1993 (i.e. open times);
- The *Aboriginal Communal Fishing Licence Regulations*;
- The *Maa-nulth First Nations Final Agreement Act*
- The *Tla'amin Final Agreement Act* (effective date of April 5, 2016)
- The *British Columbia Sport Fishing Regulations*;
- The *Oceans Act*; and,
- The *Species at Risk Act*.

These documents are available on the Internet at: http://www.dfo-mpo.gc.ca/acts-loi-eng.htm

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

- A Fishery Decision-Making Framework Incorporating the Precautionary Approach;
- Managing Impacts of Fishing on Benthic Habitat, Communities and Species;
- Policy on New Fisheries for Forage Species.
- Guidance for the Development of Rebuilding Plans under the Precautionary Approach Framework: Growing Stocks out of the Critical Zone
- Policy on Managing Bycatch
- Strategic Framework for Fishery Monitoring and Catch Reporting in the Pacific Fisheries
- Ecological Risk Assessment Framework (ERAF) for Coldwater Corals and Sponge Dominated Communities

Along with existing economic and shared stewardship policies, these will help the Department achieve and maintain sustainable fish stocks, protect biodiversity and fisheries habitats, and ensure productive fisheries.

For more information on the Sustainable Fisheries Framework, please visit:
http://www.dfo-mpo.gc.ca/reports-rapports/regs/sff-cpd/overview-cadre-eng.htm

# 1.7 Consultation

DFO has a broad mandate, with the authority to regulate and enforce activities, develop policy, provide services and manage programs. To help ensure the Department's policies and programs are aligned with its vision and effectively address the interests and preferences of Canadians, DFO supports consultations that are transparent, accessible and accountable. DFO Pacific Region undertakes consultations in order to meet the duty to consult with First Nations, improve departmental decision-making processes, promote understanding of fisheries, oceans and marine transport issues, and strengthen relationships.

For more information on the consultative process for herring, please visit:
http://www.pac.dfo-mpo.gc.ca/consultation/pelag/index-eng.html

## 1.7.1 Indigenous People of British Columbia

The Department consults with Indigenous nations on the annual Pacific Herring IFMP and the management of Pacific Herring more broadly in an effort to ensure that the duty to consult is fulfilled and that the proposed plans are informed by the best available information, including traditional knowledge and understanding of fisheries practices. Consultation occurs through a variety of means including through bi-lateral discussions, group advisory processes and other processes that may be available or requested. Consultation, as provided for under Final Agreements (currently the Tla'amin Final Agreement, Tsawwassen First Nation Final Agreement; Maa-nulth First Nations Final Agreement and Nisga'a Final Agreement) are also undertaken.

## 1.7.2 Integrated Herring Harvest Planning Committee

The Integrated Herring Harvest Planning Committee (IHHPC) is the primary multi-stakeholder body providing input and advice to DFO's decision making processes for Pacific Herring fisheries. The IHHPC was established by DFO to promote a more streamlined, representative, cross-sectoral advisory process related to herring harvest planning, management, and post-season review.

The goal of the IHHPC is to support the development of fishing plans that are coordinated and integrated, to identify potential conflicts, and to make recommendations for resolving disputes. The committee operates on a consensus basis where possible. Membership in the IHHPC is comprised of representatives from Indigenous communities coastwide, the Herring Industry Advisory Board (HIAB), the Spawn-on-Kelp fishery, the Special Use fishery, the Marine Conservation Caucus (MCC), the Sport Fishing Advisory Board (SFAB), the Province of BC, and DFO.

For more information on the IHHPC, please visit:
http://www.pac.dfo-mpo.gc.ca/consultation/pelag/ihhpc-ccpih/index-eng.html

## 1.8 Approval Process

This plan is approved by the Regional Director General for the Pacific Region.

# 2 STOCK ASSESSMENT, SCIENCE AND TRADITIONAL KNOWLEDGE

## 2.1 Biological Synopsis

Pacific Herring (*Clupea pallasii*) is a pelagic species which occurs in inshore and offshore waters of the North Pacific. In the eastern Pacific waters, Pacific Herring are found from Baja California to the Beaufort Sea in Alaska.

Pacific Herring mature and recruit to the spawning stock primarily between ages three and five, with some as young as age two. Within this range, age-at-recruitment tends to increase with latitude. Adult males and females migrate from the open ocean to sheltered bays around November or December, although in the far north of the range, these dates may be somewhat later.

Conditions that trigger spawning are not altogether clear, but after spending weeks congregating in the deeper channels, both males and females will begin to enter shallower inter-tidal or sub-tidal waters. Preferred spawning locations are sheltered bays and estuaries, commonly on eelgrass or other submerged vegetation. A single female may produce as many as 20,000 eggs in one spawn, however the juvenile survival rate is only about one resultant adult per ten thousand eggs, due to high predation by numerous other species (Hay 1985).

## 2.2 Ecosystem Interactions

Herring plays a critical, foundational role in the ecosystem, supporting numerous economically, ecologically, and culturally significant species. These species include seabirds, especially diving birds such as cormorants and murres, fish, including salmon, perch, and hake, and several marine mammals. The harvest rates are based on mature spawning biomass forecasts, and juvenile fish and a significant proportion of the adult population remain available to support ecosystem processes.

Research indicates that the interplay of food supply and predation impacts on herring survival and production is complex and not readily predictable (Schweigert et al. 2010). Recent research regarding the limit reference point of Pacific Herring, defining points of serious or slowly reversible harm to a stock, have been completed (Kronlund et al. 2018; DFO 2015), and further

research is planned to more clearly define additional reference points. Furthermore, renewal of the management system is ongoing (discussed in more detail in section 2.6.1/2 and 8.3.5). In addition, DFO acknowledges that there are a variety of research initiatives undertaken by DFO and other organizations that may provide relevant and useful ecosystem information to inform management and Science decisions. Ongoing discussions within DFO and with partners and stakeholders will aim to improve coordination and communication of information.

## 2.3 Indigenous Traditional Knowledge/Traditional Ecological Knowledge

### 2.3.1 Indigenous Traditional Knowledge

Indigenous nations provide information to DFO on Pacific Herring behavior, spawn timing, abundance, ecosystem relationships, and fishing methods, based on their historic and cultural knowledge of the species and of their local areas. This information sharing contributes to the base of knowledge regarding fish behavior, spawn timing, and abundance.

### 2.3.2 Traditional Ecological Knowledge

Traditional ecological knowledge (TEK) in the form of observations and comments provided by members of the public, and DFO staff contribute to the base of knowledge regarding Pacific Herring behavior, spawn timing, and abundance. Fishery participants provide information to DFO on herring behaviour, spawn timing, abundance, ecosystem relationships and fishing methods, based on their historic and cultural knowledge of the species and of the areas harvested.

## 2.4 Precautionary Approach

The Department follows the Sustainable Fisheries Framework (SFF), which is a toolbox of policies for DFO and other interests to sustainably manage Canadian fisheries in order to conserve fish stocks and support prosperous fisheries. The SFF includes a decision-making framework incorporating a precautionary approach to commercial, recreational, and food-social-ceremonial fishing:

http://www.dfo-mpo.gc.ca/reports-rapports/regs/sff-cpd/precaution-eng.htm

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

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

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

The framework requires that a harvest strategy be incorporated into respective fisheries management plans to keep the removal rate moderate when the stock status is healthy, to promote rebuilding when stock status is low, and to ensure a low risk of serious or irreversible harm to the stock. A key component of the Precautionary Approach Framework requires that when a stock has declined to the Critical Zone, a rebuilding plan must be in place with the aim of having a high probability of the stock growing out of the Critical Zone within a reasonable timeframe:

http://www.dfo-mpo.gc.ca/reports-rapports/regs/sff-cpd/precautionary-precaution-eng.htm

In Figure 1, the limit reference point separates the critical and cautious stock zones while the upper stock reference point separates the cautious and healthy stock zones. The removal reference (harvest control rule) defines the maximum acceptable removal rate which is constant in the healthy zone, reduced in the cautious zone and negligible (little or no targeted catch) in the critical zone.

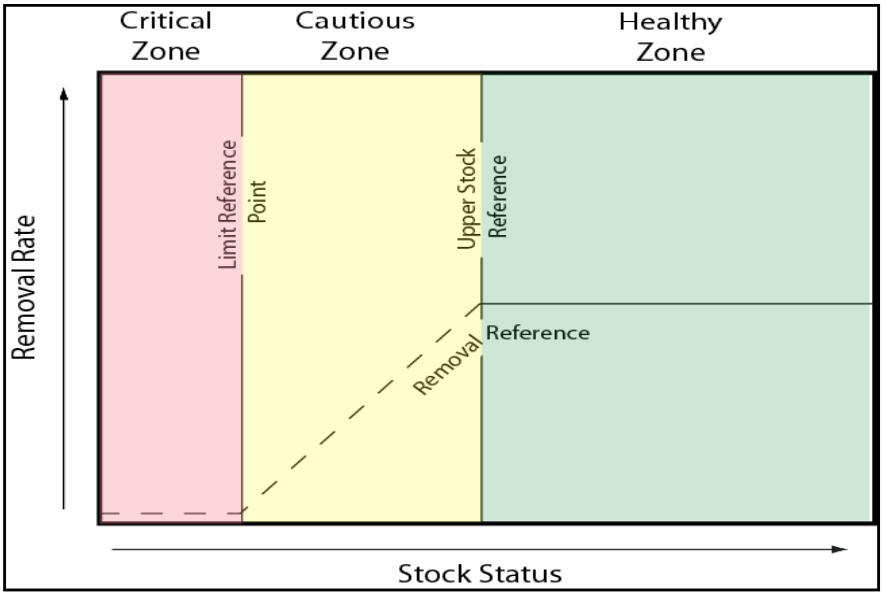


**Figure 1. The DFO harvest strategy compliant with the precautionary approach.**

## 2.5 Science Research and Other Activities

An ongoing survey has examined the fall distribution and relative abundance of juvenile herring in the Strait of Georgia since 1991. Among other things, this survey examines the

distribution, abundance, food and feeding of juvenile herring and salmonids to address the role of forage fish in an ecosystem.

DFO is undertaking a Management Strategy Evaluation (MSE) process for Pacific Herring, with engagement of managers and resource-users, focusing on evaluation of reference points and management procedures to fully align the Pacific Herring management framework with the DFO PA Framework (DFO 2009). More detail in Section 2.6.1.

Parallel to the MSE process, DFO has discussed objectives and rebuilding plans as part of the broader Pacific Herring Renewal/MSE process with the Council of the Haida Nation. A process has been identified to address the development of a rebuilding plan for Haida Gwaii herring, and the development of this rebuilding plan has been undertaken by a DFO-Haida-Parks technical working group. The rebuilding plan will include a work plan to evaluate stock status relative to rebuilding objectives, and performance metrics for objectives using data such as survey data and Haida knowledge. The target date for the final rebuilding plan for Haida Gwaii is December 2020.

## 2.6 Stock Assessment

### 2.6.1 Stock Assessment and Management Strategy Evaluation Overview

Pacific Herring are currently managed in five major and two minor stock areas. Accordingly, catch and survey information is collected independently for each of these seven areas, and DFO science advice is provided on the same scale.

Since the early 1980's, a statistical catch-age model has been used to provide stock assessment advice for the major stock areas (Haist and Stocker 1984). In 2006, the catch-age model was updated in a Bayesian framework as the Herring Catch Age Model (HCAM, Haist and Schweigert 2006), used for the 2006 through 2010 stock assessments with additional modifications (Christensen et al. 2009, Cleary et al. 2010). A new version of the model was introduced in 2011. This Integrated Statistical Catch Age Model (ISCAM, Martell et al. 2011) has been used for stock assessment from 2011-2018. In 2017, the assessment included minor updates to the analytical procedures within ISCAM, bringing the assessment in line with best practices.

A 20% harvest rate for Pacific Herring was introduced in 1983 and commercial fishing thresholds or cut-off levels were added in 1986. The 20% harvest rate is based on an analysis of stock dynamics, which indicates this level will stabilize both catch and spawning biomass while foregoing minimum yield over the long term (Hall et al. 1988, Zheng *et al*. 1993). The commercial cut-off levels were established at 25% of the unfished spawning biomass, as determined by simulation analyses. The Canadian Science Advisory Secretariat (CSAS) reviewed the biological basis for target exploitation rate, considering both the priority of assuring conservation of the resource and allowing sustainable harvesting opportunities (Schweigert and Ware 1995).

In 2016, DFO Fisheries Management requested science advice to inform the identification of Limit Reference Points (LRPs) for Pacific Herring. In response to this request, DFO Science Branch led the development of a peer reviewed paper on LRPs for Pacific Herring "The Selection and Role of Limit Reference Points for Pacific Herring (*Clupea pallasii*) in British Columbia, Canada" (Kronlund et al. 2017). A CSAS peer-review meeting occurred in February 2017. The outcome of the research and the CSAS process was support for the recommendation of a spawning biomass-based LRP of $0.3SB_0$ (unfished spawning biomass) for all five major stocks. Kronlund et al. (2017) recommended phasing-in of any new management procedure (i.e., changes to data collection, stock assessment models and/or harvest control rules) designed to avoid $0.3SB_0$ LRP and achieve targets in order to mitigate short-term consequences to resource users.

To advance work on Management Strategy Evaluation (MSE), DFO Science Branch led the development of a peer reviewed paper "Performance of management procedures for British Columbia Pacific Herring *(Clupea pallasii*) in the presence of model uncertainty: closing the gap between precautionary fisheries theory and practice (Benson et al., *In press*)". This research uses closed-loop simulations to test the performance of various management procedures (specifically different harvest control rules) against conservation, biomass, and yield objectives under three natural mortality scenarios, for SOG and WCVI stocks. This work was reviewed by CSAS in July 2018 (DFO 2018) and represents the first cycle of MSE under the DFO commitment to a multi-year renewal of the management framework (Pacific Herring Renewal). In 2019, a similar process was used to evaluate management procedures against conservation, biomass and yield objectives under the same three natural mortality scenarios for HG, PRD, and CC (DFO 2019).

The first cycle of Pacific Herring MSE includes, as a starting point, four core fisheries management objectives (DFO 2019) which reflect DFO policy, and were applied to each major stock:

1. Avoid the LRP with at least 75% probability over three Pacific Herring generations (i.e., avoid a biomass limit; P(SBt > 0:3SB0)  0:75),
2. Maintain spawning biomass at or above the USR with at least 50% probability over three Pacific Herring generations (i.e., achieve a target biomass; P(SBt  0:6SB0)  0:5),
3. Maintain average annual variability (AAV) in catch below 25% over three Pacific Herring generations (goal reflecting catch variability; AAV < 0:25), and
4. Maximize average annual catch over three Pacific Herring generations (goal reflecting catch biomass).

However, a fully specified set of objectives has not yet been developed for each management area. DFO will continue to collaborate with coastal First Nations to develop area-specific objectives specific to Food, Social and Ceremonial fisheries as well as SOK fisheries. In addition, DFO will continue to engage with the herring industry, government, and nongovernment organizations to describe broader objectives related to conservation, economics, and access.

Science Branch assessed the status of Pacific Herring stocks in 2019 and provided projections of potential herring abundance for 2020 to inform the development of the annual IFMP. The 2019 Science Response "Status of Pacific Herring *(Clupea pallasii)* in 2019 and forecast for 2020" (October 2019) presents current estimates of spawning biomass for each major stock and integrates results from the first MSE cycle for all major stocks. Biomass estimates and forecasts implement the AM2 formulation of the assessment model only (DFO 2019).

### 2.6.2 Management Procedures for Major Stocks

For all major stocks, catch is calculated based on the best performing management procedures (MPs). In the first MSE cycle for HG, none of the MPs tested could meet the conservation objective with at least 75% probability (DFO 2019), thus harvest options are not provided for 2020. For PRD, CC and SoG the MSE process identifies a range of MPs that meet the conservation objective with at least 75% probability (DFO 2019). As such, harvest options for 2020 for PRD, CC, and SOG are reported using multiple MPs all of which meet the minimum conservation criteria (Tables 3.7, 3.8 and 3.9).

For WCVI, simulations show that no tested MP could meet the conservation objective of maintaining spawning biomass above the LRP with high probability across the three future natural mortality (*M*) scenarios (DFO 2018, DFO 2019). The "best-performing" procedure maintained spawning biomass above the LRP with a 74% probability. A 2020 catch calculation is provided using a procedure which includes operational control points at (0.5, 0.6) of $SB_0$, a 10% target harvest rate, and a maximum catch cap of 2,000 t.

### 2.6.3 A Rebuilding Plan for Haida Gwaii

DFO has committed to developing and implementing a rebuilding plan for Haida Gwaii Pacific Herring by December 2020. Work is underway through a technical working group comprised of members of the Council of Haida Nation, DFO, and Parks Canada. Guidance for the Development of Rebuilding Plans under the Precautionary Approach Framework: Growing Stocks out of the Critical Zone (DFO, 2013) states the primary objective of any rebuilding plan is to promote stock growth out of the Critical Zone (i.e., to grow the stock above the status-based LRP) by ensuring removals from all fishing sources are kept to the lowest possible level until the stock has cleared this zone with high probability. Stock rebuilding does not end having met this goal, however, and one of the goals of the rebuilding plan will be to identify candidate threshold biomass levels greater than the LRP that are consistent with a rebuilt state.

The HG stock has persisted in a low biomass, low productivity state since 2000. The stock was below the LRP for much of that period and shows little evidence of sustained stock growth despite the absence of commercial fisheries since 2002 (2004 for the SOK fishery). In the absence of fishing, spawning biomass in 2020 is forecast at 4,296 t (posterior median). Results of the simulation evaluations found that none of the proposed MPs, including the historical and no-fishing MPs, performed satisfactorily against the conservation objective of maintaining spawning biomass above the LRP with high probability.

DFO supports commercial herring fishery closures for the HG major stock region until the end of the 2020/2021 herring season (April 2021).

## 2.7 Reference Points

As part of the broader renewal of the management framework for Pacific Herring, the Department is currently evaluating the performance of harvest control rules for herring, using closed-loop feedback simulations through a Management Strategy Evaluation (MSE) process.

A fully specified set of objectives that includes LRPs, Upper Stock Reference (USR) points, and Target Reference Points (TRPs) is being developed to meet goals for renewal of the Pacific Herring management system and ensure consistency with the DFO PA Framework.

The 2017 Research Document proposes four candidate USRs appropriate for Pacific Herring, as a starting point for consultations and simulations as part of Herring Renewal (DFO 2018b). These are:

1. USR = long-term average spawning biomass $SB_{avg}$,
2. USR = long-term average biomass during a productive period $SB_{avg\text{-}prod}$,
3. USR = 2x LRP (e.g., 0.6 $SB_0$), and
4. USR = $SB_0$.

The 2019/2020 stock assessments presents option 3, 0.6$SB_0$, as the USR (for all five stocks) and as the upper control point in the MPs presented for all major stocks.

# 3 SOCIAL, CULTURAL, AND ECONOMIC IMPORTANCE

## 3.1 Overview

Pacific Herring has been an important species for British Columbia's commercial fisheries for over 100 years. They are harvested in the Roe, Spawn-on-Kelp, Food and Bait, and Special Use fisheries, creating employment and contributing significantly to revenue generated from fisheries in BC. Herring fisheries have also been extremely important to BC First Nations since time immemorial (500 generations) and continue to be important, both commercially and as traditional food.

## 3.2 Value and Importance of Herring to Indigenous People

The Island Marine Aquatic Working Group (IMAWG) is a participant in the Department's Aboriginal Aquatic Resources and Oceans Management program (AAROM). IMAWG, in collaboration with South Coast DFO, described the value and importance of herring to

Indigenous people, and submitted the following paragraphs. The following is a summary of conversations IMAWG staff had with their member communities mentioned below. We invite and encourage similar submissions from other Indigenous groups or Nations for this IFMP or in the future. The full text of the IMAWG submissions can be found at their webpage at https://imawg.ca/. We also invite other Indigenous groups or Nations to provide similar links to their webpages in order to access more information about Indigenous views and knowledge of Pacific Herring.

Herring are the foundation of the marine ecosystem which coastal Indigenous people have respected and honoured since time immemorial. This is illustrated by the significant role that herring play in the culture and society of coastal communities. Traditional Ecological Knowledge (TEK) shared by elders indicates that as children they were taught to have the deepest respect for herring because it was a *"gift from the creator"*. "*Herring is the basis of the food chain. If we kill all of the herring we kill all of the salmon, we kill all of the halibut, and we kill all of the whales and so on.*" The value of herring for Indigenous people goes much deeper than an economic or monetary value, instead the value of herring is looked at as a part of a much larger picture in which "*everything is one and connected"*. This is the earliest form of what is referred to today as, Ecosystem Based Management.

Traditional harvest, knowledge and handling methods, passed down through the generations, varied from families and language groups. These methods were performed in a way that ensured there was the least amount of disturbance to the spawning herring, and their habitat, to make sure they returned every year. Today, Indigenous communities, on and around Vancouver Island, practice a multitude of adaptive harvest methods:

- Nuu-chah-nulth (West Coast of Vancouver Island): elders indicate that when the herring arrived to spawn, the entire community was engaged, from harvesting to processing. Tree boughs for the harvest of roe, (Qwikmiss), were placed in the water very quietly and carefully, so as not to disturb the schooling herring. The roe was collected from boughs and dried. Historical observations indicate the spawn used to be ten layers thick. Today, it varies from one to three layers in thickness. Harvesting methods utilized today involve using cedar trees and canoes whereas the tree is left in the water for about a week until the herring spawn. The roe is removed and salted or frozen to preserve it. Local observations on the West Coast indicate that herring are spawning in deeper water and in different locations compared to where they spawned historically.

- Kwakwaka'wakw (North Coast of Vancouver Island): elders indicate that individual groups from the community would harvest herring using nets made out of spruce roots and kelp. The harvested herring would be brought back to the community to share and primarily eaten fresh or preserved using salt. The spawn used to be over six inches thick. Today, northern Vancouver Island communities must rely on Central Coast or Haida to provide herring roe because of the limited spawn in the area and the lack of resources to access the herring.

- Coast Salish (South Coast of Vancouver Island): elders indicate that herring was traditionally harvested by individual families, rather than by the entire community. A herring rake (a long pole with spikes), was used as the primary harvest tool. This method was successful because the herring were so abundant in this area. Captured herring would be smoked or eaten fresh. Herring roe was traditionally, and currently, harvested by using trees or boughs placed in the water allowing the herring eggs to collect on the boughs. Today, some of the Hul'qumi'num can't harvest herring at all because a very small number of herring spawn in this area, and where they do spawn, it is in very low densities. Community members must travel north to Comox or Deep Bay to harvest herring and roe, and often it is harvested from kelp, which is not the method/source preferred by elders.

Herring provide more value than just the individual fish or their roe. When the herring returned to spawn in the winter, they brought with them sea birds, chinook salmon, lingcod, halibut and other groundfish species, which could then be harvested to feed communities, or to trade with other people. TEK shared by some elders indicate that Vancouver Island Indigenous people bartered and traded smoked herring with interior communities as far as northern Alberta and down into the United States. During other times of the year, many other species were sometimes not accessible to harvest locally, but as the herring returned to spawn, so did the species that fed on them. This meant there was a much easier access for local Indigenous People to harvest these other resources. Various Indigenous people across the Island would use canoes and traditional circle hooks, baited with the available herring, to troll or jig for animals such as halibut and salmon. When European settlers arrived, they learned how to fish from the local Indigenous people. This has formed the basis of modern fishing methods and techniques we use today.

The physical connection to the resource, and the ability to harvest fresh resources brought physical, emotional, spiritual and mental well-being to entire communities. Herring, and the other animals that herring brought, provided a nutrient-rich food source to sustain communities throughout the year. This is what wealth means to Indigenous people. Wealth also means sharing within and outside of the community. West coast of Vancouver Island communities would plan their feasts and ceremonies to coincide with the spawning of the herring. This would showcase their "wealth" to other communities, who were invited to come and share in the festivities. Within the traditional hereditary system, wealth meant giving and sharing. Without being able to share the wealth, communities and leaders would feel de-valued.

Often, today, you hear Indigenous people speak of wanting to "own" the herring in their traditional territory. By this, they mean that they want the ability to manage the herring in their territory as they had since time immemorial, so that they have a voice in how the "wealth" is brought to the community; both to the families and the ecosystem. There is an utmost respect for herring because it feeds the entire marine ecosystem as well as Indigenous people.

Traditional use, harvest and processing methods vary by families and language groups, but the importance and the value of herring is shared by all coastal Indigenous people. Indigenous culture teaches to take only what is needed (need being related to sustainability), and to respect and honour the ecosystem and the resources. In doing so, this will ensure access to the resource for generations to come. Indigenous People culture teaches to be the stewards of the land, to manage in a way that ensures enough for everybody and for generations to come.

The Department has engaged with Indigenous groups and Nations and stakeholders to progress on a renewal of Pacific Herring fisheries management, via a structured decision-making process. The Department hopes to build on this work with additional interested Indigenous organizations and Nations in the coming years. For Indigenous organizations that would like to explore this work, please contact the Aboriginal Affairs Advisors in your area:

Melanie Anthony, North Coast (Melanie.anthony@dfo-mpo.gc.ca)
Gerry Kelly, South Coast (gerry.kelly@dfo-mpo.gc.ca)
Matt Parslow, Fraser and Interior (matthew.parslow@dfo-mpo.gc.ca)

## 3.3 Commercial

### 3.3.1 Commercial Viability and Market Trends

Of the four commercial herring fisheries, Roe herring is the most significant (Figure 2). In 2018, the total amount of roe herring landed (a combination of the Roe gillnet and Roe seine landings) was approximately 14,965 short tons, down 34% from the 2017 harvest of 22,527 short tons. The 2017 catch was the highest roe catch volume recorded in the previous 10 years, more than 3 times the size of the 2011 low of 7,232 short tons. The roe herring share of total herring landed value was 65% in 2018, up from 57% in 2017, and approaching the high of 69% seen in 2012. The primary market for roe products is Japan, where total herring exports to the country in 2016 (29.7M, 2018$) and 2017 (39M, 2018$) were the strongest they've been since a high in 2010 (42.5M, 2018$), though falling again in 2018 (23M, 2018$). The value of herring exports total in 2017 and 2018 were 56M and 36M, respectively (2018$).

Most of BC's spawn-on-kelp is exported to Japan. Prices have declined significantly from historic peaks achieved when it was a higher value product. After many years of steady spawn-on-kelp production in BC (up to 2004), the volume of landings fell dramatically, hitting a record low of 81 short tons (162 000 lbs) in 2013. However, in 2017, the spawn-on-kelp harvest level reached 323 short tons (647 000 lbs), almost triple the 2013 value. In 2018 landings declined to more average levels of 201 short tons (402,000 lbs).

The spawn-on-kelp fishery's share of total herring landed value was 32% in 2018, up from the 25% share in 2013. The price for spawn-on-kelp peaked in the mid/late 1990s and has been highly variable in recent years. The record low was $4.74/lb. (2018$) in 2010 which recovered to $13.13/lb. (2018$) in 2013, before falling back to $8.27/lb. (2018$) in 2014. Spawn-on-kelp prices have averaged a little under $12/lb. (2018$) for the past three years (2016-2018).

Since 2011, the food and bait fishery has shown a notable increase in its landed value. Catch volume rose from less than 300 short tons in 2010 to almost 10,000 short tons in 2016, though average landings for the past 5 years (2014-2018) have been less than this at 6,695 short tons. This increase has resulted in 27% of total herring landings being attributed to the food and bait fishery on average (2015-2018), up from a share of less than 3% in 2010.

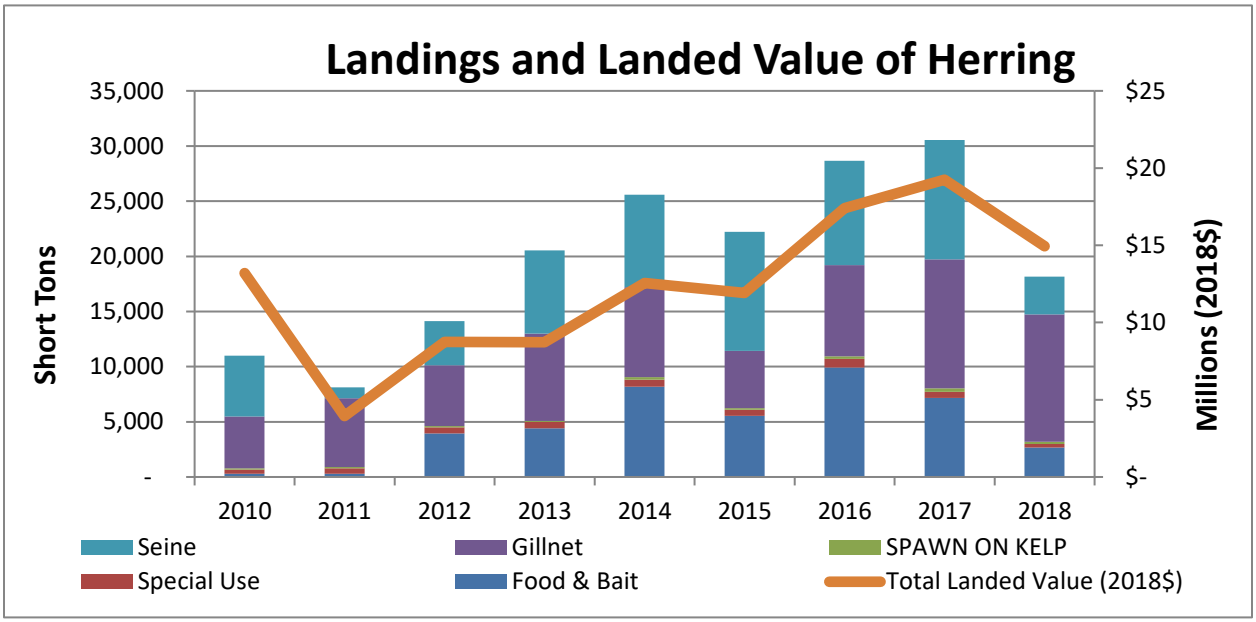


**Figure 2. Annual share of herring landed value. To convert from short tons to pounds, multiply by 2000.**

*Source: Fisheries and Oceans Canada*

## 3.4 Processing and Exporting

Once processed, the value of Roe and Food & Bait herring increases significantly over landed value. Roe herring and Food & Bait herring approximately triple in value after processing, while Spawn-on-Kelp only increases by ~15%.

Figure 3 shows the value added from processing to the various product types. It is evident that the Roe fishery has the largest value added from processing, consistent through time. This is followed by the Food & Bait and Special Use fisheries which benefit equally from processing. Finally, the Spawn-on-Kelp fishery has very little value added through processing, despite commanding very high processing prices (discussed in section 3.4.1).

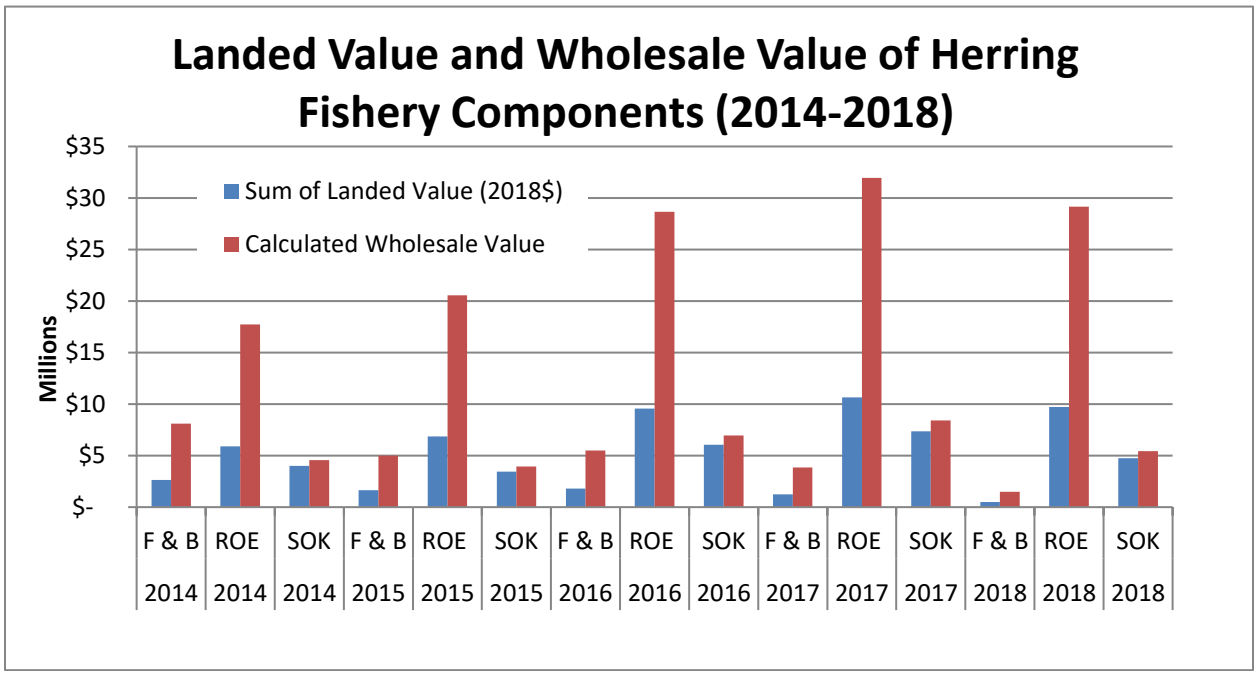


**Figure 3. Landed Value and Wholesale Value of Herring Roe fishery, Spawn-on-Kelp fishery, and Food & Bait and other fisheries, 2018$.** F & B is Food & Bait/Other, ROE is the combined seine and gillnet landings, and SOK is spawn-on-kelp.

*Source: Fisheries and Oceans Canada, Economics dept.*

Nearly all of BC's herring products are sold to Japan, China and the US. Japan is the dominant market, having imported about 63% of BC's herring products, on average, from 2014-2018. Over the same time period, China accounted for approximately 21% and the US held an 8% share. Fiji imported a significant amount of BC herring products in 2014 and 2015, making up 4% and 10% (respectively) of BC herring total export value in those years. Figure 4 shows BC's export value for herring products by importing country.

Total export value was low from 2011 through 2015 compared with previous years, largely due to a reduced export of roe herring. While this trend reversed in 2016 and 2017, higher roe volumes coupled with higher roe prices in 2017 helped export values climb above 2016 levels and surpass 2010 values, though 2018 exports are once again comparable to pre-2015 quantities.

Figure 4 illustrates the total quantity of BC's herring exports for 2010-2018. The volume of exported herring products was 11.2M kgs in 2018, down from 15.7M kgs in 2017 and now trending with 2014 – 2016 levels. This is still more than double the 2012 export volume of 5.3M kgs.

The average (2010-2018) export price (all markets, 2018$) for herring roe has been $15.16/kg, fresh herring has been $0.54/kg, and for frozen and other product types has been between $1.47/kg and $1.37/kg, respectively. This highlights that the vast majority of the value in the BC herring fishery is in the roe, especially for international markets, and how small changes in the quantity of roe exported can have large impacts on the overall value of the export market.

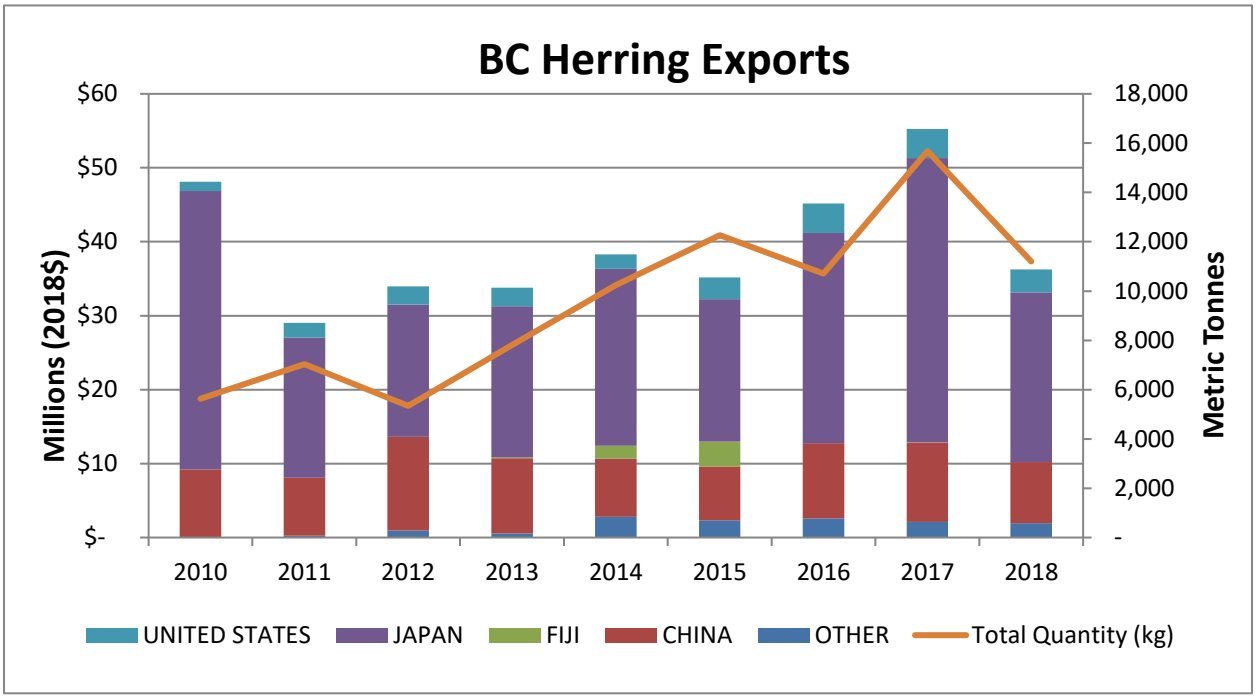


**Figure 4. Total herring export value by country adjusted for inflation (2018 dollars) and total export quantity.**

*Source: Fisheries and Oceans Canada*

In Figure 5 we see that the vast majority of herring licences in BC are in the gillnet fleet, followed by the seine fleet. In recent years the number of active food and bait licences has increased substantially, from 12 in 2010 to an average (2014-2018) of 245 active licences. This is almost on par with the average number of active herring seine licences (2014-2018) of 251. In 2016, the criteria for providing access to the food and bait fishery was changed to an equal share for all 252 of the eligible roe herring seine licenses. The active licence counts in other categories has remained relatively stable since 2010.

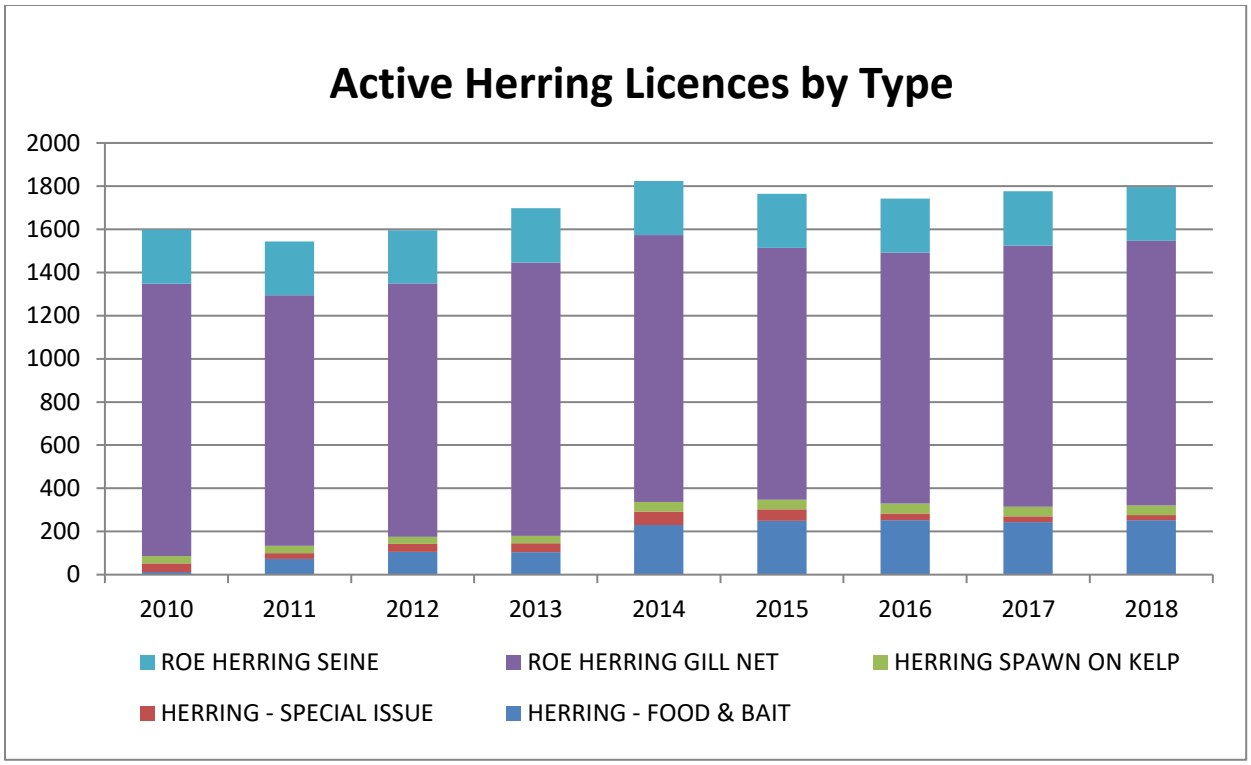


**Figure 5. Active herring licences by type, 2010-2018.**

*Source: Department of Fisheries and Oceans Canada*

### 3.4.1 Processing Employment Capacity

According to a survey commissioned by DFO to link seafood landings with processing areas and employment, on average the processing of spawn-on-kelp requires 36 hrs/metric ton at a wage of $25/hr. In contrast, the processing of roe herring requires 22 hrs/metric ton at a wage of $25/hr, and the processing of Food & Bait herring requires 12.5 hrs/metric ton at a wage of $20/hr. Based on the landings data reported above, an average of 212 full time equivalent (FTE) jobs[1] were required annually over the past five years for herring processing and paid wages (on average) of $10.6M/yr combined.

According to a report produced by the province of British Columbia on total processing employment, this accounts for approximately 6% of the total annual average fish processing jobs in BC. Processing operations are primarily focused on the production of roe herring products.

Spawn-on-Kelp landings, while comparatively low in volume, are landed and processed almost exclusively on the North Coast, while Roe herring is landed and processed almost exclusively in the Lower Mainland. Food & Bait and Special Use landings are processed both on Vancouver Island and in the Lower Mainland roughly equally.

[1] Doesn't account for administrative and maintenance jobs required by processing plants.

# 4 MANAGEMENT ISSUES

The following section highlights a number of ongoing, longer-term issues identified with respect to the management of Pacific Herring. Shorter-term and/or annual management issues are identified in the commercial fishing plans for each fishery (Appendices 7-10).

## 4.1 First Nations

DFO has received reports that some Indigenous nations have been unable to successfully harvest FSC and treaty allocations in their traditional areas. In addition to pre-season and post-season consultation, catch monitoring and co-management programs are developed in collaboration with some Indigenous communities and organizations to improve DFO's understanding of these fisheries and potential barriers to successful FSC and treaty related fisheries.

Some Indigenous nations have expressed concern regarding the status of herring stocks in some areas. In particular, they have indicated concern that stocks may not be able to support FSC access and commercial fisheries while ensuring long-term conservation and sustainability. In that context, continued efforts to consult and collaborate with First Nations (and others) regarding the management approach for Pacific Herring, as well as a broad renewal of the management framework, remain a priority for DFO. For example, the Department has broadened pre-season and post-season consultation with First Nations in order to share science and other information for planning purposes. Technical representatives from Indigenous groups and nations also participate in the Herring Technical Working Group which contributes to the annual stock assessment and forecast.

DFO has also proposed in-season management measures to address concerns identified by First Nations regarding levels of herring spawn or herring abundance observed in some areas. These measures are outlined in the applicable fishing plans for Roe (Appendix 7), Food and Bait (Appendix 9), and Special Use (Appendix 10).

## 4.2 Recreational

There is limited catch information available for the recreational herring sector, however catch is estimated to be very low.

## 4.3 Commercial

### 4.3.1 Roe Herring

**Commercial fishing licence fees:** Commercial licence holders and the Herring Industry Advisory Board (HIAB) have identified lowering commercial licence fees for herring as an urgent issue for the fishery. Specifically, licence holders have recommended license fees for BC herring fisheries be adjusted to a more equitable fee structure that aligns with fishing revenue.

**Annual fluctuations of coast wide TAC:** The Roe herring sector requires relatively stable allocation of herring in order to preserve the market from year to year. Global economics and herring catch fluctuations in other countries impact market considerations, and the profitability of the Roe fishery. The Roe herring sector also requires access to as many fishing areas as possible in order to minimize risk of fishery failure due to timing of spawn events or stock distribution.

**Fishery timing:** Ensuring that fisheries are timed to optimize roe quality and that product arrives at processing facilities in a time frame that the offloading and processing of catch does not impact the roe quality is challenging for both industry and DFO Fisheries Management, requiring on-grounds roe quality testing.

**In-season management:** The dynamic nature of the Roe fishery requires extensive in-season management and cooperation from industry to provide opportunity for quotas to be met and not exceeded. Additionally, the Department has no obligation and provides no assurance or guarantee that the maximum or any amount of fish specified in a licence will be harvested and openings will not be maintained for an indefinite time period. Fishery openings may be spatially and temporally separated to avoid gear conflicts or closed to avoid sensitive areas, for navigational purposes, or to provide access to First Nations to harvest fish or spawn.

### 4.3.2 Spawn-on-Kelp

**Licence nomination:** The restriction on licence nomination (non-transferability) in this fishery has been identified as an issue, as some individual fishery participants are no longer able or do not wish to continue to participate in the fishery. There has been renewed interest to progress this issue and DFO Fisheries Management will undertake work with interested Spawn-on-Kelp license holders.

**Herring enclosures:** The amount of herring used in a herring enclosure, number of enclosures, disease impacts, mortality estimates, and general enclosure management practices for this fishery, require further examination to improve understanding stock and ecosystem impacts.

### 4.3.3 Food and Bait

**Weather:** The ability to harvest the vessel quotas may be difficult in a given year, due to the timing of this fishery (November to February) to harvest food and bait quality fish.

**Management Measures:** Based on the scale of the fishery, the Department has implemented enhanced management measures for proper management and control of harvest. The management controls and measures for this fishery will continue to be assessed, and future management adjustments may be made to address emerging fishery developments.

### 4.3.4 Special Use

**Herring enclosures:** The amount of herring used in a herring enclosure, number of enclosures, disease impacts, and mortality estimates, and general enclosure management practices for this fishery require further examination to ensure that stock and ecosystem impacts are better understood.

## 4.4 Gear Impacts

### 4.4.1 Habitat

Under responsible operation, there are minimal environmental impacts from gear types used in the Pacific Herring fishery. During the Roe fishery, efforts are made to conduct fisheries in areas which avoid impact to sensitive spawning habitat, such as eelgrass beds. In the Spawn-on-Kelp fishery, participants are encouraged to avoid local impacts. There is potential for impacts to the benthic habitat in this fishery if poor enclosure husbandry is exercised or if there is large mortality of ponded herring.

### 4.4.2 Marine Mammals and Seabird Encounters

There is some ecological impact with respect to marine mammal and sea bird encounters, specifically with herring enclosures. Mitigation measures, including use of predator netting, weekly enclosure inspections, and post-season release of ponded herring, are in place.

Sea lions and other abundant marine mammals continue to be a significant issue in the Roe, Food and Bait, and Special Use seine fisheries. Sea lions (South Coast) and humpback whales (North Coast) are increasingly abundant in important fishing areas. There may be safety concerns in regards to contact with marine mammals. Presence of sea lions also impacts vessel stability and leads to longer set (when the fishing gear is in the water) times which may result in increased chances of herring dying and increases wear on gear. Some fishing areas experience this issue more than others.

### 4.4.3 Lost and Abandoned Gear

Lost, abandoned or otherwise discarded fishing gear (ghost gear) can cause large-scale damage to marine ecosystems through habitat disturbance and causes direct harm to the welfare and conservation of marine animals via entanglement and/or ingestion. It is estimated that between 5% - 30% of harvestable fish stocks are impacted by ghost gear across the world, posing a major threat to human health and livelihoods as well as to global food security. In 2009, the United Nations Environment Programme (UNEP) estimated that at least 640,000 tonnes of fishing gear was lost or abandoned in the world's oceans every year, making up approximately 10% of all marine litter when measured by weight. Ghost gear has many causes, but the primary ones are snags on rocks, reefs or spires beneath the surface of the water; conflict / entanglement with other deployed fishing gear; severe weather and gear being cut loose incidentally by other marine traffic crossing over top of it.

DFO is committed to showing leadership in the management of ghost gear by developing an action plan that will focus efforts on science, prevention, mitigation, as well as recovery and management. We are also working with others to advance this initiative internationally such as in regional fisheries bodies and through the Global Ghost Gear Initiative. DFO has expanded mandatory reporting requirements for lost gear to additional commercial fisheries as well as introduce a new requirement to report any retrieved gear previously reported lost has been introduced in commercial fisheries. This information will allow for targeted retrieval efforts and more robust analysis of the ghost gear issue in Canada.

## 4.5 Annual Science Assessment Program

*Larocque*-relief funding was utilized from 2006 to 2013 to fund the spawn assessment surveys, test fishing and co-management to provide data from spawn measurements and collection of biological samples for stock assessment and forecasting purposes. Amendments to Section 10 of the *Fisheries Act* grant the Minister the authority to allocate fish for the purpose of funding science and fisheries management activities.

DFO Fisheries Management and Science will continue to work with partners to assess options for a stock assessment program that is affordable. For 2020, a funding strategy has been identified to support stock assessment activities at similar levels to recent years.

## 4.6 Aquaculture

DFO is the lead federal department for sustainable management of fisheries and aquaculture. Under the *Fisheries Act*, *Pacific Aquaculture Regulations*, *Aquaculture Activities Regulations* and *Fishery (General) Regulations*, DFO regulates finfish, shellfish and freshwater aquaculture operations in BC. Cultivation of fish within the province requires a federal aquaculture licence issued under the *Pacific Aquaculture Regulations*, and, where applicable, a federal *Navigable Waters Protection Act* permit and a provincial Crown Lands tenure. Other government agency approvals may also be necessary.

Applications currently under review by the Department are available on the DFO website at: https://www.pac.dfo-mpo.gc.ca/aquaculture/licence-permis/index-eng.html#applications.

To view the Pacific Aquaculture Regulations: http://laws-lois.justice.gc.ca/eng/regulations/SOR-2010-270/FullText.html

As part of the aquaculture regulatory framework in British Columbia, DFO has developed Integrated Management of Aquaculture Plans (IMAPs). IMAPs are modelled after Integrated Fisheries Management Plans, which are used to govern wild harvest fisheries. Consultations with First Nations, interested parties, and stakeholders were and continue to be important to the IMAP process, allowing for the integration of advice, as well as environmental and social interests, into the management objectives for each aquaculture sector.

For further information refer to the following web link: http://www.dfo-mpo.gc.ca/aquaculture/aquaculture-eng.html.

Fisheries and Oceans Canada conducts aquaculture assessments on applications for licensing of new or proposed amendments to aquaculture sites. Stakeholders have requested information on the application process as it relates to development of sites in the Baynes Sound area, which is a primary location for herring fisheries. As part of the aquaculture application assessment process, the implications for other existing fisheries, any potential stock conservation concerns and ecosystem impacts will be carefully considered by the department. The Integrated Management of Aquaculture Plans (IMAPs) help to guide the management of aquaculture in BC. Consultation information relating to these plans is available at: http://www.pac.dfo-mpo.gc.ca/consultation/aquaculture/index-eng.html. DFO has also established Aquaculture Management Advisory Committees, which provide feedback related to the use and evolution of IMAPs.

## 4.7 Other Species Concerns

### 4.7.1 Species at Risk Act

Encounters with SARA-listed species (e.g. Steller sea lion) and other marine mammals and seabirds may occur in herring fisheries. The Department and the fishing industry collect information on these encounters on behalf of the Species at Risk program and Marine Mammal Unit of DFO and Canadian Wildlife Service of Environment Canada.

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."

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

To view the list of endangered, threatened, and special concern species currently listed under Schedule 1 of SARA, please visit: https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry.html

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:

https://wildlife-species.canada.ca/species-risk-registry/sar/listing/response_e.cfm

### 4.7.2 Committee on the Status of Endangered Wildlife Species (COSEWIC)

COSEWIC was formed in 1977 to provide Canadians with a single, scientifically sound classification of wildlife species at risk of extinction. COSEWIC began its assessments in 1978 and has met each year since then to assess wildlife species.

With the implementation of SARA, COSEWIC has been established as an independent body of experts responsible for identifying and assessing wildlife species considered to be at risk. This is the first step towards protecting wildlife species at risk. Subsequent steps include COSEWIC reporting its results to the Canadian government and the public, and the Minister of the Environment's official response to the assessment results. Wildlife species that have been designated by COSEWIC may then qualify for legal protection and recovery under SARA.

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

### 4.7.3 Shark Codes of Conduct

Out of the fourteen shark species in Canadian Pacific waters, three species are listed under SARA. The Basking Shark (Cetorhinus maximus) is listed as Endangered, and the Bluntnose Sixgill Shark (Hexanchus griseus) and Tope Shark (Galeorhinus galeus) are listed as species of Special Concern. The primary threats to shark species have been identified as bycatch and entanglement. In order to address the conservation concerns with shark species, it is important that measures are taken to reduce the mortality of sharks resulting from these primary threats. As such, commercial fishing licences were amended in 2018/19 to include a Condition of Licence for Basking Sharks that specify mitigation measures in accordance with SARA permit requirements. Additionally, two 'Code of Conduct for Shark Encounters' documents have been developed to reduce the mortality of Basking Shark, as well as other Canadian Pacific shark species such as Bluntnose Sixgill and Tope Shark resulting from entanglement and bycatch in commercial, aquaculture, and recreational fisheries. These guidelines include boat handling procedures during visual encounters with Basking Sharks, as well as best practices for handling Canadian Pacific shark species during entanglement encounters.

These documents have been posted online and can be found at the following URL links.

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

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

### 4.7.4 Whale, Leatherback Sea Turtle, and Basking Shark Sightings or Entanglements

The Department welcomes assistance in the reporting of any whale, leatherback sea turtle or basking shark entanglement or sighting. While there are many whale species found in Pacific Canadian waters, sightings of Basking Shark and Leatherback Sea Turtles are infrequent. The collection of sighting data is useful to scientists in determining population size and species distribution and aids in recovery efforts under the Species at Risk Act (SARA).

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

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

**Marine Mammal Incident Reporting Hotline**
The Department is responsible for assisting marine mammals and sea turtles in distress. If your vessel strikes a whale, or if you observe an entangled, sick, injured, distressed, or dead marine mammal in B.C. waters, please contact the B.C. Marine Mammal Response Network Incident Reporting Hotline immediately:

**1-800-465-4336 OR VHF CHANNEL 16**
What to report:

- Your name and contact information
- Date and time of incident
- Species
- Animal alive/dead
- Nature of injury
- Location: Latitude/Longitude coordinates, landmarks
- Pictures/Video taken

### 4.7.5 Southern Resident Killer Whale

In May 2018, DFO determined that the Southern Resident Killer Whale (SRKW) faces an imminent threat to its survival and recovery in Canada.

In May 2019, Canada worked with stakeholders, Indigenous groups and other levels of government to develop additional measures for the recovery of SRKW in 2019, including increasing prey abundance and accessibility in key foraging areas.

For the 2020/2021 fishing season, the Department is reviewing the 2019 fishery management actions that were implemented to support increased Chinook prey availability and minimize physical and acoustic disturbance in key SRKW foraging areas within the established Critical Habitat.

The Government of Canada intends to ensure that any updates to actions for the 2020/2021 season can be implemented by Spring 2020 to coincide with the return of SRKW in greater numbers to the Salish Sea. Further discussion with First Nations and stakeholders on potential measures will occur as part of the SRKW Technical Working Group meetings, which will include advancing recommendations for longer-term actions to support SRKW recovery.

### 4.7.6 Pacific Coast and Western Pacific Grey Whale

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

The two COSEWIC-assessed Endangered Grey Whale populations are under consideration for SARA listing. In-season changes to manage threats to these populations may be considered as part of the listing process. Consultations on these proposed changes and the potential impacts of SARA listing will be held in 2020. For further information, please contact the SARA Program at SARA.XPAC@dfo-mpo.gc.ca.

### 4.7.7 Marine Mammal Protection Act

In 2016, the US published new regulations (80 FR 54390) implementing the Marine Mammal Protection Act (MMPA) import provisions pertaining to the reduction of marine mammal bycatch in foreign commercial fishing operations. Every four years, the US publishes information on all fisheries that export to the US in the List of Foreign Fisheries (LFF). A harvesting nation intending to export fish and fish products to the US after January 1, 2022, must apply to the US National Oceanic and Atmospheric Administration (NOAA) for a comparability finding for each of its commercial fisheries listed in the LFF.

To receive a comparability finding for a fishery, the US MMPA import provisions mandate that the harvesting nation demonstrate: 1) the prohibition of intentional mortality or serious injury of marine mammals in the course of commercial fishing operations; and 2) the implementation of a regulatory program comparable in effectiveness to the US, including bycatch estimates from at-sea observer programs and management/mitigation measures.

DFO has been working closely with the commercial fishing industry and other stakeholders to facilitate the process under these new regulatory requirements in the US. Further information regarding the US-MMPA import provisions can be obtained by contacting your Regional Fisheries Coordinator or the DFO Marine Mammal Unit (MMU) (Contact: Lee Harber, Marine Mammal Advisor; Lee.Harber@dfo-mpo.gc.ca).

### 4.7.8 Amended Marine Mammal Regulations

On June 22, 2018 the amended *Marine Mammal Regulations* came into force. These amendments include requirements for boats to maintain a minimum approach distance of 200m from all Killer Whales. The amended regulations also provide clarification on what it means to disturb a marine mammal, including feeding, swimming or interacting with them; moving it (or enticing/causing it to move); separating a marine mammal from its group or going between it and a calf; trapping marine mammals between a vessel and the shore, or between boats; as well as tagging or marking it.

## 4.8 Oceans and Habitat Considerations

### 4.8.1 Canada's Marine and Coastal Areas Conservation Mandate

In October 2017, the Government of Canada announced that it has reached its first milestone of protecting 5% of marine and coastal areas. On August 1st 2019, the government announced that Canada had surpassed its 2020 marine conservation target of 10 percent. To date, Canada has established 14 MPAs under the Oceans Act, three National Marine Conservation Areas, one marine National Wildlife Area and 59 marine refuges. These areas protect 13.81% of Canada's marine and coastal areas. The 2020 target is both a domestic target (Canada's Biodiversity Target 1) and an international target as reflected in the Convention on Biological Diversity's Aichi Target 11 and the United Nations General Assembly's 2030 Agenda for Sustainable Development under Goal 14. More information on the background and drivers for Canada's marine conservation targets is available http://www.dfo-mpo.gc.ca/oceans/conservation/index-eng.html.

### 4.8.2 International Commitments

Recent commitments to International Agreements such as the Food and Agriculture Organization (FAO) Code of Conduct for Responsible Fishing (FAO 1995), the United Nations Fish Stock Agreement (UN 1996) and the Johannesburg Agreement (UN 2002) have shaped the development of a national Sustainable Fisheries Framework (SFF, DFO 2009) to guide Canada's domestic and international commitments for implementing a precautionary approach into its decision-making framework for fisheries.

### 4.8.3 Oceans Act

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.

On June 15, 2017, Bill C-55 was proposed to amend the Oceans Act, to facilitate the Marine Protected Area designation process, without impacting sound science or public opportunity for input. The changes would allow for interim ocean protection during the 7-10 year MPA designation process, require the application of the precautionary principle in decision making, and strengthen enforcement powers and fines to align with current provisions in other legislation, such as the Environmental Enforcement Act.

For more information on the *Oceans Act* and Canada's Ocean Strategy, please visit:
http://www.dfo-mpo.gc.ca/fm-gp/sustainable-durable/fisheries-peches/framework-eng.htm

For information on the proposed amendments to the *Ocean's Act*, please visit:
http://www.dfo-mpo.gc.ca/oceans/conservation/act-loi-eng.html

### 4.8.4 Sustainable Fisheries Framework

The Sustainable Fisheries Framework is a toolbox of existing and new policies for DFO to sustainably manage Canadian fisheries by conserving fish stocks while supporting the industries that rely on healthy fish populations. The Sustainable Fisheries Framework provides planning and operational tools that allow these goals to be achieved in a clear, predictable, transparent, and inclusive manner, and provides the foundation for new conservation policies to implement the ecosystem and precautionary approaches to fisheries management. These new policies include:

- Managing the Impacts of Fishing on Sensitive Benthic Areas;
- New Fisheries for Forage Species;
- A Fishery Decision-Making Framework Incorporating the Precautionary Approach;
- Guidance for the Development of Rebuilding Plans under the Precautionary Approach Framework: Growing Stocks out of the Critical Zone;
- Policy on Managing Bycatch; and
- Ecological Risk Assessment Framework (ERAF) for Coldwater Corals and Sponge Dominated Communities.

For more information on the Sustainable Fisheries Framework and its policies, please visit:
http://www.dfo-mpo.gc.ca/fm-gp/sustainable-durable/fisheries-peches/framework-eng.htm

Work is progressing on aligning the management of Pacific Herring with the Sustainable Fisheries Framework.

### 4.8.5 Strategic Framework for Fishery Monitoring and Catch Reporting in Pacific Fisheries

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

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

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

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

More information on the Framework and risk assessment is available on the internet at: www.pac.dfo-mpo.gc.ca/fm-gp/docs/framework_monitoring-cadre_surveillance/page-1-eng.html

In the case of the herring fishery, the risk assessment tool has been used to date to assess monitoring levels required for the Roe (seine and gillnet), Food and Bait, and Spawn-on-Kelp commercial fisheries. The risk assessments were drafted by the Department and reviewed with commercial harvesters in 2018, followed by a public comment period for the draft risk assessments as part of the draft IFMP consultation period, from December 7, 2018 to January 9, 2019. A summary of the final risk assessment results for these fisheries are highlighted in Appendix 13. Risk assessments for the FSC herring fisheries will be undertaken in the future.

### 4.8.6 National Fishery Monitoring Policy

The national Fishery Monitoring Policy has recently been finalized and is now available at: **http://www.dfo-mpo.gc.ca/reports-rapports/regs/sff-cpd/fishery-monitoring-surveillance-des-peches-eng.htm**. This policy aims to bring consistency in the development, delivery and evaluation of monitoring programs for all federally-managed wild capture fisheries in Canada, and will supersede the existing Pacific Region Strategic Framework.

To discuss the national Fishery Monitoring Policy with regional staff, please contact Amy Mar at **Amy.Mar@dfo-mpo.gc.ca** or 604-666-1090. We welcome your feedback and questions, as your contributions and participation are valuable to the implementation of this national policy.

### 4.8.7 Marine Protected Areas (MPAs)

DFO is also responsible for designating Marine Protected Areas (MPAs) under Canada's Oceans Act. Under this authority, DFO has designated three MPAs in the Pacific Region.
MPA regulations and management plans articulate any restrictions on activities taking place within the MPA, where applicable. More information on MPAs can be found at: http://dfo-mpo.gc.ca/oceans/mpa-zpm/index-eng.html.

Where applicable, management measures established for Pacific Herring have been identified to contribute to Canada's marine conservation targets. More information on these management measures and their conservation objectives are provided in the following sections.

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

A draft MPA network design, which consists of a map of areas proposed for conservation as well as potential management measures for proposed sites, was shared with First Nations, who are currently not part of the collaborative governance arrangement, and with members of the Network Advisory Committees in February 2019. Various sectors are engaged in a review of the draft network design; the deadline for input is January 30, 2020. Thereafter, the governance partners will consider all input received and anticipate sharing a revised network design with sectors and the general public for further review in late Fall 2020. Following endorsement of a MPA Network Action Plan, implementation of sites is anticipated to occur over time and there will be additional site specific assessment and consultation prior to introduction of regulatory measures.

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

**Endeavour Hydrothermal Vents (EHV) MPA**
The EHV MPA was designated in 2003. The hydrothermal vents lie in waters 2,250 m deep 250 km southeast of Vancouver Island. There is occasional commercial fishing in the MPA, and pelagic fishing is not considered to be in conflict with the objectives of the MPA. Any licenced fishing in the MPA takes place very near the ocean surface and will continue as it does not significantly impact the hydrothermal vents ecosystem. All commercial groundfish fisheries are restricted within the Endeavour MPA. More information can be found online at: http://www.dfo-mpo.gc.ca/oceans/mpa-zpm/endeavour-eng.html.

**SGaan Kinghlas-Bowie Seamount (SK-B) MPA**
The SK-B MPA (180 km west of Haida Gwaii) was designated in 2008 and was established to conserve and protect the unique biodiversity and biological productivity of the area's marine ecosystem, including the surrounding waters, seabed and subsoil. The MPA is cooperatively managed by DFO and the Council of the Haida Nation (CHN) through the SK-B Management Board (The Board). The Board (in consultation with the SK-B Advisory Committee) recently finalized the SK-B MPA Management Plan (http://www.dfo-mpo.gc.ca/oceans/publications/sk-b-managementplan-plangestion/page01-eng.html) which guides the conservation and protection of the SK-B ecosystem. In 2018, the Government of Canada and the Haida Nation closed all bottom-contact fishing at SK-B MPA as a precautionary management approach to protect sensitive benthic habitats, resulting in the MPA being closed to all commercial fishing activities. More information can be found online at: http://www.dfo-mpo.gc.ca/oceans/mpa-zpm/bowie-eng.html

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

The Hecate MPA zoning approach involves different management measures within each zone. Under the Hecate MPA Regulations, each glass sponge reefs Core Protection Zone (CPZ) is closed to all commercial, recreational, and Aboriginal fishing. Anchoring, cable installation, maintenance and repair are also prohibited in the CPZ. The Vertical Adaptive Management Zone (VAMZ) and Adaptive Management Zone (AMZ) is currently closed to all commercial bottom contact fishing activities for prawn, shrimp, crab and groundfish (including halibut), as well as for midwater trawl for hake. For more detail on the fishery closure within the Hecate MPA, review Fishery Notice FN0198 found here: https://notices.dfo-mpo.gc.ca/fns-sap/index-eng.cfm?DOC_ID=194216&ID=all&pg=view_notice.

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

For further detail on the ecological significance or management plan for the MPA, visit our website at: http://www.dfo-mpo.gc.ca/oceans/mpa-zpm/hecate-charlotte/index-eng.html

### 4.8.8 National Marine Conservation Area Reserves (NMCARs)

**Gwaii Haanas**

Gwaii Haanas National Park Reserve, National Marine Conservation Area Reserve and Haida Heritage Site is a 5000 km2 land-and-sea protected area in the southern part of Haida Gwaii (formerly the Queen Charlotte Islands) approximately 100 kilometres off the north coast of British Columbia. The Haida Nation designated the area a Haida Heritage Site in 1985. The terrestrial part of Gwaii Haanas was designated a National Park Reserve by the Government of Canada soon after, and Canada and the Haida Nation have been managing the area cooperatively since 1993. In 2010, the Gwaii Haanas marine area was designated a National Marine Conservation Area Reserve.

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

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

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

The final zoning plan includes several areas of strict protection where commercial and recreational fishing is prohibited. The zoning plan can be found at: https://www.pc.gc.ca/en/pn-np/bc/gwaiihaanas/%20info/%20consultations/gestion-management-2018.

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

Implementation of the Land-Sea-People plan will also involve cooperative management of fisheries using an ecosystem-based management framework and monitoring activities will be supported through partnerships. For more information on Gwaii Haanas and the Archipelago Management Board, visit www.parkscanada.gc.ca/gwaiihaanas.

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

**Southern Strait of Georgia NMCAR**
Parks Canada, in partnership with the Government of British Columbia, launched a feasibility assessment for a National Marine Conservation Area Reserve (NMCAR) in the southern Strait of Georgia in 2004. Since then, consultations with First Nations, key stakeholders, communities and the public have occurred. Informed by those discussions, a proposed boundary for consultation was announced by the provincial and federal Ministers of Environment in 2011. Since 2011, the two governments have been consulting with First Nations, local governments and industry. A preliminary concept is currently being developed to help advance consultations on the feasibility assessment. If the results of the feasibility assessment indicate that establishment of a NMCAR is practical and feasible, an establishment agreement between the Governments of Canada and British Columbia will be negotiated and an interim management plan developed. If the NMCAR is determined to be feasible, further consultations related to establishment agreements and Indigenous rights will also take place with First Nations. Commercial and recreational fishing sectors, communities, landowners, recreation and environmental organizations and other stakeholders will also have opportunities to provide input to the development of the interim management plan.

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

**Scott Islands Marine National Wildlife Area**
The Scott Islands Marine National Wildlife Area (mNWA) is the first protected marine area established by Environment and Climate Change Canada (ECCC) under the Canada Wildlife Act. In support of the conservation objectives of the Scott Islands mNWA, DFO is consulting on new regulations under the Fisheries Act to restrict certain fisheries that pose a risk to seabirds. The proposed regulations would prohibit fishing for three key forage fish species that serve as a

key food source for seabirds (Pacific sand lance, Pacific saury, and North Pacific krill) as well as groundfish bottom trawling (in portions of the mNWA consistent with existing commercial closures) and salmon gill net and seine for commercial and Indigenous fishing for food, social and ceremonial purposes.

For further information on this, please contact Aleria Ladwig at Aleria.ladwig@dfo-mpo.gc.ca.

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

The Scott Islands Protected Marine Area Regulations can be found at: https://laws-lois.justice.gc.ca/eng/regul8ations/SOR-2018-119/index.html

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

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

The PNCIMA Plan is available online at: http://www.pncima.org/

### 4.8.9 Other Marine Conservation Initiatives

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

DFO is undertaking a multi-year review of the conservation effectiveness of RCAs in order to determine whether some RCAs can meet the Other Effective Area Based Conservation Measures criteria. The conservation effectiveness of RCAs might be improved by adjusting boundaries or through relocation, changing management measures, conducting more research, and increasing monitoring and compliance.
RCAs in the Northern Shelf Bioregion have been selected for the first phase of engagement to align with the MPA network planning process in that area. Engagement in other bioregions will occur in subsequent years. Further information on RCAs and the boundary proposals are available online at: http://dfo-mpo.gc.ca/rockfish-conservation or for further information on this, please contact DFO.RCA-ACS.MPO@dfo-mpo.gc.ca.

**Strait of Georgia and Howe Sound Glass Sponge Reef Marine Refuges**
All commercial, recreational and FSC bottom-contact fishing activities for prawn, shrimp, crab and groundfish are prohibited within 17 areas in Howe Sound and the Strait of Georgia to protect glass sponge reefs, as marine refuges.

This includes prohibitions of the following fishing activities:

- prawn and crab by trap
- shrimp and groundfish by trawl
- groundfish by hook and line
- use of downrigger gear in recreational salmon trolling (restricted via Condition of Licence in eight of the 17 areas)

Nine areas were closed to all commercial, recreational and FSC bottom-contact fishing activities in 2015 (2016 for FSC), followed by an additional eight areas in 2019. Nine remaining areas in Howe Sound require ground-truthing to assess their ecological significance and management measures may be considered in the future.

For further information on this, please contact Deirdre Finn at Deirdre.Finn@dfo-mpo.gc.ca. Current closure locations and more information are available at: http://www.canada.ca/glass-sponge-closures

## 4.9 Indigenous Fisheries Programs

### 4.9.1 Pacific Integrated Commercial Fisheries Initiative (PICFI)

The Pacific Integrated Commercial Fisheries Initiative (PICFI) was announced in 2007 and is aimed at achieving environmentally sustainable and economically viable commercial fisheries, where conservation is the first priority and Indigenous aspirations are supported. The Government of Canada committed $175 million over five years to implement the initiative. PICFI builds on fisheries reform work begun in response to the 2004 reports of the First Nations Panel on Fisheries and the Joint Task Group on Post-treaty Fisheries, as well as subsequent discussions in a wide variety of forums that have confirmed the need for PICFI. DFO has

acquired a total of 145 roe herring gillnet and 7 roe herring seine licence eligibilities through the PICFI program. In 2017, it was announced that the Integrated Commercial Fisheries Initiative will receive permanent funding to expand Pacific and Atlantic programs. PICFI currently receives an ongoing $22.05M annually. Commercial Fisheries Enterprises (CFE) receive a notional funding of up to $375K under the Business Development Source (BDS) funding envelope and a notional funding of up to $130K under Capacity Building Support (CBS). Beginning 2018/2019, a $1M Aquaculture Development Source (ADS) funding envelope was launched to support aquaculture projects under PICFI.

More information on PICFI is available at: http://www.pac.dfo-mpo.gc.ca/fm-gp/picfi-ipcip/index-eng.html

### 4.9.2 Allocation Transfer Program (ATP)

The Allocation Transfer Program (ATP) was created in 1994 under the Aboriginal Fisheries Strategy. Its purpose is to support fisheries-based economic development for First Nations groups in coastal communities by providing opportunities to get more involved in the commercial fishing industry. The program can provide commercial fisheries access to eligible Indigenous groups through a voluntary relinquishment process, where commercial license holders are offered the opportunity to permanently relinquish licenses in exchange for payment. The equivalent commercial fishing capacity is then re-issued to Indigenous groups, so the ATP does not add to the existing effort on the resource. As of 2011, no further federal funding has been budgeted for ATP in the Pacific Region. With the renewal of the PICFI, DFO is focused on supporting Indigenous Commercial Fishing Enterprises (CFEs). ATP will continue as a source of distribution of communal commercial licenses; DFO has acquired a total of 136 roe herring gillnet and 4 roe herring seine licenses through ATP. The ATP is considered fully allocated with the exception of some licenses and quota that are generally low value, low interest, and/or not economically viable. The Department works on plans to allocate available licenses on a temporary or ongoing basis. Once a plan has been approved, eligible groups are informed of the opportunities through a call out process.

More information on ATP is available at: http://www.pac.dfo-mpo.gc.ca/abor-autoc/atp-ptaa-eng.html

# 5 ACCESS AND ALLOCATION

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

## 5.1 Indigenous People of British Columbia

Indigenous harvest of herring for FSC purposes may occur coast wide where authorized by a communal licence. DFO will ensure Indigenous communities have priority access to the resource for FSC purposes, and FSC allocations for each Major Stock Assessment Area are determined through bilateral discussions.

Fisheries chapters in modern Indigenous treaties may articulate a treaty fishing right for FSC purposes that could be protected under Section 35 of the Constitution Act, 1982. Commercial access may be provided either through the general commercial fishery or a Harvest Agreement, which is negotiated at the same time as the treaty and is referenced in the treaty, but is not protected under the Constitution Act.

Four modern treaties (Nisga'a Final Agreement, Tsawwassen First Nation Final Agreement (TFA), Maa-nulth First Nations Final Agreement (MNA) and Tla'amin Final Agreement) have been ratified in British Columbia. Tsawwassen and Maa-nulth First Nations Treaties came into effect on April 3, 2009 and April 1, 2011, respectively. Most recently, the Tla'amin First Nations Treaty came into effect on April 5, 2016. These agreements articulate a treaty right to food, social and ceremonial harvest of fish and describe the role for First Nations in fisheries management.

Five Nuu-chah-nulth First Nations located on the West Coast of Vancouver Island - Ahousaht, Ehattesaht, Hesquiaht, Mowachaht/Muchalaht, and Tla-o-qui-aht (the T'aaq-wiihak First Nations) - have aboriginal rights to fish for any species of fish, with the exception of Geoduck, within their Fishing Territories and to sell that fish. The Department has developed a 2019/20 Five Nations Multi-species Fishery Management Plan (FMP) in consultation with the Five Nations. The FMP includes specific details about the fishery, such as allocation/access, licensing and designations, fishing area, harvesting opportunities, and fishery monitoring and catch reporting. For further information see the FMP at: https://waves-vagues.dfompo.gc.ca/Library/4079393x.pdf

The Supreme Court of Canada found in its *Gladstone* decision that the Heiltsuk First Nation had an Aboriginal right to commercially fish herring spawn-on-kelp (SOK). The Heiltsuk currently hold nine SOK licences in the Central Coast area. This SOK is harvested using the preferred means of the Heiltsuk, which is open ponding.

## 5.2 Recreational

Recreational harvest of herring may occur coast wide, and requires a British Columbia Tidal Waters Sport Fishing licence. Herring may be fished for recreational purposes year-round. The daily maximum sport limit for herring is 20 kg, with a two-day possession limit of 40 kg.

## 5.3 Commercial

The harvest level for herring in each Major and Minor Stock Assessment Area is based on science advice (provided through the CSAS process) and is derived from estimates of annual stock biomass. Science advice is provided in metric tonnes, which are then converted to short tones for fishery planning purposes. After providing for FSC needs, commercial fishery quotas are set and allocations are distributed across the four commercial herring fisheries by the Department, and proposed allocations are discussed with commercial fishery representatives through consultation. The annual distribution of quotas are presented as an expected use table (Appendix 4).

# 6 MANAGEMENT MEASURES FOR THE DURATION OF THE PLAN

This year's stock assessment advice, in the form of a Science Response, includes the probability that the stocks will be below the LRP. Probabilities are used because there is inherent uncertainty in forecasting what the state of the stock will be for this year's fisheries. The Science Response included analysis using only AM2 formulations of the assessment model because AM2 provides lower absolute stock estimates and therefore is well aligned with the Sustainable Fisheries Framework, as it assumes a 'catchability' factor of 1 for the dive survey (assumes all the spawn has been observed rather than estimating that some has not been observed).

New this year, Management Strategy Evaluation (MSE) simulations for Haida Gwaii, Prince Rupert District, and Central Coast assessed the performance of various management procedures (including harvest control rules comprised of various harvest rates, control points, and catch caps) against stock specific objectives. This same work occurred for Strait of Georgia and West Coast Vancouver Island in 2018. Catch calculations for these areas were informed by the management procedures that met a "conservation objective" which was to avoid the limit reference point of 30% of the unfished herring biomass with a high probability (where "high" is defined as >75% in the Precautionary Approach Framework) in simulation testing over 15 years of application.

Indigenous groups will continue to have priority access for Food, Social, and Ceremonial (FSC) fisheries in all stock areas. Subject to consultations, commercial fishery closures in HG and WCVI will continue, and be in place in PRD (this area was open in 2018/2019). Commercial fishing opportunities are identified in CC and SOG.

For several years, HIAB has requested that DFO reduce roe herring license fees, especially for roe seine licenses, due to the high cost compared to the limited commercial opportunities. An avenue to support this request has not been identified and fees will not be reduced for this season.

Additionally, HIAB has requested additional flexibility of transfer between herring commercial fisheries, such as transfer of unused quota from Food and Bait into Roe seine, and transfer of Roe seine allocations to Roe gillnet. Additional flexibility between the Food and Bait and Roe seine fisheries is not feasible this year, however the Department will be facilitating transfer of Roe seine or Roe gillnet allocations to the other gear type, on a one year trial basis.

The Gear Selection Trial program is provided to allow licence holders seine (HS, FHS) and gillnet (HG, FHG) licence to select their licence to be fished by either a seine gear or gillnet gear pool. This means that seine and gillnet licences would be provided that could have a combination of quotas that come from seine or gillnet licences, but are fished by just one of the gear types. The selection into a gear would be one way only (not revisable prior to or in season) but would be for the 2020 season only and not carry over to subsequent seasons.

Each seine (HS, FHS) and gillnet (HG, FHG) eligibility licence is attributed a quota amount that is a calculation of the total gear fishery quota divided by the number of licences of that type. Licences will be issued for every seine and gillnet pool that will be a sum of both the seine and gillnet gear source quotas. The Gear Selection Trial will be evaluated during and subsequent to the season, and no assurance is provided it will be available in subsequent seasons.

**Recommendations for each area are as follows:**

**HG:** Closed. No MSE tested management procedures could meet the conservation objective of avoiding the LRP, even in the absence of fishing. Stock biomass and growth have been low for almost 20 years. Spawning biomass in 2020 is forecast to be 4,753 short tons (range: 1,824-13,392 tons) and to be below the LRP with an 80% probability in the absence of fishing. Development of a Rebuilding Plan is underway with a target date of December 2020, and to support this work this area will be closed for both the 2019/20 and 2020/21 fishing season.

**PRD:** Closed. Three MSE-tested management procedures provide for a small catch (up to 628 tons), however is not enough to allow commercial catch (FSC expected use is 600 tons). In this area, stock biomass and growth has remained low but steady, fluctuating around the LRP since 2005. Spawning biomass in 2020 is forecast to be 24,942 short tons (range: 12,239-50,373 tons) and to be below the LRP with a 30% probability in the absence of fishing.

**CC:** SOK opportunities only up to a maximum of 1,715 tons (5.2% harvest rate). This catch level is within the range of quota levels calculated from the MSE process. This option provides for FSC and commercial SOK opportunities only, including the Heiltsuk's rights-based fishery. This stock shows a steady increase in spawning biomass since a low in the late 2000's, with a slight decrease in forecasted spawning biomass for 2020. Spawning biomass in 2020 is forecast to be 32,816 short tons (range: 14,577-65,957 tons) and to be below the LRP with an 11% probability in the absence of fishing.

**SOG**: Food and Bait, Special Use, and Roe herring opportunities (20% harvest rate) to a maximum of 11,960 tons. All tested MPs met the conservation objective of avoiding the LRP with a high probability under MSE simulations; the quota level is based on application of a MP that applies a 20% harvest rate. Spawning biomass in 2020 is forecast to be 59,792 tons (range: 29,965-121,349 tons) and below the LRP with a 28% probability in the absence of fishing. SOK commercial fisheries do not occur in this area.

**WCVI**: Closed. No MSE-tested management procedures could meet the conservation objective of avoiding the LRP with a high probability. Low biomass and growth have persisted in most years since 2005, despite fishery closures during that time. The spawning biomass in 2020 is forecast to be 24,171 short tons (range: 12,122-49,086 tons) and below the LRP with a 14% probability in the absence of fishing.

**Minor Stock Areas**: Commercial SOK fisheries will be provided at a 10% harvest rate, applied to the 2019 spawning biomass.
Area 27: 35 tons
Area 2W: 300 tons

See Appendix 5 to 10 for information regarding the Aboriginal Fishing Plan, Recreational Fishing Plan, and Commercial Fishing Plans for each commercial herring fishery, including:

- Total Allowable Catch (TAC);
- Fishing Seasons/Areas;
- Closed Areas;
- Control and Monitoring of Removals;
- Decision Rules;
- Licensing; and
- Fishery Monitoring Programs.

# 7 SHARED STEWARDSHIP ARRANGEMENTS

Indigenous groups and stakeholders work closely with Fisheries Management staff in pre-season, in-season, and post-season processes, providing expert knowledge and specialized experience to inform management decisions and cooperatively develop solutions to management issues.

The Gwaii-Haanas Land-Sea-People Management Plan has been under development since 2014 and the final plan was signed and approved in November, 2018. Gwaii Haanas is managed cooperatively by the Haida Nation and the Government of Canada through the Archipelago Management Board (AMB). This one-of-a-kind management plan includes a single integrated vision for Gwaii Haanas, as well as principles to guide the AMB in how they manage this

globally renowned protected area. More information on this plan can be found at: https://www.pc.gc.ca/en/pn-np/bc/gwaiihaanas/info/consultations

Additionally, development of a rebuilding plan for Haida Gwaii herring has been undertaken by a DFO-Haida-Parks Canada technical working group. The rebuilding plan will include a work plan to evaluate stock status relative to rebuilding objectives, and performance metrics for objectives using data such as survey data and Haida knowledge. The target date for the final rebuilding plan for Haida Gwaii is 2020.

On March 31, 2015, Heiltsuk and DFO signed a Letter of Understanding (LOU) committing to the development of a Joint Management Plan (JMP) for each herring fishery season in the Central Coast, which, if agreed to, reflects management decisions for that season. When developed, a 2019-20 JMP may be provided by representatives and a summary of the JMP may be provided in this management plan if time permits. Development of the 2020/21 JMP will include acceptable criteria for permitting a roe fishery to occur in this area (e.g. spawn distribution and biomass levels).

In addition, the Herring Conservation and Research Society (HCRS) plays an important role in the annual management of the Roe herring fishery by conducting a roe quality test program and has made significant contributions over time to support research in the area of stock dynamics and abundance.

# 8 OBJECTIVES

## 8.1 National

DFO aims to:

- Meet conservation objectives and ensure healthy and productive fisheries and ecosystems
- Base management decisions on the best available scientific information
- Manage First Nations fisheries for FSC purposes in a manner consistent with the Sparrow Decision (SCC 1990) and other relevant court decisions (*R v. Gladstone 1996 and Ahousaht*) and treaty obligations
- Work collaboratively with commercial and recreational sectors to provide fishing opportunities in a manner that ensures the long term sustainability of the resource
- Provide stability and predictability in fisheries management and improved governance through an open and transparent consultation process
- Foster shared stewardship
- Manage commercial fisheries to improve economic performance, provide certainty for participants and to optimize harvest opportunities

## 8.2 Pacific Region

The overall goal of Fisheries Management in the Pacific Region is the conservation of Canada's fisheries resources and sustainable resource utilization to ensure priority (after conservation) FSC access for First Nations and generate economic prosperity. This is accomplished through close collaboration with resource users and stakeholders based on shared stewardship consistent with treaty and Indigenous rights. Fisheries Management is responsible for management of the Indigenous, commercial, and recreational fishing in the Pacific Ocean and creating the conditions for a vibrant and innovative aquaculture industry.

Fisheries Management will continue to develop and implement the Sustainable Fisheries Framework by integrating the precautionary and ecosystem approach frameworks into IFMPs with the goal of protecting vulnerable marine and freshwater ecosystems and vulnerable stocks from significant adverse impacts, and to help ensure long term sustainable management and support economic prosperity.

## 8.3 Pacific Herring Resource Management

Objectives for Pacific Herring Resource Management include stock conservation, First Nations access to FSC fish, monitoring and research of ecosystem processes, sustainable harvest and economic considerations, renewal of the management framework, and transparent and open consultation processes. More detail is outlined below.

### 8.3.1 Stock Conservation

The biological objective is to conserve and protect Pacific Herring stocks.

### 8.3.2 Access for Indigenous People

DFO will continue to work collaboratively with Indigenous communities to provide priority opportunities to harvest fish for food, social, and ceremonial (FSC) purposes, in a manner consistent with the *Sparrow* Decision (SCC 1990) and for treaty and Indigenous commercial fisheries.

For more information see Appendix 5 or visit: http://www.pac.dfo-mpo.gc.ca/abor-autoc/index-eng.html

### 8.3.3 Ecosystem Processes

The ecosystem objective is to manage ecosystem impacts to Pacific Herring using the best available science, Indigenous traditional knowledge/traditional ecological knowledge (ATK/TEK), and through application of the precautionary approach and comprehensive monitoring of Pacific Herring fisheries.

### 8.3.4 Sustainable Harvest and Economic Opportunities

DFO will work collaboratively with commercial fishery participants to:

- Provide reasonable fishing opportunities in a manner that ensures long-term sustainability of the resource, through the application of decision rules and management measures.
- Monitor fish stocks and fish harvest to allow for sustainable management decisions and improve knowledge of the stock.

DFO will continue to provide opportunities for a recreational fishery for Pacific Herring. For more information, see Appendix 6.

### 8.3.5 Renewal of the Management Framework for Pacific Herring

In 2015, DFO initiated the Pacific Herring Renewal (PHR) initiative in order to renew the current management framework for Pacific Herring and better align with the Sustainable Fisheries Framework. The PHR is comprised of three main elements: (1) Renewal of the Management Framework, (2) Fisheries Management Reforms, and (3) Survey Program Review. A rebuilding plan for Haida Gwaii Herring will also be undertaken, with a target date of December 2020 for completion.

The Department's objectives undertaking this process are to provide transparent decision making, and choose the best performing management procedures for Pacific Herring. Additionally, the Department aims to facilitate collaboration, as well as fulfill many of the other objectives listed in section 8.3, including sustainable harvest, Indigenous FSC access, and economic opportunities.

More detail on this initiative and progress to date is provided in Sections 2.6 and 2.7.

### 8.3.6 Consultation

An open and transparent consultation process will be maintained for management issues related to Pacific Herring, including the annual development of an IFMP and long-term planning of the fishery with Indigenous groups and stakeholders.

### 8.3.7 Compliance

Key priorities for the Pacific Herring fishery for DFO Conservation and Protection are:
- Ensure fisheries are carried out in an orderly manner and in compliance with legislation and licence conditions.
- Ensure compliance with the herring fishery monitoring programs.
- Provide regular reports on enforcement and compliance for this fishery through the Record of Management Strategies report (RMS), the Fisheries Enforcement Activity Tracking System (FEATS), and through the Departmental Violation System (DVS).

For more information, see Appendix 11.

# 9 PERFORMANCE / EVALUATION CRITERIA

## 9.1 National

- Pacific Herring conservation objectives are met such that fisheries and ecosystems are healthy and productive.
- Ensure harvest opportunities in a manner consistent with the *Sparrow* Decision (SCC 1990) and other relevant court decisions and treaty obligations.
- Reasonable effort has been made to provide opportunities for economic prosperity while meeting conservation objectives.
- Consultation and management processes are stable, transparent, and predictable.

## 9.2 Pacific Region

- Execution of the Pacific Herring fisheries in accordance with the requirements outlined in the IFMP.
- Ensure monitoring program provides accurate information on catch and effort and is designed to provide information necessary for effective management of the herring resource. This includes ensuring the required level of fisheries monitoring to support the fishery and conservation objectives.
- Proper controls in place for management and control of the fisheries and the conservation and protection of fish.
- Engagement with First Nations and stakeholders for informed management decisions and cooperatively developed solutions to issues related to management of Pacific Herring fisheries.
- Review of progress on renewal of the herring management framework through a collaborative process.

## 9.3 Pacific Herring Resource Management

### 9.3.1 Stock Conservation

- Application of a precautionary approach to inform harvest decisions.
- Development and implementation of a rebuilding plan for herring stocks that fall into the critical zone, as defined by the Sustainable Fisheries Framework

### 9.3.2 Access for Indigenous Nations

- Work collaboratively with Indigenous Nations to provide priority access, after conservation, for FSC purposes.

### 9.3.3 Ecosystem Processes

- Consider impacts to the ecosystem from management decisions using best available Science, Indigenous traditional knowledge/traditional ecological knowledge and application of the precautionary approach and monitoring of the herring fisheries.

- Coordinate and communicate with Science to understand on-going research, information gaps, and plan future work.

### 9.3.4 Sustainable Harvest and Economic Opportunities

- Provide reasonable fishing opportunities in a manner that ensures long-term sustainability of the resource, through the application of decision rules and management measures.
- Enact and enforce regulations through licences and licence conditions.
- Develop standards and monitor compliance of the various herring monitoring programs funded by individual licence eligibility holders.
- Collection of accurate and timely catch, effort, landings, and other relevant information (e.g. marine mammal and seabird encounters) by geographic location and time period.
- Collect data to assist in management decisions and monitor size and age distribution of herring caught.
- Through post-season reviews and data analysis, assess catch monitoring, management measures, fishery implementation processes and emerging issues.

### 9.3.5 Renewal of the Management Framework for Pacific Herring

- Use decision rules which consider the stock status relative biological and operational control points, such as the risk of stocks breaching the limit reference point of $0.3SB_0$,
- Provide transparent decision making in regards to harvest levels and area closures.
- Facilitate Indigenous and multi-stakeholder collaboration on management procedures.
- Use an MSE approach to achieve resource management and other objectives.

### 9.3.6 Consultation

- Hold pre-season planning meetings and seek stakeholder and First Nations advice on development of the IFMP allowing up to 30 days for review and feedback on IFMP draft content.
- Engage in bilateral consultations supported by Tier Two engagement processes with Indigenous communities, and participate in collaborative engagement meetings with First nations from watershed groups and industry to discuss fishing plans and priorities for the management of the fishery.
- Hold post-season meetings to review issues encountered and to develop options for addressing and resolving them.

### 9.3.7 Compliance

Performance criteria for DFO Conservation and Protection can be found in Appendix 11.

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# APPENDIX 1. 2018/19 POST-SEASON REVIEW

**Table 1.1. 2018/19 Resource Management Performance Evaluation**

| Objective Category | Performance Measure | DFO Activity |
|---|---|---|
| Stock conservation | Application of a precautionary approach to inform harvest decisions. | • In 2018/19, two of the five major management areas (HG and WCVI) remained closed to support stock rebuilding, due to their proximity of breaching the LRP<br>• A rebuilding plan is being developed for the HG major stock area, due to the stock being below the LRP for a prolonged period of time<br>• An LRP has been established and applied to all stock areas, and form the basis of management decisions annually<br>• Discussions are ongoing to choose and implement an Upper Stock Reference |
| Access for Indigenous Nations | Work collaboratively with Indigenous Nations to provide priority access, after conservation, for FSC purposes. | • In the SOG, subareas (Area 15, 17S for the Roe fishery and portions of Area 17 and all of Area 18 for the Food & Bait fishery) were closed on advice from First Nations due to low spawn in those areas and reports of First Nations inability to access herring for FSC purposes. A catch cap of 4000 tons was implemented in Area 29-5 as well.<br>• Commercial industry participants were asked to avoid areas where there could be |

| | | |
|---|---|---|
| | | potential for gear conflict with FSC gear<br>• Ongoing concern from PRD and Area 10 First Nations about inability to obtain herring for FSC purposes |
| Ecosystem Processes | • Consider impacts to the ecosystem from management decisions using best available Science, Indigenous traditional knowledge/traditional ecological knowledge and application of the precautionary approach and monitoring of the herring fisheries<br>• Coordinate and communicate with Science to understand on-going research, information gaps, and plan future work. | • A maximum of 20% of the spawning stock biomass can be harvested annually from each stock area, leaving 80% of the biomass and all juveniles remaining to support ecosystem processes<br>• More work is needed to coordinate with Science to understand on-going Science research and information gaps. |
| Sustainable harvest and economic opportunities | • Provide reasonable fishing opportunities in a manner that ensures long-term sustainability of the resource, through the application of decision rules and management measures.<br>• Enact and enforce regulations through licences and licence conditions, to ensure proper management and control of fisheries.<br>• Develop standards and monitor compliance of the various herring monitoring programs funded by individual licence eligibility holders.<br>• Collection of accurate and timely catch, effort, landings, and other relevant information (e.g. marine mammal and seabird encounters) by geographic location and time period.<br>• Collect data to assist in management decisions and | • Management and control of fisheries was achieved by measures such as at sea observers, dockside monitoring, hail requirements and on-grounds management.<br>• The SOG stock was estimated to be high and healthy and therefore this area was opened at a 20% harvest rate (to allow for Food & Bait, Special Use, and Roe fisheries).<br>• PRD and CC management areas were opened to commercial SOK fisheries only due to their likelihood of exceeding the LRP.<br>• A harvest rate of 10% was applied to minor stock areas.<br>• Each of the four herring fisheries were monitored by an industry-funded monitoring program which collects information on each of the listed metrics and |

| | | |
|---|---|---|
| | monitor size and age distribution of herring caught.<br>• Through post-season reviews and data analysis, assess catch monitoring, management measures, fishery implementation processes and emerging issues. | provides regular updates to DFO throughout the fishing season.<br>• Fisheries Management coordinated with Science and industry to collect biological samples (to monitor size and age) through the test-fishing program and other opportunities to augment samples collected through scientific surveys.<br>• Catch monitoring risk assessments for the Food & Bait, Spawn-on-Kelp, and Roe herring commercial fisheries were undertaken in collaboration with commercial harvesters, as outlined in the Strategic Framework for Fishery Monitoring and Catch Reporting. The results of these assessments were included in the 2018/19 IFMP for comment (Appendix 13). |
| Renewal of the Management Framework | • Use decision rules which consider the stock status relative to biological and operational control points, such as the risk of stocks breaching the limit reference point of $0.3SB_0$,<br>• Provide transparent decision making in regards to harvest levels and area closures.<br>• Facilitate Indigenous and multi-stakeholder collaboration on management procedures.<br>• Use an MSE approach to achieve resource management and other objectives. | • Fisheries Management and Science worked together to engage with First Nations and industry representatives on the first cycle of Management Strategy Evaluation for SOG and WCVI management areas (new). Engagement included the development of objectives.<br>• MSE simulations assessed the ability of management procedures to maintain the stock above the LRP with a high probability over a 15 year timeframe (the "conservation objective"), and these results were used to guide decision making |

| | | |
|---|---|---|
| | | • For CC, PRD, and HG, provision of advice for potential harvest levels was in the form of decision tables to accommodate uncertainty in decision making and incorporated the probability of breaching the LRP. |
| Consultation | • Hold pre-season planning meetings and seek stakeholder and First Nations advice on development of the IFMP, allowing up to 30 days for review and feedback on IFMP draft content.<br>• Engage in bilateral consultations supported by Tier Two engagement processes with Indigenous communities, and participate in collaborative engagement meetings with First nations from watershed groups and industry to discuss fishing plans and priorities for the management of the fishery.<br>• Hold post-season meetings to review issues encountered and to develop options for addressing and resolving them. | • Pre-season Integrated Herring Harvest Planning Committee (IHHPC) planning meeting held on October 17, 2018 in Vancouver, seeking First Nation and stakeholder advice on development of the IFMP (meeting minutes available on request)<br>• DFO met with the Herring Industry Advisory Board (HIAB) in Vancouver on October 18, 2018 to discuss pre-season planning<br>• Draft IFMP released for consultation from December 7, 2018-January 9, 2019 (34 days); draft Food & Bait and Special Use plans distributed for consultation from September 26-October 25, 2019 (30 days)<br>• DFO engaged in bilateral, Tier Two meetings with Indigenous communities to discuss fishing plans and priorities for the 2018/19 season, during or prior to the IFMP consultation period. Meetings were held with several nations and First Nation organizations such as the Island Marine Aquatic Working Group (IMAWG) and member nations, Q'ul-lhanumutsun Aquatic Resources Society (QARS) and member nations, The Nuu-chah-nulth Tribal Council (NTC) and |

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|---|---|---|
| | | member nations, Heiltsuk First Nation, Metlatkatla First Nation, Lax Kw'alaams First Nations, and Council of the Haida Nation<br>• Post-season IHHPC meeting held on May 1, 2019 in Nanaimo to review the season and issues encountered (meeting minutes available on request)<br>• DFO and HIAB met on May 2, 2019 in Vancouver to review the industry charter vessels reports and fishing season issues |
| **Compliance** | Monitor compliance of the herring fisheries with monitoring programs funded by individual licence eligibility holders. | Lead resource managers and C&P staff worked closely with the service provider and industry. Monitoring requirements were tailored to address fishery specific compliance issues and few occurrences were reported. More detail on compliance performance detailed in Appendix 11. |

**Table 1.2. Management decisions for 2018/19 harvest opportunities in major and minor stock assessment areas (short tons)**

| Area | Forecast (in brackets: 95% confidence interval) | Limit Reference Point | Harvest Option | Management Decision |
|---|---|---|---|---|
| 2W | 680 | N/A | 67 | Area is open to commercial fishing with a 10% target harvest rate (of spawn index). |
| HG | 5,474 (2,313 - 13,442) | 7,471 | 150 | FSC only; area is closed to commercial fishing. |
| PRD | 21,326 (10,038 - 40,913) | 19,555 | 1,600 | Area is open to FSC and commercial SOK fisheries only with a 7.4% harvest rate and probability of being below the LRP of 50%. SOK allocation is provided due to the inability of operators to move to other stock areas and the relationship between abundance and harvest for this fishery. |

| Area | Forecast (in brackets: 95% confidence interval) | Limit Reference Point | Harvest Option | Management Decision |
|---|---|---|---|---|
| CC | 20,136 (9,898 - 42,474) | 17,487 | 1,865 | Area is open to FSC and commercial SOK fisheries only with a 9.4% harvest rate and probability of being below the LRP of 45%. SOK allocation is provided due to the inability of operators to move to other stock areas and the relationship between abundance and harvest for this fishery. In addition, the three Area 8 SOK operations are not permitted to operate to support the constitutionally protected Aboriginal right of the Heiltsuk First Nation to fish SOK for commercial purposes, and to meet DFO's objective of ensuring orderly and well-managed fisheries. |
| SOG | 135,497 (73,933 - 244,010) | 40,884 | 28,430 | Area is open to commercial fishing with a 20% harvest rate, based on application of an MSE-tested management procedure that meets the conservation objective of being above the LRP with a high probability over 15 years. This is the first year that decisions are based on MSE results for this area. This harvest provides for FSC, and commercial Food & Bait, Special Use, and Roe fisheries; commercial SOK fisheries do not occur in this area. |
| WCVI | 24,799 (13,716 – 57,429) | 15,752 | 150 | FSC only; area is closed to commercial fishing due to inability of any MSE-tested management procedure to meet the conservation objective of being above the LRP with a high probability over 15 years across all three natural mortality scenarios. This is the first year that decisions are based on MSE results for this area. |
| Area 27 | 1,152 | N/A | 115 | Area is open to commercial fishing with a 10% target harvest rate (of spawn index). |

## Season Summaries

### *Roe Herring*

**Table 1.3. Roe Herring Seine Fishery 2018/19 Summary**

| | **Strait of Georgia** |
|---|---|
| Expected Use | 10,021 tons |
| Quota Issued | 8,311 tons |
| Landings | 7,178 tons |
| # Pools | 7 |
| # Licences | 209 |
| Tons per licence | 39.7658 tons |
| Open | Mar. 9, 2019 13:45 |
| Closed | Mar. 15, 2019 16:00 |
| Areas Fished | 14-1, 14-4 |

**Table 1.4. Roe Herring Gillnet Fishery 2018/19 Summary**

| **Gillnet Fishery** | |
|---|---|
| | **Strait of Georgia** |
| Expected Use | 11,472 tons |
| Quota Issued | 11,472 tons |
| Landings | 8,374 tons |
| # Pools | 14 |
| # Licences | 1,190 |
| Tons per licence | 9.640 tons |
| Open | 1st - Mar. 15, 2019 07:30 |
| Closed | Apr. 4, 2019 23:59 |
| Areas Fished | 14-5, 14-7, 14-8, 14-10 |

*Spawn on Kelp*

**Table 1.5. SOK Herring Fishery 2018/19 Summary**

| | Prince Rupert District | Central Coast | Area 10/12 |
|---|---|---|---|
| Quota Issued | 71,512 lbs | 352,059 lbs | 18,000 lbs |
| Landings | N/A* | 355,316 lbs | N/A* |
| # Licences | 4 | 12 | 4 |
| # of closed ponds | 5 | 7 | 0 |
| Open ponding | Yes | Yes | Yes |
| **Location(s)** | Kitkatla, Pearl Harbour | Kitasu Bay, Spiller Inlet | Birkby Point |

* Cannot be displayed due to privacy reasons

*Food and Bait*

**Table 1.6. Food & Bait Herring Fishery 2018/19 Summary**

| | Strait of Georgia |
|---|---|
| Expected Use | 6,000 tons |
| Quota (including transfers from Roe seine) | 7,710 tons |
| Landings | 7,503 tons |
| # Licences | 252 |
| # Licences converted from Roe Seine into F&B | 43 @ 39.7658 tons |
| Quota converted from Roe Seine into F&B | 1,710 tons |
| Quota towards Charity ZM Licence | 100 tons |
| Quota per licence | 23.8095 tons |
| Release occurrences | 25 tons |
| Location(s) | E of Galiano/Gabriola Isl., Northumberland, Nanoose, Parksville, Qualicum, outside of Deepwater Bay |
| Areas Fished | 14-1. 14-3, 14-4, 17-12, 17-13, 17-18, 17-19, 29-5 |

*Special Use*

**Table 1.7. Special Use Herring Fishery 2018/19 Quota and Catch Summary.** Quota and landings occurred in Strait of Georgia only; fishery was extended to November 26, 2019 due to 2019/20 opening delay.

| Licence | Category | Expected Use (tons) | Quota Issued (tons) | Landings (tons) |
|---|---|---|---|---|
| ZX | Personal Use | 25 | 3 | Not yet available |
| ZY1 | Sport Bait | 617 | 448 | 381 |
| ZY2 | Commercial Bait | 0 | 0 | 0 |
| ZY3 | Human Food & Bait | 150 | 150 | *N/A |
| ZY4 | Zoo & Aquarium | 110 | 110 | *N/A |
| Total | | 902 | 711 | |

* Cannot be displayed due to privacy reasons

**Table 1.8. Special Use Herring Fishery 2018/19 Ponding Summary.**

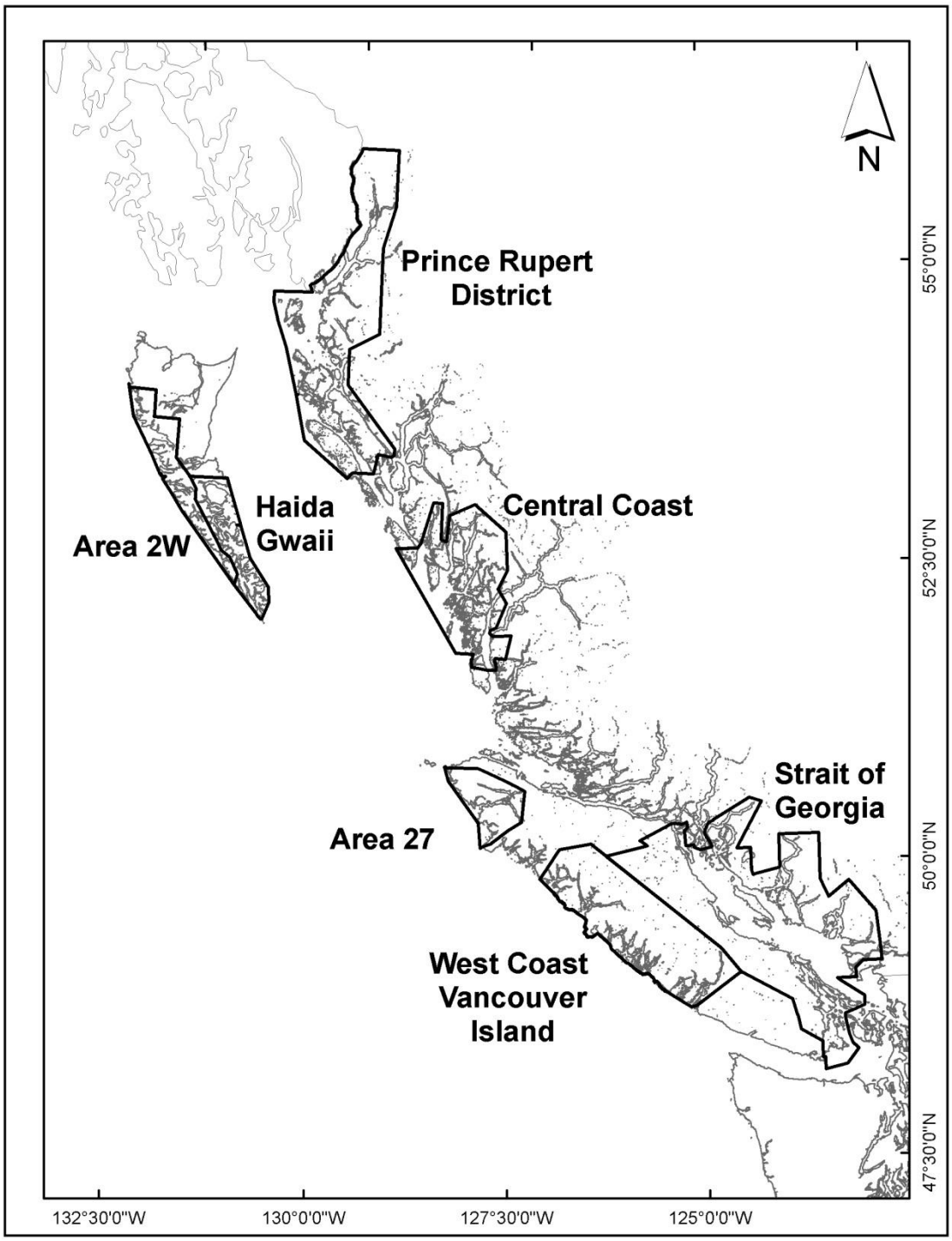
| | Fresh/Frozen | Live | Total |
|---|---|---|---|
| # of ponding operations | 3 | 1 | 4 |
| Pond locations | Area 13-7 (Deepwater Bay) | Area 16 (Secret Cove) | |
| # of ponds | 10 | 1 | 11 |
| # of ponds per operator | 1-4 | 1 | |
| Size of Ponds | 4: Large (100x100x50 feet = 500,000 cubic feet)<br>6: Medium (50x50x50 feet = 125,000 cubic feet) | Small (24x16x12 feet = 4,608 cubic feet) | |

**Table 1.9. Special Use Herring Fishery 2018/19 Licensing Summary.**

**Number of vessels, licences issued, and licence eligibility holders**

| Licence | Number of Vessels | Number of Licences | Number of Licence Eligibility Holders |
|---|---|---|---|
| ZX | 3 | 3 | 3 |
| ZY1 | 4 | 19 | 8 |
| ZY3 | 1 | 3 | 1 |
| ZY4 | 1 | 1 | 1 |

# APPENDIX 2. MAP OF FISHING AREAS



# APPENDIX 3. STOCK ASSESSMENT RESULTS

Forecasting the potential catch that can be safely removed from Pacific Herring stocks requires an assessment of current abundance and an understanding of the factors affecting their dynamics. Pacific Herring are strongly affected by annual variations in environmental conditions, which produce large fluctuations in recruitment and stock abundance. An assessment of current abundance for all stock areas is obtained using a statistical catch-age model (SCA). Forecast estimates of spawning biomass for 2019 are projected based on estimated survival, growth and recruitment. For all stocks, stock assessment results and harvest advice reflects the AM2 parameterization of the SCA model (defined in the Science Response; DFO, 2019).

The Pacific Herring SCA model is driven by four sources of data from 1951 to 2019: commercial catch landings, a spawn survey index, as well as age composition and weight-at-age data. DFO Pacific Science assesses current abundance for the five BC Pacific Herring major stock areas: Haida Gwaii (HG), Prince Rupert District (PRD), Central Coast (CC), Strait of Georgia (SoG), and West Coast of Vancouver Island (WCVI).

**Stock Assessment Summary for the Current Year**

Projected median spawning biomasses assuming zero catch in 2020, as well as the relative contribution of age-3 and ages 4-10 fish are presented in Table 3.1. Stock status is assessed against the Limit Reference Point (LRP) of $0.3SB_0$ (unfished spawning biomass), estimated for 2019 and projected for 2020 (under an assumption of zero catch). For example, for the HG stock in 2020, there is a 79.7% probability (median estimate) that the estimated pre-fishery spawning biomass ($SB_{2020}$) is below the LRP given zero catch (i.e., row $P(SB_{2020} < 0.3SB_0)$; Table 3.2).

**Table 3.1. Estimates of projected spawning biomass in thousands of metric tonnes (t x $10^3$) in 2020 given zero catch, as well as predicted proportion aged 3 and aged 4-10 fish for all BC Pacific Herring major stocks. Legend: Haida Gwaii (HG), Prince Rupert District (PRD), Central Coast (CC), Strait of Georgia (SoG), and West Coast of Vancouver Island (WCVI).**

| | Projected spawning biomass in 2020 given zero catch (t x $10^3$) | | | Projected proportion aged 3 fish in 2020 | | | Projected proportion aged 4-10 fish in 2020 | | |
|---|---|---|---|---|---|---|---|---|---|
| Stock | 5th %ile | Median | 95th %ile | 5th %ile | Median | 95th %ile | 5th %ile | Median | 95th %ile |
| HG | 1.655 | 4.296 | 12.149 | 0.12 | 0.43 | 0.79 | 0.10 | 0.28 | 0.56 |
| PRD | 11.103 | 22.627 | 45.698 | 0.06 | 0.20 | 0.50 | 0.42 | 0.71 | 0.89 |
| CC | 13.224 | 29.770 | 59.835 | 0.06 | 0.21 | 0.52 | 0.39 | 0.69 | 0.88 |
| SoG | 27.184 | 54.242 | 110.086 | 0.13 | 0.33 | 0.63 | 0.25 | 0.48 | 0.71 |
| WCVI | 10.997 | 21.928 | 44.530 | 0.12 | 0.32 | 0.64 | 0.26 | 0.49 | 0.74 |

**Table 3.2 Posterior (5th percentile, Median, and 95th percentile) estimates of proposed reference points for the Haida Gwaii model. Legend: spawning stock biomass, *SB*; pre-fishery spawning biomass, $SB_{2020}$; estimated unfished spawning biomass, $SB_0$. All biomass numbers are in thousands of metric tonnes (t x $10^3$). Note: probabilities of $SB_{2020} < 0.3SB_0$ and $SB_{2020} < 0.6SB_0$ are based on zero catch.**

| Reference point | 5% | 50% | 95% |
|---|---|---|---|
| $SB_0$ | 18.248 | 23.056 | 30.319 |
| $0.3SB_0$ | 5.475 | 6.917 | 9.096 |
| $SB_{2019}$ | 3.547 | 6.944 | 12.692 |
| $SB_{2019}/SB_0$ | 0.515 | 0.300 | 0.551 |
| $SB_{2019}/0.3SB_0$ | 0.504 | 1.001 | 1.838 |
| $SB_{2020}$ | 1.655 | 4.296 | 12.149 |
| $SB_{2020}/SB_0$ | 0.073 | 0.184 | 0.500 |
| $SB_{2020}/0.3SB_0$ | 0.243 | 0.614 | 1.665 |
| Proportion aged 3 | 0.12 | 0.43 | 0.79 |
| Proportion aged 4-10 | 0.10 | 0.28 | 0.56 |
| $P(SB_{2019} < 0.3SB_0)$ | 0.499 | | |
| $P(SB_{2020} < 0.3SB_0)$ | 0.797 | | |
| $P(SB_{2020} < 0.6SB_0)$ | 0.970 | | |

**Table 3.3 Posterior (5th percentile, Median, and 95th percentile) estimates of proposed reference points for the Prince Rupert District model. See Table 3.2 for description.**

| Reference point | 5% | 50% | 95% |
|---|---|---|---|
| $SB_0$ | 45.213 | 58.546 | 87.672 |
| $0.3SB_0$ | 13.564 | 17.564 | 26.302 |
| $SB_{2019}$ | 13.141 | 23.223 | 39.807 |
| $SB_{2019}/SB_0$ | 0.209 | 0.386 | 0.679 |
| $SB_{2019}/0.3SB_0$ | 0.696 | 1.297 | 2.262 |
| $SB_{2020}$ | 11.103 | 22.627 | 45.698 |
| $SB_{2020}/SB_0$ | 0.175 | 0.378 | 0.772 |
| $SB_{2020}/0.3SB_0$ | 0.584 | 1.259 | 2.575 |
| Proportion aged 3 | 0.06 | 0.20 | 0.50 |
| Proportion aged 4-10 | 0.42 | 0.71 | 0.89 |
| $P(SB_{2019} < 0.3SB_0)$ | 0.241 | | |
| $P(SB_{2020} < 0.3SB_0)$ | 0.294 | | |
| $P(SB_{2020} < 0.6SB_0)$ | 0.857 | | |

**Table 3.4 Posterior (5th percentile, Median, and 95th percentile) estimates of proposed reference points for the Central Coast model. See Table 3.2 for description.**

| Reference point | 5% | 50% | 95% |
|---|---|---|---|
| $SB_0$ | 43.844 | 54.534 | 71.396 |
| $0.3SB_0$ | 13.153 | 16.360 | 21.419 |
| $SB_{2019}$ | 19.331 | 33.366 | 55.574 |
| $SB_{2019}/SB_0$ | 0.347 | 0.607 | 1.006 |
| $SB_{2019}/0.3SB_0$ | 1.156 | 2.022 | 3.352 |
| $SB_{2020}$ | 13.224 | 29.770 | 59.835 |
| $SB_{2020}/SB_0$ | 0.241 | 0.542 | 1.096 |
| $SB_{2020}/0.3SB_0$ | 0.804 | 1.807 | 3.653 |
| Proportion aged 3 | 0.06 | 0.21 | 0.52 |
| Proportion aged 4-10 | 0.39 | 0.69 | 0.88 |
| $P(SB_{2019} < 0.3SB_0)$ | 0.018 | | |
| $P(SB_{2020} < 0.3SB_0)$ | 0.114 | | |
| $P(SB_{2020} < 0.6SB_0)$ | 0.590 | | |

**Table 3.5 Posterior (5th percentile, Median, and 95th percentile) estimates of proposed reference points for the Strait of Georgia model. See Table 3.2 for description.**

| Reference point | 5% | 50% | 95% |
|---|---|---|---|
| $SB_0$ | 108.543 | 136.306 | 196.563 |
| $0.3SB_0$ | 32.563 | 40.892 | 58.969 |
| $SB_{2019}$ | 36.204 | 64.281 | 111.761 |
| $SB_{2019}/SB_0$ | 0.246 | 0.464 | 0837 |
| $SB_{2019}/0.3SB_0$ | 0.820 | 1.547 | 2.791 |
| $SB_{2020}$ | 27.184 | 54.242 | 110.086 |
| $SB_{2020}/SB_0$ | 0.190 | 0.389 | 0.806 |
| $SB_{2020}/0.3SB_0$ | 0.634 | 1.298 | 2.687 |
| Proportion aged 3 | 0.13 | 0.33 | 0.63 |
| Proportion aged 4-10 | 0.25 | 0.48 | 0.71 |
| $P(SB_{2019} < 0.3SB_0)$ | 0.126 | | |
| $P(SB_{2020} < 0.3SB_0)$ | 0.278 | | |
| $P(SB_{2020} < 0.6SB_0)$ | 0.847 | | |

**Table 3.6 Posterior (5th percentile, Median, and 95th percentile) estimates of proposed reference points for the West Coast of Vancouver Island model. See Table 3.2 for description.**

| Reference point | 5% | 50% | 95% |
|---|---|---|---|
| $SB_0$ | 37.267 | 46.201 | 60.046 |
| $0.3SB_0$ | 11.180 | 13.860 | 18.014 |
| $SB_{2019}$ | 11.411 | 20.664 | 35.721 |
| $SB_{2019}/SB_0$ | 0.240 | 0.442 | 0.785 |
| $SB_{2019}/0.3SB_0$ | 0.801 | 1.473 | 2.616 |
| $SB_{2020}$ | 10.997 | 21.928 | 44.530 |
| $SB_{2020}/SB_0$ | 0.238 | 0.471 | 0.963 |
| $SB_{2020}/0.3SB_0$ | 0.793 | 1.569 | 3.211 |
| Proportion aged 3 | 0.12 | 0.32 | 0.64 |
| Proportion aged 4-10 | 0.26 | 0.49 | 0.74 |
| $P(SB_{2019} < 0.3SB_0)$ | 0.135 | | |
| $P(SB_{2020} < 0.3SB_0)$ | 0.142 | | |
| $P(SB_{2020} < 0.6SB_0)$ | 0.716 | | |

**Harvest Advice for 2020**

Provision of harvest advice to managers for 2020 is presented for each major stock based on the application of simulation-tested management procedures (MPs) evaluated in the first cycle of the Management Strategy Evaluation (MSE) process. MPs that perform the best at achieving the conservation objective under three different operating model scenarios (which include three different hypotheses about natural mortality) are used to provide catch level options. These management procedures are summarized below.

In the first MSE cycle for HG, none of the MPs tested could meet the conservation objective with at least 75% probability (DFO 2019), thus harvest options are not provided for 2020. The HG stock has been in a low biomass, low productivity state since 2000. DFO has committed to developing and implementing a rebuilding plan for Haida Gwaii herring by April 2021, and supports commercial herring fishery closures for the HG major stock region until this time. As such, the harvest recommendation for the HG stock in 2020 is 0 t.

Closed-loop feedback simulations were used to evaluate MPs for PRD where MPs differed in the configuration of the harvest control rule (HCR), and application (or not) of a fixed catch cap. Results for PRD are presented in Table 3.7. The best performing MPs generally had 10% or lower harvest rates, although two MPs with a 20% harvest rate did meet the conservation objective because they use a higher lower operational control point of $0.5SB_0$. These MPs also result in more frequent fishery closures due to spawning biomass declining below the lower control point more frequently. While several MPs are able to meet the core conservation objective of maintaining spawning biomass above the LRP with a high probability (at least 75%), they also imply different trade-offs among biomass (e.g., ecosystem) and yield outcomes. For management regions where multiple MPs meet the conservation objective, further ranking of the remaining objectives is needed in order to provide decision-makers with a set of trade-off choices. This was not undertaken with the first MSE cycle because a fully specified set of objectives has not yet been developed for each management area.

For the CC, the closed-loop feedback simulations were also used to evaluate MPs. The best performing MPs against the conservation objective for CC have a 10% or lower harvest rate and include a range of operational control point choices (Table 3.8). Similar to PRD, the simulation results for CC indicate there are multiple MPs that meet the conservation objective of maintaining the spawning biomass above the LRP with high probability (at least 75%) and further ranking of the remaining objectives is needed in order to provide decision-makers with a set of trade-off choices. Additionally, DFO acknowledges commitment to the Heiltsuk Nation for the development of a Joint Fisheries Management Plan for Pacific Herring in the Central Coast in 2020, and MSE results may inform development of this plan.

Closed-loop feedback simulations for the SoG showed that all tested MPs could maintain the spawning biomass above the LRP with a 91% probability or higher across all natural mortality *(M)* scenarios, including the historical fixed cutoff MP which applied a constant escapement of 21,200 t based on the 1996 stock assessment and 20% harvest rate (Table 3.9). MPs that included

a 30,000 t catch cap were able to maintain spawning biomass above a biomass level of $0.6SB_0$ with 60% probability or higher across all OM scenarios; this cap was not often triggered, and thus did not limit the commercial fishery very often in simulations. MPs with catch caps of 20,000 t or less rarely exceed the 20% harvest rate for any given projection year (over the 15 year projections).

For the WCVI, closed-loop feedback simulation results showed that no tested MP could meet the conservation objective of maintaining spawning biomass above the LRP with high probability across all three OM scenarios. Of the MPs that were simulation-tested across the three OM scenarios, the best-performing MP maintained spawning biomass above the LRP with a 74% probability. This MP implements a lower control point at the assessment model estimate of 0.5SB0, a 10% target harvest rate, and a maximum catch cap of 2,000 t. Given the best performing MP for the WCVI did not meet the minimum "high" probability of 75%, further simulation-testing of HCRs that include additional measures to ensure persistent stock growth away from the critical zone and towards identified biomass targets may be required. Updates to the operating model (addition of 2018 and 2019 data) and evaluation of additional MPs and objectives (including new objectives) is scheduled to occur in 2020/2021. As such, the harvest recommendation for the WCVI stock in 2020 is 0 t.

**Table 3.7. Management procedure (MP) performance for Pacific Herring in the Prince Rupert District major stock assessment region under three operating model (OM) scenarios: density-dependent natural mortality (DDM), density-independent natural mortality (DIM), and constant natural mortality (conM). Performance criteria are calculated over three Pacific Herring generations (i.e., 15 years) from the start of the projection period for all objectives. MPs are ordered within each scenario by performance of achieving Objective 1. The recommended total allowable catch (TAC) in thousands of tonnes (t) and associated harvest rate (HR) are reported for each MP. Legend: limit reference point (LRP); SBt is spawning biomass in year t; $SB_0$ is estimated unfished spawning biomass; average annual variability (AAV); Ct is catch in year t; and C is average catch. MPs are defined in DFO (2019a) and DFO (2019c). Note: dashes indicate that TAC and HR do not apply, either because the MP specifies no fishing, or because the MP fails to meet Objective 1.**

| Scenario | | Conservation | Biomass | Yield | | | 2020 TAC | |
|---|---|---|---|---|---|---|---|---|
| | | Objective 1 (LRP) | Objective 2 | Objective 3 | Objective 4 | Catch < 650 t | 2020 TAC by MP | |
| | | ≥75% | ≥50% | < 25% | max | min | | |
| OM | MP | $P(SB_t > 0.3SB_0)$ | $P(SB_t \geq 0.6SB_0)$ | AAV | $\overline{C}_t$ | $P(C_t < 650\ t)$ | (1000 t) | HR |
| DDM | NoFish_FSC | 79% | 44% | 3.82 | 0.27 | 100% | - | - |
| DDM | HS30-60_HR0.05 | 78% | 40% | 36.50 | 1.28 | 44% | 0.28 | 0.01 |
| DDM | HS50-60_HR0.2_cap2.5 | 78% | 40% | 39.43 | 1.43 | 57% | 0.00 | 0.00 |
| DDM | minE.5$SB_0$_HR0.1 | 78% | 37% | 51.86 | 1.85 | 57% | 0.00 | 0.00 |
| DDM | HS30-60_HR0.1_cap2.5 | 77% | 38% | 33.35 | 1.64 | 39% | 0.57 | 0.03 |
| DDM | minE0.5$SB_0$_HR0.2 | 76% | 28% | 67.14 | 2.71 | 58% | 0.00 | 0.00 |
| DDM | minE12.1_HR0.2 | 61% | 18% | 41.80 | 4.74 | 18% | - | - |
| DIM | NoFish_FSC | 68% | 32% | 3.98 | 0.27 | 100% | - | - |
| DIM | HS30-60_HR0.05 | 66% | 27% | 41.91 | 0.97 | 53% | - | - |
| DIM | HS50-60_HR0.2_cap2.5 | 66% | 27% | 41.89 | 0.94 | 67% | - | - |
| DIM | minE.5$SB_0$_HR0.1 | 66% | 24% | 57.00 | 1.20 | 67% | - | - |
| DIM | HS30-60 HR0.1 cap2.5 | 65% | 26% | 41.46 | 1.43 | 48% | - | - |
| DIM | minE0.5$SB_0$ HR0.2 | 63% | 18% | 75.94 | 1.56 | 70% | - | - |
| conM | NoFish_FSC | 100% | 73% | 3.61 | 0.27 | 100% | - | - |
| conM | HS50-60 HR0.2 cap2.5 | 100% | 66% | 40.10 | 1.76 | 38% | 0.00 | 0.00 |
| conM | HS30-60 HR0.05 | 100% | 65% | 37.00 | 2.02 | 22% | 0.28 | 0.01 |
| conM | HS30-60 HR0.1 cap2.5 | 99% | 63% | 24.63 | 2.12 | 19% | 0.57 | 0.03 |
| conM | minE0.5$SB_0$ HR0.1 | 98% | 58% | 52.45 | 3.11 | 37% | 0.00 | 0.00 |
| conM | minE0.5$SB_0$ HR0.2 | 96% | 43% | 62.26 | 5.17 | 37% | 0.00 | 0.00 |

**Table 3.8. Management procedure performance for Pacific Herring in the Central Coast major stock assessment region. See Table 3.7 for description.**

| Scenario | | Conservation Objective 1 (LRP) ≥75% | Biomass Objective 2 ≥50% | Yield Objective 3 < 25% | Yield Objective 4 max | Yield Catch < 650 t min | 2020 TAC by MP (1000 t) | HR |
|---|---|---|---|---|---|---|---|---|
| OM | MP | $P(SB_t > 0.3SB_0)$ | $P(SB_t \geq 0.6SB_0)$ | AAV | $\overline{C}_t$ | $P(C_t < 650\ t)$ | | |
| DDM | NoFish_FSC | 78% | 42% | 6.74 | 0.27 | 100% | - | - |
| DDM | HS30-60_HR0.05 | 77% | 37% | 39.92 | 1.09 | 45% | 1.20 | 0.04 |
| DDM | minE0.5SB$_0$_HR0.1 | 76% | 33% | 52.3 | 1.54 | 57% | 2.29 | 0.08 |
| DDM | HS30-60_HR0.1_cap5.0 | 75% | 32% | 46.10 | 1.81 | 33% | 2.41 | 0.08 |
| DDM | minE17.6_HR0.2 | 70% | 20% | 62.84 | 3.26 | 38% | - | - |
| DIM | NoFish_FSC | 58% | 21% | 9.33 | 0.27 | 100% | - | - |
| DIM | HS30-60_HR0.05 | 55% | 17% | 40.94 | 0.66 | 64% | - | - |
| DIM | minE0.5SB$_0$_HR0.1 | 55% | 15% | 44.30 | 0.78 | 74% | - | - |
| DIM | HS30-60_HR0.1_cap5.0 | 52% | 14% | 53.32 | 1.00 | 52% | - | - |
| conM | NoFish_FSC | 100% | 84% | 6.67 | 0.27 | 100% | - | - |
| conM | HS30-60_HR0.05 | 99% | 75% | 39.69 | 2.68 | 15% | 1.20 | 0.04 |
| conM | HS30-60_HR0.1_cap5.0 | 99% | 69% | 26.62 | 3.93 | 11% | 2.41 | 0.08 |
| conM | minE0.5SB$_0$_HR.1 | 98% | 67% | 45.77 | 4.62 | 24% | 2.29 | 0.08 |

**Table 3.9. Management procedure performance for Pacific Herring in the Strait of Georgia major stock assessment region. See Table 3.7 for description.**

| Scenario | | Conservation Objective 1 (LRP) ≥75% | Biomass Objective 2 ≥50% | Yield Objective 3 < 25% | Yield Objective 4 max | Yield Catch < 650 t min | 2020 TAC by MP (1000 t) | HR |
|---|---|---|---|---|---|---|---|---|
| OM | MP | $P(SB_t > 0.3SB_0)$ | $P(SB_t \geq 0.6SB_0)$ | AAV | $\overline{C}_t$ | $P(C_t < 650\ t)$ | | |
| DDM | NoFish_FSC | 100% | 97% | 0.00 | 0.14 | 100% | - | - |
| DDM | minE0.5SB$_0$_HR0.1_cap30.0 | 99% | 92% | 23.50 | 21.48 | 2% | 0.00 | 0.00 |
| DDM | HS30-60 HR0.1 cap30.0 | 99% | 92% | 22.98 | 21.48 | 0% | 1.61 | 0.03 |
| DDM | minE21.2_HR0.1 | 99% | 91% | 29.64 | 23.44 | 0% | 5.42 | 0.10 |
| DDM | minE0.5SB$_0$_HR0.2 | 98% | 79% | 28.35 | 39.87 | 3% | 0.00 | 0.00 |
| DDM | HS30-60_HR0.2_cap30.0 | 98% | 78% | 27.83 | 39.87 | 0% | 3.22 | 0.06 |
| DDM | minE21.2 HR0.2 | 97% | 78% | 26.97 | 39.87 | 0% | 10.85 | 0.20 |
| DIM | NoFish FSC | 99% | 98% | 0.00 | 0.14 | 100% | - | - |
| DIM | minE21.2 HR0.1 | 99% | 93% | 29.63 | 24.88 | 0% | 5.42 | 0.10 |
| DIM | minE0.5SB$_0$_HR0.1_cap30.0 | 99% | 93% | 22.94 | 22.63 | 2% | 0.00 | 0.00 |
| DIM | HS30-60_HR0.1_cap30.0 | 99% | 93% | 22.94 | 22.63 | 0% | 1.61 | 0.03 |
| DIM | minE0.5SB$_0$_HR0.2 | 98% | 85% | 28.73 | 43.92 | 3% | 0.00 | 0.00 |
| DIM | HS30-60_HR0.2_cap30.0 | 97% | 85% | 27.97 | 43.92 | 1% | 3.22 | 0.06 |
| DIM | minE21.2 HR0.2 | 97% | 84% | 27.14 | 43.92 | 0% | 10.85 | 0.20 |
| conM | NoFish_FSC | 100% | 84% | 0.00 | 0.14 | 100% | - | - |
| conM | minE21.2 HR0.1 | 99% | 60% | 33.54 | 13.80 | 0% | 5.42 | 0.10 |
| conM | minE0.5SB$_0$_HR0.1_cap30.0 | 99% | 60% | 36.19 | 13.43 | 6% | 0.00 | 0.00 |
| conM | HS30-60 HR0.1 cap30.0 | 99% | 60% | 35.22 | 13.56 | 1% | 1.61 | 0.03 |
| conM | minE0.5SB$_0$_HR0.2 | 93% | 35% | 38.63 | 23.31 | 9% | 0.00 | 0.00 |
| conM | HS30-60 HR0.2 cap30.0 | 92% | 33% | 34.28 | 23.76 | 1% | 3.22 | 0.06 |
| conM | minE21.2 HR0.2 | 91% | 31% | 28.27 | 24.08 | 0% | 10.85 | 0.20 |

**Minor stock areas**

Formal stock assessments are not conducted for the two Pacific Herring minor stock areas (Area 27 and Area 2 West).

A commercial spawn-on-kelp fishery last occurred in Area 27 in 2014, and the last commercial roe fishery occurred in 1994. The spawn index in 2019 was 192 Mt.

A commercial spawn-on-kelp fishery last occurred in Area 2 West in 2014, and the last commercial roe fishery occurred in 1998. The spawn index in 2019 was 2,884 Mt.

# APPENDIX 4. EXPECTED USE TABLE

The expected use of herring for 2019/20 in short tons is as follows for each of the stock assessment areas and fisheries (for Roe Herring as Total Allowable Catch – TAC):

**FINAL**

**2019 / 2020 EXPECTED HERRING USE BY FISHERY AND AREA**
**Values In Short Tons (T)**

| AREA | Harvest Option | FSC | SOK | | ROE-HERRING | | WINTER FOOD & BAIT (ZM) | SPECIAL USE | | | | | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | ABORIG COMML | J - LICENCE[7] | SEINE[8] | GILLNET | | PERS'L USE BAIT (ZX) | SPORT BAIT (ZY1) | COMML BAIT (ZY2) | HUMAN FOOD (ZY3) | ZOO & AQUAR (ZY4) | |
| [6]Area 2W | 288 | | | 300 | | | | | | | | | 300 |
| [1]**HG** | 0 | 150 | | | | | | | | | | | 150 |
| | | | | | | | | | | | | | |
| [2]**PRD** | 628 | 600 | | | | | | | | | | | 600 |
| Area 10 | | | | | | | | | | | | | 135 |
| [3]**CC** | 1,715 | 600 | 665 | 450 | | | | | | | | | 1,715 |
| Area 12 | | | | 100 | | | | | | | | | 100 |
| [4]**SOG** | 11,960 | 35 | | | 5,733 | 4,690 | 600 | 25 | 617 | | 150 | 110 | 11,960 |
| [6]Area 27 | 19 | | | 35 | | | | | | | | | 35 |
| [5]**WCVI** | 0 | 150 | | | | | | | | | | | 150 |
| **TOTAL** | **14,610** | **1,535** | **665** | **885** | **5,733** | **4,690** | **600** | **25** | **617** | **0** | **150** | **110** | **15,115** |

Areas shaded in grey are minor or outside stock assessment areas

*1.10231131 short tons = 1 metric tonne*

1. Development of rebuilding plan underway; closed to support process and stock rebuilding.
2. Closed
3. Open for FSC/SOK fisheries only. Max HR = 5.2%
4. Open to Roe, Food and Bait, Special Use. Max HR = 20%
5. Closed to allow further time for stock rebuilding.
6. 10% HR
7. CC quota = 300 tons for Kitasoo and 150 tons for Area 8 operators
8. May select into Food and Bait at 22.75 tons

# APPENDIX 5. ABORIGINAL FISHING PLAN

DFO is committed to improving its relationship with Indigenous people. Indigenous fisheries play an important role in this relationship and, therefore, are an integral part of fisheries resource management in the Pacific Region.

Through the Aboriginal Fisheries Strategy, DFO seeks to negotiate with Indigenous organizations access for Food, Social, and Ceremonial (FSC) purposes. Subject to conservation, FSC has priority over access for commercial and recreational purposes. FSC fisheries are managed through communal licences that are issued to Indigenous organizations. The Department consults with Indigenous organizations to determine appropriate levels of access. In some cases, a portion of a PFMA may be closed to fishing except for FSC fishing by a First Nation organization. These closures may be for the season or for specified times. Whenever possible, the appropriate annual fishing plan will identify such closures. It is possible that situations may arise in the implementation of the plan where in season closure adjustments will be required to ensure access to the fishery by Indigenous organizations for FSC purposes.

For additional information on DFO's Treaty and Aboriginal Fisheries programs, please visit: http://www.pac.dfo-mpo.gc.ca/abor-autoc/index-eng.html

**Nisga'a Domestic Fishing**
The Harvest agreement for domestic (FSC) purposes under the Nisga'a Final Agreement (Treaty) came into effect on May 11, 2000. The Nisga'a territory is located within the Nass River valley on the northwest coast of British Columbia. More information on the Treaty and the Nisga'a annual fishing plan can be found at:
http://www.aadnc-aandc.gc.ca/eng/1100100031747/1100100031749

**Tsawwassen Domestic Fishing**
The Tsawwassen fishery for domestic (FSC) purposes under the Tsawwassen Final Agreement (Treaty) came into effect on April 3, 2009. The Tsawwassen First Nation is located in the lower mainland near the city of Vancouver, and their territory spans portions the Strait of Georgia near the mouth of the Fraser River as well as portions of the lower Fraser River and Boundary Bay. More information on the Treaty can be found at:
https://www.canada.ca/en/crown-indigenous-relations-northern-affairs.html

**Maa-nulth First Nations Domestic Fishery**
The Maa-nulth First Nations fishery for domestic (FSC) purposes under the Maa-nulth First Nations Final Agreement (Treaty) came into effect on April 1, 2011. The Maa-nulth First Nations comprise five individual First Nations; Huu-ay-aht First Nations, Ka:'yu:'k't'h'/Che:k'tles7et'h'

First Nations, Toquaht Nation, Uchucklesaht Tribe and the Yuułuʔiłʔath First Nation on the west coast of Vancouver Island.

The Domestic Allocation for herring under the Maa-nulth First Nations Final Agreement:
Each year the Maa-nulth Fish Allocation for whole herring is 90 short tons or a corresponding amount of herring spawn on kelp or herring spawn on boughs in accordance with the conversion rates for whole herring to herring spawn on kelp or herring spawn on bough as described in the Maa-nulth Fisheries Operational Guidelines.

More information on the MFA can be found at:
http://www.maanulth.ca/downloads/treaty/2010_maa-nulth_final_agreement_english.pdf

**Tla'amin Nation Domestic Fishing**
The Tla'amin fishery for domestic (FSC) purposes under the Tla'amin Final Agreement (Treaty) came into effect on April 5, 2016. The Tla'amin Nation is located near the City of Powell River, 130 km northwest of Vancouver. More information on the Treaty can be found at:

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

The Domestic Allocation for herring under the Tla'amin Nation Final Agreement:
In any year, the Tla'amin Fish Allocation for herring is a maximum of 62,600 lbs. of whole herring or a corresponding amount of herring spawn on kelp or of herring spawn on boughs, in accordance with the conversion rates for whole herring to herring spawn on kelp or herring spawn on boughs as described in the Tla'amin Fisheries Operational Guidelines.

More information on the Treaty can be found at:
www.aadnc-aandc.gc.ca/eng/1397050017650/1397050094605

**T'aaq-wiihak Nations**
Five Nuu-chah-nulth First Nations located on the West Coast of Vancouver Island - Ahousaht, Ehattesaht, Hesquiaht, Mowachaht/Muchalaht, and Tla-o-qui-aht (the T'aaq-wiihak First Nations) - have aboriginal rights to fish for any species of fish, with the exception of Geoduck, within their Fishing Territories and to sell that fish. The Department has developed a 2019/20 Five Nations Multi-species Fishery Management Plan (FMP) in consultation with the Five Nations. The FMP includes specific details about the fishery, such as allocation/access, licensing and designations, fishing area, harvesting opportunities, and fishery monitoring and catch reporting. For further information see the FMP at: https://waves-vagues.dfompo.gc.ca/Library/4079393x.pdf

**Heiltsuk Communal Commercial Spawn On Kelp Fishery**
In 1996, the Supreme Court of Canada found in its *Gladstone* decision that the Heiltsuk First Nation had an Aboriginal right to commercially fish herring spawn-on-kelp (SOK). The Heiltsuk currently hold nine SOK licenses in the Central Coast area, with an annual quota of

304,000 pounds. This SOK is harvested using the preferred means of the Heiltsuk, which is open ponding.

As in previous seasons, DFO is committed to working with Heiltsuk First Nation, as well as Kitasoo / Xia'xais First Nation and the commercial harvest sector on a management plan for the Central Coast area. DFO will also be working directly with Heiltsuk First Nation on a plan for the Heiltsuk communal commercial spawn on kelp (SOK) fishery.

# APPENDIX 6. RECREATIONAL FISHING PLAN

**Tidal Water Sport Fishing - Licensing and Regulations**

The recreational harvest of various fish and invertebrate species in BC is regulated via the *British Columbia Sport Fishing Regulations, 1996* made under the *Fisheries Act*. A DFO Tidal Waters Sport Fishing licence is required for the recreational harvest of all species of fish and invertebrates. The daily maximum for herring is 20kg, with a two-day possession limit of 40kg. Recreational harvesting may occur by means of dip net, herring jig, herring rake, or cast net. Harvesting of herring spawn-on-kelp is prohibited. Tidal Waters Sport Fishing licences may be purchased for a 1, 3, 5 day, or annual period. Check for applicable fees in Table 6.1; fees depend on licence duration, age (senior, adult, juvenile) and residency status. Licences for juveniles (ages 15 and under) are free. Purchase your licence online via the National Recreational Licensing System: http://www.pac.dfo-mpo.gc.ca/fm-gp/rec/licence-permis/application-eng.html.

**Table 6.1: Recreational licence fees for 2020**

| Licence type & duration | Fee: resident | Fee: non-resident |
|---|---|---|
| Annual licence, Adult (16-64 years of age) | $22.05 | $106.05 |
| Annual licence, Senior (65 years of age and over) | $11.55 | $106.05 |
| Annual licence, Juvenile (under 16 years of age) | Free | Free |
| 5 day licence | $16.80 | $32.55 |
| 3 day licence | $11.55 | $19.95 |
| 1 day licence | $5.51 | $7.35 |
| Salmon Conservation Stamp (annual) | $6.30 | $6.30 |

Notes:

- Fees shown above include GST
- A Canadian resident is an individual who normally lives in Canada; proof of residency may be requested (driver's licence etc.)
- A non-resident is anyone who does not live in Canada
- Fees are governed by the BC Sport Fishing Regulations as established in 1996 - http://laws-lois.justice.gc.ca/eng/regulations/SOR-96-137/index.html; please note that the regulations do not have concessionary rates for people with disabilities
- An annually-purchased Salmon Conservation Stamp ($6.00 + GST) must be affixed to licences held by anglers, both adult and juvenile, wishing to retain any species of Pacific salmon; a salmon stamp is not required for catch and release

**Online Regulations**

The regulations for recreational fishing are summarized online in the British Columbia Tidal Waters Sport Fishing Guide, which lists open and closed times, catch limits, size limits (where

applicable) and open/closed areas: http://www.pac.dfo-mpo.gc.ca/fm-gp/rec/index-eng.html. When required, Fishery Notices are issued to advise of changes to the regulations which are kept up-to-date in the online Sport Fishing Guide; view or sign-up to receive Fishery Notice notifications by email at: http://notices.dfo-mpo.gc.ca/fns-sap/index-eng.cfm. The old printed Sport Fish Guide booklet is no longer being produced/distributed, both to reduce costs and in recognition that the online guide does a better job at reporting in-season changes, which was not possible with the printed guide. You may also call your local fishery office to obtain regulatory information for your area of interest – visit us at http://www.dfo-mpo.gc.ca/contact/regions/pacific-pacifique-eng.html or call 604-666-0384 or email info@dfo-mpo.gc.ca.

**Using mobile devices and the FishingBC App**

The FishingBC App http://www.fishingbcapp.ca/, as developed by the Sport Fishing Institute of BC, may be downloaded to your mobile device to assist with having access to regulatory information for species/areas/fishing gear while out on the water (along with other functionality). Please note that the DFO website is the official site for regulatory information in the event of a discrepancy between the two.

**E-licences and Paper licences**

At this time most fishers continue to use the traditional paper copy of their licence; however an e-licence – which is an electronic/pdf copy of your licence – may be used on a mobile device, such as a cell phone or tablet; however there are restrictions on its use.

Please consider these licensing requirements before your fishing trip:

- For all recreational tidal water fishers that do not have an electronic copy of their licence on their mobile device - you must still have a paper copy of your licence with you as proof of licence purchase to show to a fishery officer
- For users of the App, or on any electronic device, you may have a pdf copy of your licence on the device which must be immediately producible to show to a fishery officer; and a paper copy of the licence is not required unless you wish to retain any chinook, halibut, or lingcod
- For all fishers wishing to retain chinook, halibut, or lingcod, even if you have your e-licence and catch details in the App or in your mobile device, you must still have a paper copy of your licence with you to record catch on the licence for these three species

**Supporting Sustainable Fisheries - Catch Reporting and the (iREC) Survey**

The Sport Fishing Advisory Board (SFAB) is the primary consultative body for the recreational fishing community, and includes representatives from all geographic regions in BC, and the BC Wildlife Federation, and the Sport Fishing Institute of BC. The SFAB and the recreational fishing sector strongly support effective fishery monitoring and catch reporting programs in recreational fisheries. The SFAB has been working with DFO on initiatives to strengthen fishing monitoring and catch reporting in the recreational fishery for a number of years.

Recreational harvesters are required as a condition of the Tidal Waters Sport Fishing Licence to report information on their recreational fishing activity and catch to DFO representatives when requested to do so, whether in person or via an internet survey. Recreational harvesters may be requested by a Fishery Officer or designated DFO representative at the dock, or through a creel or internet survey to provide catch/effort information on their recreational fishing activities.

The Internet Recreational Effort and Catch (iREC) Survey was initiated in 2012 to provide monthly estimates of effort for all methods of recreational fishing. New for 2018, survey participants are now selected at time of licence purchase, and have their iREC survey access code printed to their licence. A reminder notice will also be sent by email. By completing the survey, fishers provide information essential to understanding the full impacts of the recreational fishery, and thus support sustainable fishery management. More information on the iREC Survey is available at: http://www.pac.dfo-mpo.gc.ca/fm-gp/rec/irec-iarc/index-eng.html.

# APPENDIX 7. COMMERCIAL FISHING PLAN FOR ROE HERRING

## Table of Contents

# 1 PURPOSE

This document is a Commercial Fishing Plan for roe herring in British Columbia, for the period from February 10, 2020 to April 30, 2020.

# 2 OVERVIEW

Pacific Herring are fished for the roe (eggs), which is a highly valued delicacy in Japan. The fisheries take place as the herring move into the shallow inland waters to spawn from late February to mid-April. Herring spawn earliest in southern BC, and progressively later at higher latitudes. Opening dates and times for the commercial roe herring fisheries are typically announced on the fishing grounds once the roe has matured to optimum quality. The commercial roe herring fisheries may occur in five areas which correspond to the major stock assessment regions: Haida Gwaii (HG, previously Queen Charlotte Islands), Prince Rupert (PRD), Central Coast (CC) Strait of Georgia (SOG) and the west coast of Vancouver Island (WCVI). Commercial roe herring fisheries are only planned in areas where the stocks are forecast to have available abundance based on stock assessment advice. The stock assessment advice includes a Management Strategy Evaluation (MSE) approach and stock forecasts are provided on an annual basis by the Centre for Scientific Advice – Pacific (CSAP). Specific fishing timing and locations are determined by a number of variables such as major concentrations of fish and roe yield.

A roe herring seine license (category HS or FHS) or gill net license (category HG or FH) is required to participate in the commercial roe herring fishery. Licence eligibilities are party-based and are limited to 252 seine and 1,267 gill net licences. For each area where there will be a fishery in a given year, the licences are grouped into pools by gear type. This pool fishery structure was established in 1998 to address fishery concerns and improve fishery quota compliance.

# 3 HERRING FISHERY REPRESENTATION

The Herring Industry Advisory Board (HIAB) provides advice regarding commercial Roe and Food and Bait herring fisheries. This role includes submitting recommendations for Roe herring harvesting plans for all areas with a Roe herring TAC. The HIAB's advice on harvest levels is reviewed with the Integrated Herring Harvest Planning Committee (IHHPC). The HIAB has ten seats on the IHHPC. The ten participants are selected by the Roe herring sector from a pool of: (a) 10 individuals elected by Roe herring Licence holders (5 seine and 5 gill net); (b) 4 appointed processors; and (c) 5 appointed individuals representing: the United Fishermen and Allied Workers Union; the Native Brotherhood of BC; the Aboriginal Fishing Vessel Owners

Association; the Fishing Vessel Owners Association, and the Herring Conservation and Research Society (HCRS).

# 4 FINANCIAL RESPONSIBILITIES

## 4.1 Fishery Monitoring Program

Commercial roe herring licence holders fund the fishery monitoring program which consists of vessel hails and 100% dockside weight validation of all roe herring landings. This program is administered by the HCRS. In recent years this service has been provided by J.O. Thomas and Associates. At-sea observers may be required in some areas or time periods in order to monitor commercial roe herring seine fisheries.

## 4.2 Roe Quality Testing Program

Since 2008, the Roe herring sector, through the HCRS, has planned and delivered an on-grounds roe herring quality assessment program, and it is anticipated that this program will continue.

# 5 MANAGEMENT MEASURES FOR THE DURATION OF THE PLAN

## 5.1 Changes from Previous Seasons

### 5.1.1 Implementation of Management Strategy Evaluation (MSE) approach in Stock Assessment Advice

The commercial fishery management approach for the 2019 roe herring season included a Management Strategy Evaluation (MSE) approach to inform quota levels for SOG and WCVI. Prior to the 2020 season, MSE simulations were run for the northern stock areas and are used to inform quota levels for those areas.

### 5.1.2 Strait of Georgia Roe Herring Areas

Since 2018, Areas 15 and 17 South of Nanaimo have been closed to Roe herring commercial fisheries and this will continue in the 2020 season. This management measure is due to lack of observed spawn in these areas over the past several years, and concerns expressed by Indigenous nations with respect to the inability to access herring for FSC in these areas adjacent to their communities.

### 5.1.3 Updates to License Conditions

Conditions of licence for Roe seine and gillnet operators will include several new provisions in the 2019/20 fishing season:

1. A provision has been added regarding taking precautions to avoid fishing among seabirds, similarly to what is included in the Food and Bait and Special Use conditions.
2. A provision has been added to require reporting of any lost fishing gear (newly required in all commercial fisheries).
3. Minor updates regarding reporting the estimated weight in tons of any roe herring on board a packing/transporting vessel and keeping the vessel set log on board the vessel at all times.

### 5.1.4 Licensing Changes

For several years, HIAB has requested that DFO reduce roe herring license fees, especially for roe seine licenses, due to the high cost compared to the limited commercial opportunities. An avenue to support this request has not been identified and fees will not be reduced for this season.

Additionally, HIAB has requested additional flexibility of transfer between herring commercial fisheries, such as transfer of unused quota from Food and Bait into Roe seine, and transfer of Roe seine allocations to Roe gillnet. Additional flexibility between the Food and Bait and Roe seine fisheries is not feasible this year, however the Department will be facilitating transfer of Roe seine or Roe gillnet allocations to the opposite gear type, on a one year trial basis.

The Gear Selection Trial program is provided to allow licence holders seine (HS, FHS) and gillnet (HG, FHG) licence to select their licence to be fished by either a seine gear or gillnet gear pool. This means that seine and gillnet licences would be provided that could have a combination of quotas that come from seine or gillnet licences, but are fished by just one of the gear types. The selection into a gear would be one way only (not revisable prior to or in season) but would be for the 2020 season only and not carry over to subsequent seasons.

Each seine (HS, FHS) and gillnet (HG, FHG) eligibility licence is attributed a quota amount that is a calculation of the total gear fishery quota divided by the number of licences of that type. Licences will be issued for every seine and gillnet pool that will be a sum of both the seine and gillnet gear source quotas. The Gear Selection Trial will be evaluated during and subsequent to the season, and no assurance is provided it will be available in subsequent seasons.

## 5.2 Allocation, Harvest Levels, and Fishing Areas

The Department will attempt to provide reasonable fishing opportunities for seine and gillnet fisheries in each management area where fishing opportunities have been identified.

Fishery openings will be focused on the major bodies of fish or significant spawn events in the areas. Fishery openings will not be undertaken in sensitive areas, or maintained for an indefinite time period. Once an area is open, closures may be implemented if fish of unacceptable quality are prevalent. The Department has no obligation and provides no assurance or guarantee to participants that the maximum or any amount of fish specified in a licence will be harvested.

Commercial fleets should avoid locations where local Indigenous people are gathering fish, or fishing for herring spawn-on-boughs or spawn-on-kelp. DFO managers will coordinate with the First Nations Communications Coordinator to identify areas where boughs have been placed or locations of other FSC harvests so that the commercial fleets can be directed to avoid these areas. Additionally, the Department works collaboratively with Indigenous nations on communication regarding herring stocks and spawning locations for FSC fishery planning and information on FSC activities. During the fishing season, requirements to avoid specific locations to support FSC harvest may be implemented.

The quotas in open areas are allocated between seine and gillnet gear types based on recommendations from HIAB on a 55:45 coast wide basis.

### 5.2.1 Selection of Food and Bait for Roe Seine Licences

Roe seine licence holders will have the option to select into the Food and Bait fishery in the SOG only (no option for PRD) instead of the Roe seine fishery. The initial SOG Food and Bait allocation will increase if Roe seine licence holders select to transfer quota to the Food and Bait fishery. The SOG Roe fishery quota will be reduced by the same amount of quota that is transferred to the Food and Bait fishery, and on a first come/first-served basis (see Section 4.5 of Appendix 9: Commercial Fishing Plan for Food and Bait Herring). Roe seine licences that have selected the Food and Bait fishery option may not have Roe herring quota associated with their licence. Increased quota transfer flexibility between these two fisheries may be permitted based on discussions with HIAB to determine the scope and feasibility of requested options.

During times of high abundance, the maximum amount of quota that can be transferred from the SOG Roe fishery into the Food and Bait fishery is 12,000 short tons.

### 5.2.2 Haida Gwaii

The Haida Gwaii major stock assessment area is closed to commercial fishing in 2020.

### 5.2.3 Prince Rupert District

The Prince Rupert District major stock assessment area is closed to commercial fishing in 2020.

### 5.2.4 Central Coast

Closed to Roe fisheries.

### 5.2.5 Strait of Georgia

Open for Roe (and Food and Bait, Special Use) fisheries, to a maximum of 11,960 tons, subject to consultations. All tested MPs met the conservation objectives under MSE simulations for this area. The quota level is based on application a 20% harvest rate. Spawning biomass in 2020 is forecast to be 59,792 tons (range: 29,965-121,349 tons) and below the LRP with a 28% probability in the absence of fishing.

### 5.2.6 West Coast Vancouver Island

The West Coast Vancouver Island major stock area is closed to commercial fishing in 2020.

## 5.3 Catch target, licence distribution, and quota table

The expected use of herring for commercial Roe herring fisheries for each of the stock assessment areas is described in Table 7.1. Also provided is the number of tons per licence and gear type, provided the areas selected by licence holders matches the ideal number, which is an equitable proportion of the licences per area based on the 55:45 gear split and quota for the area. The actual licence quota will be based on the number of licences that select to fish in a specific area. The quota and ideal numbers will be adjusted based on the actual numbers of commercial seine and gillnet licences that will be available for issuance, and may not include all licences held by DFO in PICFI or ATP inventories. The quota amount per gear allocation, the final number of licences, ideal distribution, and quotas by gear type will be provided by way of Fishery Notice prior to the licence area selection deadline. The SOG Roe seine catch targets are reduced by the number of tons based on the number of licences (22.75 short tons per licence) selected to harvest in the SOG Food and Bait fishery.

**Table 7.1. Roe herring catch targets (short tons) and proportional licence distribution by gear type/area**

| Licence Area | Total Roe Quota (tons) | Seine | | | Gill Net | | |
|---|---|---|---|---|---|---|---|
| | | Catch Target (tons) | Fishing Area | Ideal # Licenses* | Catch Target (tons) | Fishing Area | Ideal # Licenses |
| HG | closed | | | | | | |
| PRD | closed | | | | | | |
| CC | closed | | | | | | |
| SOG | 10,423 | 5,733 | 14 & 17N | 252 | 4,690 | 14 & 17N | 1,267 |
| WCVI | closed | | | | | | |
| **TOTAL** | | | | | | | |
| # of Licences | | | | 252 | | | 1,267 |
| Tons/Licence | | 22.75 | | | 3.70 | | |

*** The ideal number of licences will change with the number of licences that select to harvest in the Food and Bait fishery.**

## 5.4 Open Times

The commercial fishing plan for roe herring is in effect from February 10, 2020 to April 30, 2020. Fisheries will be timed to coincide with major bodies of fish that are acceptable to industry in terms of roe maturity and fish size. Areas will be opened to seine or gillnet gear in specific areas and at specific times by way of Variation Order made under the authority of the Fishery (General) Regulations. Historically, fishing begins in late February and finishes by early April. DFO will continue to provide the commercial sector opportunity to achieve optimum roe quality within the bounds of maintaining management control, coordination with other fisheries and sound conservation principles. It is the intention of DFO to open Roe herring fisheries in consultation with the on-grounds industry advisors to provide reasonable fishing opportunities. Safety of the fleet, roe quality, gear compatibility, FSC access, and weather conditions will be taken into consideration in the conduct of fisheries, including the determination of a fishery opening.

## 5.5 Fishery Openings

### 5.5.1 Areas

The following areas are identified as fishing areas:

Haida Gwaii: Closed
Prince Rupert: Closed
Central Coast: Closed (to roe fisheries)
Strait of Georgia: PFMA 14 and portions of Area 17
West Coast Vancouver Island: Closed

Actual open areas for each fishery will be subject to in season decisions and opened by Variation Order. Potential fishing areas will be subject to the permanent area closures detailed in the following section.

Fishery managers will endeavor to ensure that sensitive herring spawning areas are protected from gear damage by establishing shallow water net boundaries inside which no fishing shall take place. Herring spawning grounds may be designated under Section 41(1) of the Pacific Fishery Regulations, 1993. Vessels shall not anchor or transfer herring within a designated herring spawning ground.

The fleet is requested to avoid excessive disturbance of herring caused by vessels running back and forth over schools prior to openings.

Commercial fleets are also requested to avoid locations where local First Nations are gathering fish, or fishing for herring spawn on boughs or spawn on kelp. Additionally, the Department works collaboratively with First Nations on communication regarding herring stocks and spawning locations for FSC fishery planning and information on FSC activities. As the fishery

season progresses, in some cases, specific requirements to remain out of particular locations to support FSC harvest will be broadcast for adherence by fish harvesters.

### 5.5.2 Areas 15 & 17 South

Spawn information and local observations indicate recent low levels of spawn in PFMAs 15 and 17S, beginning with a marked decrease in spawn in the mid-1990's. Migratory patterns for herring shift and it is unclear what impact fisheries may have on the distribution of spawn in these areas. For the 2017 season, DFO implemented in-season spawn criteria that are required prior to consideration of a commercial Roe herring fishery in these areas. There was no significant spawn in these areas in the 2017 season, and for the 2018 season, a further measure of not opening to commercial Roe fisheries was put in place. No spawn was observed in these areas in 2018 or 2019, therefore for the 2020 season these areas will remain closed.

This measure is intended to ensure that commercial fisheries are not opened in small areas of fish or spawn, commercial fisheries are staged on major bodies of fish, and opportunities for Indigenous FSC fisheries can be provided on a priority basis.

### 5.5.3 Decision Rules for Opening Seine Fisheries

**Strait of Georgia**: The opening time and location for seines will be decided by the DFO fishery managers in consultation with pools. If necessary, an opening will be determined by polling each pool captain. In this situation, each pool carries the weight of the number of licences in the pool.

**Prince Rupert:** When open, single seine pool in each of these areas. The opening time and location for seines will be determined by the DFO fishery managers in consultation with pool representatives.

### 5.5.4 Decision Rules for Opening Gill Net Fisheries

**Strait of Georgia**: The designated representative of HIAB will contact the nine gill net advisors identified by the roe herring sector. The opening of the fishery will be based on the advice received from the advisors through the designated representative of HIAB to the gill net fishery manager.

**Prince Rupert:** When open, the gill net fishery manager will attempt to contact the nine gill net advisors identified by HIAB, and will open the area based on the advice received from the advisors that were contacted. If a gill net fishing opportunity presents itself at a time when the majority of the fleet is not in the area, the Department will, if practical, seek the advice of as many of the nine gill net representatives they are able to contact before deciding whether to open the area. Notice of closures will be announced promptly, as required for conservation purposes. Notice will be sufficient to provide a reasonable opportunity for fish harvesters to remove their fishing gear from the water.

## 5.6 Closed Areas

### 5.6.1 Haida Gwaii – Area Closed

### 5.6.2 Prince Rupert – Area Closed

### 5.6.3 Central Coast

### 5.6.4 Strait of Georgia

**Strait of Georgia 2019-20 Closed Areas**
Area closures detailed below. There may be additional closures in season by Variation Order and fishery notice depending on the circumstances. Other area closures may be identified to address specific management concerns such as providing access to First Nations to harvest fish or spawn for food, social, and ceremonial purposes (FSC) or vessel navigation.

Area 15:
All Subareas

Area 17:
South of Dodd Narrows (17S): Subareas 17-1 to 17 -10 and portions of 17-16, that portion south of a line at Dodd Narrows, drawn from Joan Point at 49°08.150'N 123°49.145'W on Vancouver Island easterly to Purvis Point at 40°08.174N 123°49.016'W on Mudge Island.

Area 18:
All subareas

**Strait of Georgia Permanently Closed Areas**
Area closures are detailed below. These areas are closed due to navigation concerns, sensitive fish habitat, or concerns regarding bycatch of other species.

Area 14:
Comox Harbour: Subarea 14-14

Area 17:
Porlier Pass: A portion of Subarea 17-3 north-easterly of a line from Cayetano Point at 49°00.767'N 123°36.014'W on Valdes Island to Alcala Point at 49°00.099'N 123°35.3730'W on Galiano Island.

Ladysmith Harbour: Subarea 17-7.
Nanaimo Harbour: Subarea 17-14.
Nanoose Harbour: Subarea 17-20.

Kulleet Bay: A portion of Subarea 17-5 westerly of a line from Coffin Point at 48°59.250'N 123°45.474 W on Vancouver Island to Yellow Point at 49°02.395'N 123°44.810'W on Vancouver Island.

Gabriola Pass: The waters of Gabriola Pass described as portions of Subareas 17-10 and 17-17 bounded by a line from Dibuxante Point at 49°07.625'N 123°42.913'W on Valdesz Island, thence following the northerly shore of Valdesz Island to Cordero Point at 49°07.700'N 123°42.126'W on Valdesz Island, thence to the most southerly tip of Breakwater Island at 49°07.546'N 123°40.897'W, thence following the westerly shore of Breakwater Island to the most northerly point on Breakwater Island at 49°08.360'N 123°40.872'W, thence due west to Gabriola Island at 49°08.355'N 123°41.4770'W, thence following the southerly shore of Gabriola Island to the point of land located at 49° 07.777' N 123° 43.045' W, thence in a straight line southerly to the point of commencement at Dibuxante Point.

Area 18:
Maple Bay: Subarea 18-7.
Cowichan Bay: Subarea 18-8.
Fulford Harbour: Subarea 18-10.
Active Pass: That portion of Subarea 18-2 north-easterly of a line from Collinson Point at 48°51.583'N 123°21.172'W on Galiano Island to Enterprise Reef Buoy at 48°50.694'N 123°20.882'W to Crane Point at 48°50.497'N 123°20.040'W on Mayne Island.

### 5.6.5 West Coast Vancouver Island – Area Closed

## 5.7 Gear

This section is a general description of gear used in fishing for roe herring. Please refer to the license conditions for specifics on eligible gear for each license. In the case of a discrepancy between this document and the licence condition, the licence conditions prevail.

The licence condition restricting the number of gillnets that may be used under authority of a gillnet licence to one (1) net was removed in 2015. This change allowed for fishing vessel efficiencies. All fishing gear must be marked in accordance with the Licence Conditions.

The restriction of a maximum of two seine (category HS or FHS) licences which may be placed on a single seine vessel was removed in 2013, and there is no maximum number of licences that may be placed on a vessel.

### 5.7.1 Seine

A herring purse seine shall not be greater than 411.48 metres (225 fathoms) in length, and a minimum mesh size of 25 millimetres (one inch) extension measure.

Vessels should have a full sized herring seine, along with all the associated gear (i.e. pumps, winches, power skiffs), to fish and haul the gear, as well as adequate electronic equipment for locating and estimating herring schools.

A properly functioning chilled seawater (C.S.W.), or refrigerated seawater (R.S.W.), system is required for all vessels participating in the fishery.

### 5.7.2 Gillnet

The effort restriction of fishing a single gillnet per licence was removed in the 2015 season. The gear that is permitted to be used (as per the Licence Conditions) is:
(1) Herring gill nets with:
(a) a maximum length of 135 m;
(b) a maximum depth of 100 meshes; and
(c) a maximum mesh size of 64 mm.

The maximum mesh size of 64 mm does not apply in respect of a gill net that contains a single portion of netting that is not more than 2 m in depth and that has a mesh size of at least 150 mm.

Each herring gillnet shall be marked with the unique licence gillnet number and licence year on a small marker float that is affixed to one end of the gill net, adjacent to one of the large marker buoys. A 2005 study of the use of "Sharpie" brand markers on fishing floats indicates that this can provide a low cost and minimal failure rate net marking methodology. Nets tagged with buoys marked in this manner were tested over a 23 day period and showed no degradation in the marking readability. These floats can be replaced at low cost each year to accommodate annual gillnet licence number changes. The following is detailed in the licence conditions:

1. A buoy floating on the surface of the water shall be attached to each end of every gill net that is not attached to the vessel.
2. The buoys shall be at least 125 cm in circumference.
3. All buoys attached to the gill net shall be of the same colour.
4. A net float marked with the licence year and gillnet licence number shall be attached to a buoy that is attached to one end of the gill net.
5. The net float referred to in 4 shall be marked in solid block Arabic numerals and letters
(a) without ornamentation;
(b) not less than 25 mm in height; and 7mm in width
(c) in a colour that contrasts with their background.


In addition, no person shall use or carry on board a gill net that is more than 100 meshes in depth in a hung position or is of a greater length than 135 metres. The gill net mesh size shall not be greater than 64 mm (2.5 inches). Shaker panels shall not exceed a depth of 2 m with a mesh size no less than 150 mm (6 inches). Gill nets must be marked on both ends with buoys of similar colour, no less than 125 cm in circumference. No person shall leave any anchors, buoys or lines in the water during any closed time.

### 5.7.3 Vessel Master Responsibility

The maximum quantity of Roe Herring authorized to be taken under a roe herring licence by the licence holder shall not exceed the landed weight set out under "Quota" in the licence. The landed weight shall be determined at the port of landing.

The Pool captain has been identified as the person who may communicate with the fishery manager for the licensed pool and is responsible for documenting fishing locations, the number of nets fishing, estimated catch, and the list of packing vessels for the pool; however the vessel master who is conducting the fishing activity is responsible for not exceeding the weight of fish set out in the quota for the licence.

## 5.8 Herring Licence Pools

DFO supports the licence pooling structure established in 1998, to ensure the proper management and control of the roe herring fishery. To this end, DFO will support the integrity of the pooling system while managing to the overall fishery quota of an area. Catch in excess of pool quotas are not permitted and therefore the DFO's on-grounds precautionary strategy is to estimate catch during the fishery opening based on hails and validated landings, and to close the fishery based on estimates of when the allocation for a gear type will be achieved. All licence holders are advised that they must ensure catch does not exceed the amount they are licensed to harvest.

### 5.8.1 Guidelines for Herring Licence Pools

1. When more than one stock assessment area is open, licence selection for the fishing areas will be on an open basis. This means that the average for each pool would depend on the total number of licences choosing the area. The quota for each pool equates to the licence share for the area chosen multiplied by the number of licences in a pool.

2. Seine roe licences which select and land catch into the Strait of Georgia Food and Bait fishery may do so on a one-way basis for 2019/2020, and will not be part of the roe herring licence pool process for that year.

3. All Roe herring licences, except those that select into the Food and Bait fishery, must be associated with a pool. Licences not associated with a pool will not be issued.

4. In areas that there is an identified roe fishing opportunity, individual seine and gillnet licence quotas are determined by the number of licences that select an area. The quota for each pool is determined by the number of licences in that pool. The individual licence quotas are added together, to calculate the pool quota.

5. Each pool designates a pool captain to act a liaison between the pool and the Department.

6. Within each area, each gear type will be managed to an overall quota. Each pool may fish until they have reached their quota, the overall fishery quota is achieved, or until the fishery is closed.

7. There will be no quota carry over from one year to the next.

8. If there are fish from seine and gillnet gear placed on the same packing vessel, fish from each gear type must be kept in separate holds.

### 5.8.2 Seine licence pool fishery guidelines

1. The minimum number of seine licences required to form a pool in the Strait of Georgia seine fishery is eight.

2. When open, seine fisheries in Prince Rupert and Central Coast will be managed as a single pool in each area.

3. Each pool will designate one representative (pool captain) to work with the on-grounds fishery manager.

4. Once DFO, in conjunction with the pool representatives, has agreed that the fish in an area are harvestable, final details of the fishing plan will be discussed with industry participants. This will include fishing boundaries, setting order, hail-in procedures, etc. Ideally target size of sets should be 200 tons maximum to facilitate capture and reduce the possibility of exceeding target catch.

5. Seine vessels must have set approval from an on grounds fishery manager prior to setting, unless the At Sea Observer (ASO) program is in place and the vessel has an at sea observer on board the vessel.

6. Fish captured by seine net may be released if the roe maturity of the set is not representative of the fish in the area. Once the fish have been dried up all fish must be pumped, and fish may not be released once pumping of the set has commenced. The sorting of fish captured in the seine is not allowed. Approval from a DFO representative must be received before any fish are released.

7. The fishery manager will evaluate the catch on an ongoing basis so that new sets can be approved in order to complete the fishery.

8. If a pool exceeds their quota, arrangements should be made to have another pool take the excess on the grounds.

9. All packers and fishing vessels leaving the grounds must hail prior to leaving the fishing grounds, regardless of whether they have fish on board or not.

10. Daylight openings are preferred but if required the decision to fish at night will be made on grounds.

### 5.8.3 Gill net licence pool fishery guidelines

1. For all gill net area selections, a minimum pool of four gill net licences must be submitted to a PFLU. Larger pools are permitted.

2. Only a licensed punt may be used for all catching, carrying and offloading of catch on the fishing grounds.

3. Each fishing pool must designate one person to act as a representative for that pool to co-ordinate with DFO prior to and during the season. The pool coordinator will be the liaison between the pool and the fishery manager. They will be responsible for keeping a running tally of the catch, documenting fishing locations, number of nets fishing, and a list of packing vessels for the pool.

4. Timing of gill net openings will be determined by a process for each fishing area.

5. A successful fishery requires that harvesters are present in the area with the appropriate gear, crews, vessel support, and packing capacity when the opening occurs.

6. The Department, in consultation with the pool representatives, will agree to the fishing areas.

7. Each pool will be required to weigh their catch on the grounds, using current government inspected scales. Validated weights at point of landing will be used to calculate the final weight against the individual pool quota.

8. All fish caught must be retained and validated.

9. In the Strait of Georgia, there will be a maximum number of 20 reporting relationships (gillnet pool fishery contacts), as managers will not be in a position to receive information from each of the pool coordinators.

10. Where specified vessels leaving the fishing grounds, regardless of whether they have fish on board or not, must hail into the manager prior to leaving the fishing grounds.

# 6 FISHERY MONITORING PROGRAM

An industry funded Fishery Monitoring Program will be used to ensure accurate and timely catch reporting.

1. To ensure full accounting of catch, a Dockside Monitoring Program funded by the licence holders will be required to validate the weight of all catch from the fishery. The monitoring program will record all landings and provide a final report documenting all catch. All costs incurred for plant validation of the catch is the responsibility of the licence holder.

2. Confirmation of the service provider shall be provided to the Department each year.

3. The vessel master is required to make oral reports (hails) regarding weight of catch prior to leaving the fishing grounds, as specified in the Conditions of the roe herring seine or roe herring gillnet licence.

4. To ensure the timely deployment of a port monitor to the landing stations, each vessel leaving the grounds with fish onboard must notify the designated service provider prior to leaving the fishing grounds in order to receive a validation number. There will be a unique number assigned for each hail in. This number must be written on the plant validation slip and provided upon request to a fishery officer or designate.

5. Weights validated at point of landing will be used to calculate the final validated weight against the individual pool quota. There will be no allowances made for ice and/or water in the tote at time of weighing. It is the responsibility of the licence holder to ensure that fish are being weighed accurately.

6. Approved landing stations for Roe herring dockside validation will be provided by fishery notice prior to the season.

**At Sea Observer Coverage Option**

The use of at-sea observers (ASO's) to supplement the on grounds management may be utilized this season. The purpose of the program to is to provide fishing opportunities at times when on grounds management staff and oversight are not available, and to test the utility for ASOs in the Roe herring fishery. The parameters of the program are as follows:

- Specific areas will be opened, and only for vessels with an ASO on board.
- The program is bounded by the availability of ASO staff (2-3 at a time).
- There must be sufficient packing capacity to ensure all catch is retained, and vessels should fish in a minimum of pairs.
- ASO must be on board the vessel until all fishing activity ceased (all pumping completed and gear is out of the water).
- Set releases will be photographed by ASO, and approval from fishery manager provided prior to release.
- ASO will collect data in the form of an At Sea Observer record.
- Hail requirements and all other requirements of Licence Conditions must be adhered to.

# 7 LICENSING

## 7.1 Fisher Identification Number

Since 2006, unique Fisher Identification Numbers (FIN) have been assigned to all Pacific commercial harvesters. The FIN allows for identification of fish harvesters for data collection, fisheries management and enforcement purposes. Once a FIN is assigned to a fish harvester, that individual will reference the FIN when identifying him or herself in subsequent business dealings with both the department and service contractors; for example filling in the FIN field on logbooks, noting the FIN when hailing, landing catch, etc. More information on FIN may be obtained from your DFO fisheries manager, or the Pacific Fishery Licensing Unit (PFLU).

## 7.2 Licence Categories

A Roe herring seine (category HS or FHS) or gill net licence (category HG or FH) is required to commercially fish for roe herring. Roe herring licence eligibilities are limited entry and are party based.

## 7.3 Licence Renewal Fees

Roe herring licence renewal fees are available at full or reduced rates. Reduced fee licence eligibilities are eligibilities held by parties who have status under the Indian Act and who elect to pay a reduced fee for the Roe herring licence eligibility. The election to pay a reduced fee may be made at any time and is irreversible. Fees are not applicable to communal commercial licenses.

| Gear | Full Fee | Reduced Fee |
|---|---|---|

| | | |
|---|---|---|
| Gill Net | $200.00 | $100.00 |
| Seine | $3,980.00 | $1,990.00 |

## 7.4 Licence Issuance

A commercial roe herring gill net or seine licence must be renewed, and the licence renewal fees paid, annually to retain the privilege to be issued the licence in the future. This means that the licence eligibility holders must renew the licence whether they intend to fish or not. If the licence is not renewed annually, the licence eligibility will cease and DFO will not be able to consider a request to issue that licence in the future.

The licence process and deadlines outlined below may be adjusted as required to accommodate fishery planning deadlines. If adjustments are made, the revised process will be provided by way of fishery notice.

The steps to the issuance of the commercial licence and quotas are detailed below.

a) Log into the National Online Licensing System (NOLS) and pay the 2020 roe herring licence renewal fee prior to the fees payment deadline:
b) When the payment fee is processed, a licence document is sent to your NOLS account. Print the licence document ('Print Documents' tab in NOLS) The licence document does not authorize fishing without appropriate conditions of licence being attached (to be provided in February)
c) Page 2 of the licence document (Area Selection Request) shall be completed and submitted to DFO as the pool captain election form.

All deadlines are for 4 pm on the deadline date. The key dates will be provided in the approved final IFMP.

### 7.4.1 Area Selection/Re-Selection

**Area Selection deadline - Return of Forms (When more than one area opened)**
There will be no area selection for the 2019/20 season, as the roe seine and gill net fishery will be in Strait of Georgia (SOG) area only.

**Area Re-selection Option (When more than one area opened)**
As the roe herring seine and gill net fishery will only be in the SOG area only, area re-selection will not occur for 2019/20 season.

### 7.4.2 Pool Designation Lists

a) Gill net: Submission deadline – TBD
    (i) A pool list shall be submitted for each pool.
    (ii) There is a minimum of four (4) gillnet licences per pool.
b) Seine: Submission deadline – TBD
    (i) A pool list shall be submitted for each seine pool.

(ii) There is a minimum of eight (8) seine licences per pool and no more than ten pools permitted for the Strait of Georgia area.

c) All licences - Submit pool lists by the submission deadlines via:
   (i) Fax: 604-666-5855
   (ii) E-mail: fishing-peche@dfo-mpo.gc.ca
   (iii) Courier or drop-off by personal appointment:
   Fisheries and Oceans Canada,
   200 – 401 Burrard St, Vancouver BC V6C 3S4

To ensure proper management and control of the fishery, any roe herring licences that have selected an area, but who have not been identified on a pool list as required, will not be eligible to participate in the fishery (see section 5.8 of this Appendix) and will be marked as inactive. The individual gear and area share quota that would have been allocated to licences that have paid the annual licence fee and selected an area but that have not identified on a pool list as "pooled" by the dead line date will remain out of the overall total allowable catch for that gear type and area.

### 7.4.3 Licence, Conditions of Licence, and Quota Addendum in NOLS

Licence conditions and quotas are expected to be available for printing in NOLS in mid-February (Date TBD).

a) Once pools are finalised, a fishery notice will be released when the documents are available for printing – target date TBD.
b) Licence holders or their representatives will then be able to print the conditions of licence from their NOLS 'Print Documents' tab.
c) The licence does not authorize fishing for roe herring until the conditions of licence are printed and attached to the licence.

Vessel masters are reminded that under the Canada Shipping Act, all vessels fishing herring or capelin are required to have a valid stability certificate/booklet on board the vessel. Skiffs used in the Gill Net Fishery: Skiffs must be registered/licensed by D.O.T and display a D.O.T. number and meet all fish hold inspection standards.

## 7.5 Licence Documents

### 7.5.1 Valid Period

Roe herring licence documents are valid from the date of issue to December 31, 2020.

### 7.5.2 Replacements

Replacement for lost or destroyed licence documents may be obtained by re-printing from your National Online Licensing System (NOLS) account.

### 7.5.3 Seine Vessel Redesignation

Roe herring seine licences may be redesignated upon receipt of a written request prior to issuance of licences for that pool has commenced. The application and pool sheet must be amended.

On grounds redesignation requests will not be considered where a vessel is licensed in another area and unable to arrive in time for a fishery in a second area.

After licence issue, vessel redesignation may occur on grounds on the approval of a fishery officer. On grounds requests are considered only if the vessel is disabled (lost, damaged or mechanical breakdown), within the same pool or prior to the fishery openings in the area (Changes in area are not permitted).

## 7.6 Transporting herring

Transporting vessels are used in the herring fishery to transport herring harvested during commercial fishing to landing locations. Transporting fish is not permitted unless the vessel is registered and licensed to be used in commercial fishing or a transporting (category D) licence has been issued in respect of the vessel. A roe herring seine licence or any limited entry vessel based licence (i.e. salmon, schedule II species, geoduck, sablefish, halibut, crab, shrimp trawl, groundfish trawl or prawn and shrimp by trap) allows the transport of roe herring caught by other vessels.

## 7.7 Licence Eligibility Nomination

Roe herring licence eligibilities for categories HG or HS, may be nominated from one party to another. Communal commercial roe herring licenses may not be nominated.

Nomination forms are available at a PFLU or through the following Internet site: www.pac.dfo-mpo.gc.ca/fm-gp/licence-permis/index-eng.htm

Nomination applications are accepted annually from April 1st to October 31st. Forms must be received by the PFLU by close of business on October 31st. Postmarks will not be accepted. Nomination forms can be submitted to the PFLU via:

(iv) Fax: 604-666-5855
(v) E-mail: fishing-peche@dfo-mpo.gc.ca
(vi) NOLS

There are no restrictions as to who can be nominated for a full fee roe herring licence, however only First Nation individuals, who have status under the Indian Act may be nominated for a reduced fee roe herring licence.

The nomination form must be signed by the licence eligibility holder on record; if the licence eligibility holder on record is a company or Indigenous group, the PFLU must have on record a current BC Company Summary and a copy of the Confirmation of Signing Authorities form, advising who the signing authorities are.

Only one nominee (i.e. an individual, Indigenous group or company) may be nominated. Multiple nominees will not be accepted.

# 8 PUBLIC HEALTH

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

- Portable toilets or other designated human waste receptacles shall be used only for the purpose intended, and shall be so secured and located as to prevent contamination of the shellfish area or any harvested shellfish on board by spillage or leakage.
- The contents of toilets or other designated human waste receptacles shall be emptied only into an approved sewage disposal system.
- Vessels that have a toilet on board must have a holding tank or an approved marine sanitation device.
- The discharge of untreated sewage into all Canadian inland waters and Canadian coastal waters within 3 nautical miles of land is banned.
- Sewage holding tanks must be emptied at an appropriate pump-out facility or at least three nautical miles from the shore while underway.

In 2017 and in 2018 there were two separate Norovirus outbreaks linked to oysters harvested from Baynes Sound. The confirmed cause of these outbreaks is human sewage; commercial fishing vessels have been identified as a potential source of contamination. A risk assessment on this issue has been undertaken by the BCCDC and is available online here:

http://www.bccdc.ca/resource-gallery/Documents/Guidelines%20and%20Forms/Guidelines%20and%20Manuals/Health-

Environment/2018%20norovirus%20outbreak%20linked%20to%20vessels%20and%20oysters.pdf

The Canadian Food Inspection Agency regulations require:

1. All herring gill net skiffs to have areas where the fish harvester can stand without standing on or in herring. Fuel and hydraulic oil pump reservoir areas must be separate from fish holding areas. Skiffs should have self-bailing systems for fish holds and standing areas separate from oil contaminated areas. No unpainted wood may come in contact with fish. Random inspections will be conducted on the fishing grounds.

2. All herring seine vessels to have valid fish hold inspection certificates. Licensing seine vessels for catching/carrying fish requires that the vessel and fish holds comply with rigid inspection criteria. Deck loads are not permitted.

3. That processing of herring in B.C. is conducted at inspected processing plants. Processing of herring for human consumption requires handling and preservation "to a degree which ensures maximum quality of the end product", (Schedule B - Part 4 Section 12 *British Columbia Fish Inspection Regulations*).

In 2019, DFO and the herring industry worked with CFIA to meet these criteria, resulting in no closures to the shellfish operations. For 2020, DFO will continue to work with the herring industry to identify and reduce potential risks.

# 9 COMPLIANCE WITH OTHER FEDERAL AND PROVINCIAL LEGISLATION

Fish harvesters are responsible for compliance with all federal and provincial laws and regulations pertaining to fishing operations.

# 10 HISTORIC FISHERY DATES AND CATCH TARGETS

**Table 7.2. Roe Herring Expected Use (Short tons) by Area, 2009 to 2019**

| | HG | PRD | CC | SOG | WCVI | Coast Wide |
|---|---|---|---|---|---|---|
| **2009** | closed | 2,000 | closed | 9,750 | closed | 11,750 |
| **2010** | closed | 1,537 | closed | 8,500 | closed | 10,037 |
| **2011** | closed | 2,346 | closed | 13,500 | closed | 15,846 |
| **2012** | closed | 1,500 | closed | 11,500 | closed | 13,000 |
| **2013** | closed | 2,100 | closed | 13,805 | closed | 15,905 |

| | | | | | | |
|---|---|---|---|---|---|---|
| **2014** | 1,200 | 2,000 | 750 | 13,633 | 2,117 | 19,700 |
| **2015** | 800 | 2,000 | 1,400 | 29,415 | 3,000 | 37,200 |
| **2016** | closed | 2,500 | 215 | 19,945 | closed | 22,660 |
| **2017** | closed | 2,500 | 215 | 28,185 | closed | 30,900 |
| **2018** | closed | 2,258 | closed | 20,990 | closed | 23,248 |
| **2019** | closed | closed | closed | 28,430 | closed | 28,430 |

**Table 7.3. Roe Catches (Short tons) by Gear and Roe Herring Area - 2019**

| Roe Herring Area | Seine | Number of Licences | Gill Net | Number of Licences | Total Catch |
|---|---|---|---|---|---|
| HG | 0 | 0 | 0 | 0 | 0 |
| PRD | 0 | 0 | 0 | 0 | **0** |
| CC | 0 | 0 | 0 | 0 | **0** |
| SOG | 7,178 | 209 | 8,374 | 1,190 | **15,552** |
| WCVI | 0 | 0 | 0 | 0 | 0 |
| Inactive | | 0 | | 77 | |
| Food and Bait SOG | | 43 | | | |
| Total | 7,178 | 252 | 8,374 | 1,267 | 15,552 |

**Table 7.4. Dates, Locations and Catch of Roe Herring Fisheries - 1980 to 2019**

**Haida Gwaii (Queen Charlotte Islands) (Areas 1, 2E and 2W)**

| Year | Seine | Location | Total Seine Catch | Gill Net | Location | Total Gill Net Catch |
|---|---|---|---|---|---|---|
| 1980 | Mar 23 | Skincuttle Inlet | 2,321 | Feb. 12-14, 17-20 | Naden Harbour | 1,334 |
| | Mar 19-21 | Louscoone Inlet | | Mar 19-21 | Louscoone Inlet | |
| 1981 | Mar 17 | Skincuttle Inlet | 4,281 | Mar 18-20 | Skincuttle Inlet | 1,879 |
| | Mar 21 | Inskip Inlet | | Mar 24-30 | Atli Inlet | |
| | Mar 24 | Atli Inlet | | | | |
| | Mar 25 | Rennell Sound | | | | |
| 1982 | Mar 14 | Lower Juan Perez | 2,594 | Mar 20-22 | Inner Skincuttle Inlet | 1,551 |
| | Mar 20 | Inskip Channel | | | | |
| | Mar 22 | Atli Inlet | | | | |
| 1983 | Mar 09 | Lower Juan Perez | 5,071 | Mar 15 | Outside Poole Inlet | 1,024 |
| | Mar 21 | Inskip Channel | | | | |
| 1984 | Mar 2 | Lower Juan Perez | 4,427 | Mar 14 | Poole Inlet | 589 |

| Year | Seine | Location | Total Seine Catch | Gill Net | Location | Total Gill Net Catch |
|---|---|---|---|---|---|---|
| 1985 | Mar 11 | Skincuttle Inlet | 4,832 | Mar 25-26 | Inner Skincuttle Inlet | 1,644 |
| 1986 | Mar 23 | Skincuttle Inlet | 2,720 | Apr 7 | Juan Perez Sd. | 981 |
| 1987 | Mar 20 | Juan Perez Sound | 1,896 | No fishery | | |
| 1988 | No fishery | | | No fishery | | |
| 1989 | Mar 28 | Louscoone Inlet | 1,211 | No fishery | | |
| 1990 | Mar 18 | Port Louis | 5,787 | Apr 8 | Burnaby Strait | 1,290 |
| | Mar 26 | Louscoone Inlet | | | | |
| 1991 | Mar 23 | Rennell Sound | 6,367 | Apr 8 | Section Cove | 598 |
| | Mar 31 | Burnaby Strait | | | | |
| 1992 | Mar 16 | Louscoone Inlet | 3,650 | No fishery | | |
| | Mar 18 | Rennell Sound | | No fishery | | |
| 1993 | Mar 25 | Skincuttle Inlet | 3,470 | No fishery | | |
| | Mar 28 | Port Louis | | | | |
| | Mar 29-30 | Rennell Sound | | | | |
| | Mar31-Apr 1 | Inskip Inlet | | | | |
| 1994 | No fishery | | | No fishery | | |
| 1995 | No fishery | | | No fishery | | |
| 1996 | No fishery | | | No fishery | | |
| 1997 | No fishery | | | No fishery | | |
| 1998 | Mar 14 - | Huston Inlet | 1,512 | No fishery | | |
| | Mar 15-16 | Huston Inlet | | | | |
| | Mar 15-17 | Lower Juan Perez | | | | |
| | Mar 25 | Skincuttle Inlet | | | | |
| 1999 | Mar 10 | Skaat Harbour | 2,484 | Mar 25-27 | Lower Juan Perez / Skincuttle Inlet | 521 |
| 2000 | Mar 15 | Island Bay / Skaat Harbour | 1,640 | No fishery | | |
| | Mar 16 | Skaat Harbour / | | | | |

| Year | Seine | Location | Total Seine Catch | Gill Net | Location | Total Gill Net Catch |
|---|---|---|---|---|---|---|
| | | Skincuttle Inlet | | | | |
| 2001 | No Fishery | | | No Fishery | | |
| 2002 | Mar 22 | Juan Perez | 502 | No Fishery | | |
| 2003 to 2016 | No Fishery | | | No Fishery | | |
| 2017 | No Fishery | | | No Fishery | | |
| 2018 | No Fishery | | | No Fishery | | |
| 2019 | No Fishery | | | No Fishery | | |

**Prince Rupert District (Areas 3, 4 and 5)**

| Year | Seine | Location | Total Seine Catch (tons) | Gill Net | Location | Total Gill Net Catch (tons) |
|---|---|---|---|---|---|---|
| 1980 | Mar 29-31 | Kitkatla Inlet | 1,809 | Mar 29-31 | Kitkatla Inlet | 1,153 |
| 1981 | Mar 27 | Kitkatla Inlet | 1,159 | Apr 3 | Kitkatla Inlet | 392 |
| 1982 | No fishery | | | No fishery | | |
| 1983 | No fishery | | | No fishery | | |
| 1984 | Mar 21 | Kitkatla Inlet | 1,822 | Mar 26 | Big Bay | 2,072 |
| 1985 | Mar 28 | Kitkatla Inlet | 3,086 | Mar 26-28 | Big Bay | 3,831 |
| 1986 | Apr 2 | Kitkatla Inlet | 3,796 | Apr 12-13 | Big Bay | 5,039 |
| 1987 | Mar 31 | Kitkatla Inlet | 1,918 | Mar 24,25,29 | Big Bay | 4,485 |
| | Apr 1 | | | Apr 2 | | |
| 1988 | Apr 4 | Kitkatla Inlet | 3,585 | Apr 2,3,4,6 | Big Bay | 4,781 |
| 1989 | Apr 2, 3 | Kitkatla Inlet | 3,805 | Apr 2, 3, 4 | Big Bay | 5,231 |
| 1990 | Apr 3, 4 | Kitkatla Inlet | 2,224 | Mar 28 | Big Bay | 2,603 |
| 1991 | Apr 6 | Kitkatla Inlet | | Mar 25, 27 | Big Bay | |
| 1992 | Mar 30 | Kitkatla Inlet | 1,230 | Mar 26 | Big Bay | 3,912 |
| 1993 | Apr 1 | Kitkatla Inlet | 2,000 | Mar 31 | Big Bay | 4,155 |
| 1994 | Apr 2, 3 | Kitkatla Inlet | 2,017 | Apr 2, 3 | Big Bay | 2,530 |
| 1995 | Apr 4, 5 | Kitkatla Inlet | 797 | Mar 27 | Big Bay | 1,522 |
| 1996 | No fishery | | | Mar 27 | Big Bay | 3,075 |
| 1997 | No fishery | | | Apr 5 | Big Bay | 6,007 |
| 1998 | No fishery | | | Mar 21-23 | Big Bay | 3,501 |
| 1999 | No Fishery | | | Mar 20-25 | Big Bay | 2,028 |
| 2000 | Mar 27-28 | Kitkatla Inlet | 1,366 | Mar 29-Apr 1 | Big Bay | 3,308 |
| 2001 | Mar 23 | Kitkatla Inlet | 839 | Apr 1 – 4 | Big Bay, Venn | 2,100 |
| 2002 | Apr 3-6 | Kitkatla Inlet | 2,059 | Mar 25-29 | Big Bay | 2,681 |
| 2003 | Mar 23 | Kitkatla Inlet | 1,383 | Mar 28-30 | Big Bay | 2,706 |
| 2004 | Mar 27; 29 | Kitkatla Inlet | 1,646 * | Mar 19 – 25 | Big Bay | 2,330 |
| 2005 | Mar 18 – 20 | Kitkatla Inlet | 1,567 * | Mar 19 – 21 | Big Bay | 2,142 * |
| 2006 | Mar 23, 24 | Kitkatla Inlet | 820* | Mar 26-29 | Big Bay | 1,697* |
| 2007 | | No Fishery | | Apr 3 to 4 | Big Bay | 1,067 |

| Year | Seine | Location | Total Seine Catch (tons) | Gill Net | Location | Total Gill Net Catch (tons) |
|---|---|---|---|---|---|---|
| 2008 | Mar 15-18 | Kitkatla Inlet | 566 | Apr 2 to 4 | Slippery Rock Big Bay | 1,266 |
| 2009 | Apr 7,8 | Kitkatla Inlet | 786 | Apr 7,8 | Big Bay | 1,418 |
| 2010 | Mar 25-26 | Kitkatla Inlet | 523 | Mar 29- Mar 31 | Big Bay | 1,113 |
| 2011 | Mar 25-27 | Kitkatla Inlet | 973 | Mar 26-29 | Big Bay | 1,346 |
| 2012 | Mar 30 | Kitkatla Inlet | 514 | Mar 24-27 | Big Bay | 1,010 |
| 2013 | Mar 19 and 22 | Kitkatla Inlet | 818 | Mar 20-22 | Big Bay | 1,415 |
| 2014 | Mar 22-24 | Kitkatla Inlet | 791 | Mar 30-Apr 1 | Big Bay | 1,223 |
| 2015 | Mar 21-23 | Kitkatla Inlet | 812 | Mar 22-27 | Big Bay | 1,092 |
| 2016 | Mar 20-24, Apr1 | Kitkatla Inlet | 803 | Mar 18-22 | Big Bay | 1,521 |
| 2017 | Mar 23 | Kitkatla | 1,124 | Mar 17 to 21 | Big Bay | 1,541 |
| 2018 | No Opening | | | Mar 25 to 27 | Big Bay | 459 |
| 2019 | No Opening | | | | | |

**Central Coast (Areas 6, 7, 8)**

| Year | Seine | Location | Total Seine Catch (tons) | Gill Net | Location | Total Gill Net Catch (tons) |
|---|---|---|---|---|---|---|
| 1982 | Mar 15 | Stryker Bay | 2,489 | Mar 18-19 | Cape Mark-Thompson Bay | 4,488 |
| | | | | Mar 21-22 | Kitasu Bay-Higgins Pass | |
| 1983 | Mar 15 | East Houghton Islands | 2,272 | Mar 21 | West Coast Price Island | 3,945 |
| | | | | Mar 23 | Houghton Islands, Thompson Stryker, Cecilia Island | |
| 1984 | Mar 16-17 | East Higgins Pass | 3,955 | Mar 27-29 | Kitasu Bay, Powell Anchorage | 3,949 |
| 1985 | Mar 11 | Spiller Channel | 2,993 | Mar 31-Apr 1 | S.E. Princess Alice Island Weeteeam Bay, Kitasu Bay, Powell Anchorage, Spiller | 2,529 |

| Year | Seine | Location | Total Seine Catch (tons) | Gill Net | Location | Total Gill Net Catch (tons) |
|---|---|---|---|---|---|---|
| | | | | | Dundivan, Thompson | |
| | | | | | Waskesiu Houghton Islands, Kwakshua Channel | |
| 1986 | Mar 29 | E. Higgins Pass | 2,224 | Apr 5 | Kitasu Bay, Powell Anchorage, Spiller Channel, Thompson | 1,296 |
| 1987 | Mar 29 | Seaforth Channel | 2,583 | Mar 30 | Powell Anchorage, Stryker | 1,014 |
| | | Spiller Channel | | | Kitasu Bay | |
| 1988 | Mar 19 | Stryker Bay | 3,490 | Mar 28-30 | Kitasu Bay, Thompson Bay | 1,069 |
| | | Thompson Bay | | | Raymond Pass | |
| 1989 | Mar 24 | Kitasu Bay | 6,796 | Mar 30, 31 | E. Higgins Pass | 3,209 |
| | Mar 25 | E. Higgins | | Apr 1, 3, 4 | Kitasu, Thompson & Stryker | |
| | | | | | Boddy/Joassa Channel | |
| | | | | | Norman Morrison Bay | |
| 1990 | Mar 19 | Spiller Channel | 5,336 | Mar 28 | Kitasu Bay & Stryker Bay | 3,357 |
| | Mar 24 | Spiller Channel | | Mar 29 | Kitasu Bay, Stryker Bay, Thompson Bay | |
| 1991 | Mar 23 | Spiller Channel | 7,300 | Mar 31 | Thompson Bay, Powell Anchorage | 1,915 |
| 1992 | Mar 19 | Seaforth / Spiller | 6,913 | Mar 24 | Seaforth/ Powell Anchorage/ Thompson | 1,085 |

| Year | Seine | Location | Total Seine Catch (tons) | Gill Net | Location | Total Gill Net Catch (tons) |
|---|---|---|---|---|---|---|
| 1993 | Mar 24 | Seaforth / Spiller | 8,655 | Mar 28-29 | Bay Seaforth, Thompson Bay, Boddy Pass | 2,007 |
| 1994 | Mar 26, 27 | Seaforth / Spiller | 10,036 | Mar 28 | Kitasu, Thompson Bay, Powell Anchorage | 2,406 |
| 1995 | Mar 18 | Kitasu Bay | 8,406 | Mar 22 | Kitasu Bay Moss Pass | 1,581 |
| | Mar 22, 23 | Spiller Channel | | Mar 29 | Cecilia Island, Spiller Ch, Thompson Seaforth Channel | |
| 1996 | Mar 20 | Seaforth / Spiller | 3,900 | Mar 23 | Powell Anchorage, Berry Inlet, Seaforth Channel | 369 |
| 1997 | Mar 25 | Spiller Channel | 2,805 | Mar 29 | Powell Anchorage | 33 |
| 1998 | Mar 16-18 | Spiller Channel | 7,919 | Mar 20-23 | Seaforth Ch, Mathieson Ch Powell Anch, E Higgins Pass | 498 |
| 1999 | Mar 16-17 | Spiller Channel | 5,967 | Mar 19-24 | West Price Is. | 1,558 |
| 2000 | Mar 17-19 | Spiller Channel | 6,513 | Mar 28-30 | East Higgins Pass | 1,021 |
| 2001 | Mar 18-21 | Spiller Channel | 5,665 | Mar 26 | East Higgins Pass | 509 |
| 2002 | Mar 27-29 | Spiller Channel East Higgins Pass | 2,636 | Apr 2-5 | Laredo Snd, E Higgins Pass Matheson Ch | 440 |
| 2003 | Mar 23-24 | East Higgins Pass | 2,054 | Apr 2-3 | Laredo Snd, E Higgins Pass | 319 |
| 2004 | Mar 24-25 | Seaforth / Spiller | 2,559 * | No Fishery | | |
| 2005 | Mar 22- 24 | Seaforth / Spiller | 3,618 * | No Fishery | | |
| 2006 | Mar 21 -25 | Lambard Inlet, Neekas Inlet | 2,710* | No Fishery | | |
| | Mar 26-28 | | | | | |

| Year | Seine | Location | Total Seine Catch (tons) | Gill Net | Location | Total Gill Net Catch (tons) |
|---|---|---|---|---|---|---|
| 2007 | Mar 27-28<br>Mar 15 –Apr 3 | E. Higgins Pass<br>Seaforth/Spiller Clifford Bay, Waskesui Pass/East Higgins Pass/Kitasu Bay | 439 | No Fishery | | |
| 2008-2013 | No Fishery | | | No Fishery | | |
| 2014 | No Fishery | | | Apr 1-4 | Clifford Bay and Weeteeam Bay | 757 |
| 2015 | Mar 22,23 | Spiller Channel | 690 | No catch | | |
| 2016 | Mar 26 | E. Higgins | 234 | No fishery | | |
| 2017 | No Fishery | | | No Fishery | | |
| 2018 | No Fishery | | | No Fishery | | |
| 2019 | No Fishery | | | No Fishery | | |

**Strait of Georgia (SOG) (Areas 12 to 18)**

| Year | Seine | Location | Total Seine Catch (tons) | Gill Net | Location | Total Gill Net Catch (tons) |
|---|---|---|---|---|---|---|
| 1980 | Mar 6<br>Mar 6 | Lambert Channel | | Mar 5-6<br>Mar 9-12 | Hornby - Denman<br>Northwest Bay | 3,502 |
| 1981 | Mar 7-8 | Hornby - Denman | 2,294 | Mar 5-7 | Hornby - Denman | 5,584 |
| 1982 | Mar 7-8 | Pylades Channel | 3,651 | Mar 5-7 | Hornby - Denman | 6,154 |
| 1983 | February 27<br>Mar 4-5<br>Mar 2 | Cape Lazo<br>Powell River<br>Nanoose Bay | 8,576 | Feb. 27-Mar 1 | Hornby - Denman | 9,495 |
| 1984 | Mar 2, 4 | Powell River | 4,548 | Mar 9-11 | Cape Lazo, Nanoose Bay | 6,657 |
| 1985 | Mar 6 | Hornby - Denman. | 2,915 | Mar 8-9 | Hornby - Denman | 3,852 |
| 1986 | No Fishery | | | No Fishery | | |
| 1987 | Mar 6, 7 | Powell River | 3,429 | Mar 7, 8<br>Mar 17, 18 | Lambert Channel<br>Yellow Point | 6,612 |

| Year | Seine | Location | Total Seine Catch (tons) | Gill Net | Location | Total Gill Net Catch (tons) |
|---|---|---|---|---|---|---|
| 1988 | Mar 3 | Baynes Sound | 1,621 | Mar 12 | Hornby - Denman | 6,601 |
| 1989 | Mar 11, 12 | Pylades & Stuart Channel | 1,562 | Mar 15 | Cape Lazo - French Creek | 6,525 |
| 1990 | No Fishery | | | Mar 14 | Cape Lazo | 8,693 |
| | | | | | Hornby - Denman | |
| | | | | Mar 22-24 | Hornby - Denman | |
| | | | | | French Creek | |
| | | | | | Stuart Channel | |
| 1991 | Mar 2 | Baynes Sound | 1,020 | Mar 17 | Hornby - Denman | 9,844 |
| | | | | Mar 18-19 | Hornby - Denman | |
| 1992 | Mar 4 | Baynes Sound | 3,430 | Mar 14-15 | Cape Lazo - Lambert Channel | 9,393 |
| 1993 | Mar 2 | Baynes Sound | 4,383 | Mar 6 | Upper Denman - Hornby | 9,948 |
| | | | | | Baynes Sound - Lambert Channel | |
| 1994 | Mar 10 | Baynes Sound | 4,902 | Mar 14, 15 | Shelter Point to Dorcus Point | 12,249 |
| 1995 | Mar 4, 5 | Baynes Sound | 4,209 | Mar 12 | Upper Baynes Sd-Hornby Is. Lambert Channel | 9,112 |
| 1996 | Mar 7, 8 | Baynes Sound | 6,995 | Mar 15 | Baynes Sd-Hornby Is. Lambert Channel | 6,528 |
| | | | | | Qualicum | |
| 1997 | Mar 4 | Baynes Sound | 9,410 | Mar 19 | Baynes Sd-Hornby Is. Lambert Channel | 6,294 |
| 1998 | Mar 8,9 | Baynes Sound | 6,259 | Mar 12, 13 | Baynes Sound - French Creek | 7,343 |
| | | | | Mar 18 | Nanaimo | |
| 1999 | Mar 5 | Baynes Sound | 5,104 | Mar 4-7 | Baynes Sound-Lambert Channel | 7,296 |

| Year | Seine | Location | Total Seine Catch (tons) | Gill Net | Location | Total Gill Net Catch (tons) |
|---|---|---|---|---|---|---|
| 2000 | Mar 2-4 | Lower Baynes Sound | 6,689 | Mar 4-7 | French Creek Lower Baynes, East Coast Denman Island, Qualicum | 8,155 |
| 2001 | Mar 4 | Baynes Sound | 7,358 | Mar 6-9 | Cape Lazo to Thames Creek | 8,281 |
| 2002 | Mar 7-8 | Baynes Sound | 9,685 | Mar 17-20 | Cape Lazo to Nanaimo | 8,640 |
| 2003 | Mar 14 | Baynes Sound | 10,897 | Mar 16-23 | Cape Lazo to Nanaimo | 8,707 |
| 2004 | Mar 10-13 | Nanoose Bay & Northumberland | 7,737 | Mar 10-15<br>Mar 20-29 | Cape Lazo - Valdes Island | 5,637 |
| 2005 | Feb 28 – Mar 2 | Baynes Sound | 7,710 * | Feb 28 – Mar 4 | Cape Lazo to Nanaimo | 9,657 * |
| 2006 | Mar 6-10 | Baynes Sound | 9,060* | Mar 4<br>Mar 13-15 | Cape Lazo to Nanaimo<br>Stuart Channel, Valdes Island | 7,698* |
| 2007 | Mar 12-14 | French Creek/Chrome Island/Baynes Sound | 4,260 | Mar 4-14 | Hornby Island/Denman Island to Parksville | 5,826 |
| 2008 | Mar 1,2, 4, 5 | French Creek/Qualicum Beach | 6,664 | February 26 – Mar 24 | Cape Lazo – Nanaimo, Dodd Narrows | 3,033 |
| 2009 | Mar 4 | Baynes Sound | 6,265 | Mar 6-8 | Cape Lazo to Nanaimo | 4,340 |
| 2010 | Feb 28 | Neck Point/Blunden | 5,004 | Feb 26-Mar 3 | Cape Lazo to Nanaimo | 3,576 |
| 2011 | No fishery | | | Mar 13 – 22 | Cape Lazo to Nanaimo | 4,686 |
| 2012 | Mar 4,6,7,17 | Henry Bay, Comox Bar, Yellow Pt | 3,494 | Mar 4 to Apr 2 | Cape Lazo to Nanaimo | 4,496 |
| 2013 | Mar 3 to 10 | Baynes, Qualicum, | 6,723 | Mar 2-6 | Cape Lazo to Nanaimo | 6,509 |
| 2014 | March 3 to 8, Mar 10 | Baynes | 7,583 | Mar 5-11 | Cape Lazo to Nanaimo | 6,167 |

| Year | Seine | Location | Total Seine Catch (tons) | Gill Net | Location | Total Gill Net Catch (tons) |
|---|---|---|---|---|---|---|
| 2015 | Feb 24 and 28; Mar 1, 2, 3, 4, 12, 13, 18, 26, 30; April 2 and 6 | Baynes, FCreek, NW Bay, Nanaimo | 9,278 | Feb 28 – Apr 8 | Cape Lazo to Nanaimo | 4,107 |
| 2016 | Mar 3-6 | Baynes | 8,407 | Mar 6-Apr 6<br>Mar 27-29 | Lazo-Nanaimo<br>Yellow Pt area | 6,761 |
| 2017 | Mar 6, 8 to12 | Horseshoe, Baynes Sound | 9,695 | Mar 4 to Apr 4 | Lazo-Nanaimo | 10,166 |
| 2018 | Mar 5 to 13 | Lower Baynes Sound and Lambert Channel | 3,429 | Mar 2 to 7<br>Mar 29 to 29 | Parksville to Bowser<br>Nanaimo area | 11,077 |
| 2019 | Mar 9, 10, 13 | Northwest Bay/Brant Pt. and French Creek/Qualicum Beach | 7,178 | Mar 15 to 21, April 1 | Denman Island, Mapleguard Pt. to Qualicum | 8,374 |

**WCVI (Areas 23 to 27)**

| Year | Seine | Location | Total Seine Catch (tons) | Gill Net | Location | Total Gill Net Catch (tons) |
|---|---|---|---|---|---|---|
| 1980 | March 7-8 | Clayoquot Sound | 1,854 | March 8<br>March 2-5<br>March 3-9 | Clayoquot Sound<br>Esperanza Nuchatlitz Pt. Langford<br>Winter Harbour | 2,536 |
| 1981 | March 11 | Barkley Sound | 5,521 | March 15-16<br>March 2-5<br>March 6-13 | Barkley Sound<br>Esperanza / Nuchatlitz, P. Langford<br>Winter Harbour | 3,395 |

| Year | Seine | Location | Total Seine Catch (tons) | Gill Net | Location | Total Gill Net Catch (tons) |
|---|---|---|---|---|---|---|
| 1982 | March 17, 18 | Barkley Sound | 2,613 | March 8-9 | Clayquot Sound | 3,433 |
| | March 8 | Clayoquot Sound | | March 7-12 | Esperanza / Nuchatlitz, Pt. Langford | |
| | March 7, 8 | Winter Harbour | | March 8-14 | Winter Harbour | |
| 1983 | March 1 | Barkley Sound | 6,769 | March 3 | Esperanza, Nuchatlitz | 2,684 |
| | | | | Feb. 28-March 4 | Winter Harbour | |
| 1984 | March 8 | Barkley Sound | 6,303 | March 5 | Esperanza / Nuchatlitz | 946 |
| | | | | March 3-6 | Winter Harbour | |
| 1985 | No Fishery | | | No Fishery | | |
| 1986 | No Fishery | | | No Fishery | | |
| 1987 | Area 23 March 12 | Barkley Sound | 14,438 | Area 25 March 12 | Esperanza / Port Langford Nuchatlitz | 2,724 |
| 1988 | Area 23 | Barkley Sound | 8,375 | | | 1,596 |
| | March 11 Area 24 | Clayoquot Sound | | Area 24 | Clayoquot Sound | |
| | March 11 | Cypress Bay | | March 23 | | |
| 1989 | March 13, 17 | Barkley Sound | 9,825 | March 23 | Hand / Pinkerton / Turtle Island | 3,874 |
| 1990 | March 11, 12 | Barkley Sound | 7,819 | March 21 | Yellow / Elbow Banks | 2,160 |
| 1991 | March 10 | Cook Channel | 6,145 | March 21 | Macoah / Toquart | 2,062 |
| | March 12 | Barkley Sound | | | | |
| 1992 | March 6-8 | Stopper Island / Toquart Bay | 3,123 | March 8 | Maggie River/ Macoah Pass | 618 |

| Year | Seine | Location | Total Seine Catch (tons) | Gill Net | Location | Total Gill Net Catch (tons) |
|---|---|---|---|---|---|---|
| 1993 | March 11 | Barkley Sound | 5,775 | March 10 | Winter Harbour | 369 |
| 1994 | March 7 | Barkley Sound | 6,022 | March 9 | Winter Harbour<br>Esperanza Inlet | 1,020 |
| 1995 | March 3 | Barkley Sound | 1,629 | No Fishery | | |
| 1996 | March 14-16<br>March 16 | Barkley Sound<br>Tofino | 793 | No Fishery | | |
| 1997 | March 4 | Barkley Sound | 6,893 | No Fishery | | |
| 1998 | March 9 | Barkley Sound | 5,377 | March 17<br>March 7,8<br>March 18 | Barkley Sound<br>Esperanza Inlet<br>Sydney Inlet | 1,640 |
| 1999 | March 10 | Barkley Sound | 3,210 | March 4-7<br>April 1 | Esperanza Inlet<br>Sydney Inlet | 1,062 |
| 2000 | March 8-9 | Barkley Sound | 547 | March 21-24 | Esperanza Inlet | 772 |
| 2001 | No Fishery | | | No Fishery | | |
| 2002 | No Fishery | | | March 26-28 | Esperanza Inlet | 428 |
| 2003 | March 10-14 | Barkley Sound | 2,285 | March 24-27 | Esperanza Inlet | 1,042 |
| 2004 | March 14-15 | Rosa Harbour | 3,689 * | March 14-19 | Inner and Outer Nuchatlitz; Rosa Harbour | 654 |
| 2005 | March 7 – 8 | Esperanza Inlet | 3,257 * | March 7 – 12 | Esperanza Inlet | 988 |
| 2006-2013 | No fishery | | | No fishery | | |
| 2014 | Remained closed – due to interlocutory injunction | | | Remained closed – due to interlocutory injunction | | |
| 2015 | | No catch | | | No catch | |

| Year | Seine | Location | Total Seine Catch (tons) | Gill Net | Location | Total Gill Net Catch (tons) |
|---|---|---|---|---|---|---|
| 2016 | No fishery | | | No fishery | | |
| 2017 | No fishery | | | No fishery | | |
| 2018 | No fishery | | | No fishery | | |
| 2019 | No fishery | | | No fishery | | |

*Includes portion of HCRS allocation.

# APPENDIX 8. COMMERCIAL FISHING PLAN FOR SPAWN ON KELP

## Table of Contents

# 1 PURPOSE

This document is a Commercial Fishing Plan for Spawn-on-Kelp in British Columbia, for the period from February 1, 2020 to June 30, 2020.

# 2 COMMERCIAL FISHERY OVERVIEW

The Spawn-on-Kelp (SOK) fishery traditionally occurs in four of the five Pacific Herring major stock assessment areas: Haida Gwaii (HG), Prince Rupert District (PRD), Central Coast (CC), and the west coast of Vancouver Island (WCVI). It does not occur in the Strait of Georgia (SOG) because of the lack of suitable kelp. The fishery also has activity in the minor stock assessment areas Area 2W and 27, and in Areas 10 and 12 which are outside the stock assessment areas.

Spawn-on-kelp is a traditional food of Indigenous people in British Columbia. Indigenous communities harvest herring spawn-on-kelp for food, social and ceremonial purposes (FSC) under the authority of communal licences. Indigenous coastal communities traditionally harvest herring spawn naturally on several different types of kelp, eel grass and tree branches.

The SOK fishery provides the opportunity to harvest herring eggs which have adhered to blades of kelp after herring have spawned. Commercial production of spawn on kelp was initiated in 1975 with the issuance of permits to 13 individuals, and developed in a gradual fashion. Selection of permit holders was based on remoteness of operation site and experience in catching, holding and handling live herring. Permits were issued only if adequate supplies of herring and kelp were available in the area being considered.

Between 1975 and 1983, additional permits were granted, increasing the number of permit holders to 29. In 1983, the permits formally became limited entry category J licences. In 1989, ten new licences were granted to Indigenous individuals or nations subject to retirement or rendering temporarily inactive a set number of Roe herring seine or gillnet licences from the herring Roe fishery**.** In 1996, the Supreme Court of Canada found in its *Gladstone* decision that the Heiltsuk First Nation had an Aboriginal right to commercially fish herring spawn-on-kelp (SOK). As a result, seven new communal commercial licence eligibilities were negotiated with the Heiltsuk First Nation and the Heiltsuk held nine SOK licences in Central Coast area, with an annual quota of 240,000 lbs. until 2017. In 2018, this was permanently increased by four SOK equivalent licences or 64,000 lbs. to an overall quota of 304,000 lbs. This SOK is harvested using the preferred means of the Heiltsuk, which is open ponding.

In total, there are 46 Spawn-on-Kelp licence eligibilities. Twelve of these are communal commercial, category "FJ" licence eligibilities held by First Nations (three as a result of relinquishment through ATP and re-issuance as communal commercial, and nine are unique Heiltsuk communal commercial licences), while the remainder are category 'J' commercial

licence eligibilities issued to individual parties, which include First Nations individuals and bands.

# 3 MANAGEMENT MEASURES FOR THE DURATION OF THIS PLAN

## 3.1 Changes from Previous Seasons

### 3.1.1 Implementation of Management Strategy Evaluation (MSE) approach in Stock Assessment Advice

The commercial fishery management approach for the 2019 roe herring season included a Management Strategy Evaluation (MSE) approach to inform quota levels for SOG and WCVI. Prior to the 2020 season, MSE simulations were run for the northern stock areas (HG, PRD, and CC) and are used to inform quota levels for those areas.

### 3.1.2 Updates to License Conditions

Conditions of licence for commercial SOK operators will include two new provisions in the 2019/20 fishing season:

1. A provision has been added to allow transporting or "packing" of fish by the licensed transport vessel
2. A provision has been added to require reporting of any lost fishing gear (newly required in all commercial fisheries).

## 3.2 Events Calendar

**Table 8.1. SOK Events Calendar.**

| MONTH | DAY | EVENT |
|---|---|---|
| | | **2018** |
| October | 1 | Provincial Marine Plant Harvest Permit Application Deadline |
| | | **2020** |
| January | | |
| | 31 | Deadline for Area 2W, 27, and Area 8 spawn on kelp license eligibility holder consensus proposal |

| | | |
|---|---|---|
| | 31 | Deadline for Area 2W, 27, and Area 8 spawn on kelp lottery submissions if no consensus proposal |
| | 31 | Spawn-on-kelp lottery at PR Licensing (if required) |
| | TBD | Deadline to designate 2020 roe herring licences as inactive for 2020 |
| February | 1 | Deadline to enroll with spawn on kelp monitoring program |
| March | 1 | Spawn on kelp fishing season anticipated to open |
| April | 15 | Closure of Island Point to seining operations for spawn on kelp purposes (if open) |
| May | 31 | Spawn on kelp fishing closes |
| June | 30 | All spawn on kelp fishing gear removed from water |
| August | 1 | SOK licence eligibility holders that opted out of the 2020 fishery may renew their license for zero fee |
| December | 31 | License Eligibility must be completed with Licensing |

## 3.3 Open Times

The Spawn-on-Kelp commercial fishing plan is in effect from 00:01h February 1, 2020 to 23:59h June 30, 2020. The actual opening of the fishery will be through a Variation Order and fishery notice. Application to extend the open time for late season harvest must be made to the Regional SOK Coordinator (Steven.Groves@dfo-mpo.gc.ca) before May 24, 2020 in order to allow for consultation and discussions with all participants. Extensions to the season are not automatically approved; a precautionary plan may be required for herring conservation.

## 3.4 Open Areas

The following areas are identified as fishing areas, subject to in-season decisions and consultations:

**Table 8.2 Areas with Available Commercial TAC for the 2020 season.**

| | | |
|---|---|---|
| Major Stock Assessment Areas | Central Coast | 6, 7, 8 |
| Minor Stock Assessment Areas | Area 2W | 2-49 through 2-100 |
| | Area 27 | 27-1 through 27-10 |
| Other Areas | Area 10 | |
| | Area 12 | |

Commercial fleets are requested to avoid locations where local Indigenous people are gathering fish, or fishing for herring spawn on boughs or spawn on kelp. Additionally, the Department works collaboratively with Indigenous people on communication regarding herring stocks and spawning locations for FSC fishery planning and information on FSC activities. As the fishery season progresses, in some cases, specific requirements to remain out of particular locations to support FSC harvest will be implemented as required

## 3.5 Closures

No commercial harvest will be permitted in the following areas in Table 8.3.

**Table 8.3. SOK Closures for the 2020 season.**

| | |
|---|---|
| Major Stock Areas | Haida Gwaii (HG) - Area 2E<br>Prince Rupert (PRD) – Areas 3, 4, 5<br>West Coast Vancouver Island (WCVI) – Areas 23 to 25 |

Note that there may be additional closures in season by Variation Order and Fishery Notice. Refer to Fishery Notices before fishing in an area.

## 3.6 Allocation and Harvest Levels

A guideline for determining Spawn-on-Kelp harvest allocations has been implemented by the Department to avoid the issuance of partial quotas based on recent science advice and Management Strategy Evaluation (MSE) simulations. Where the provided harvest option is not evenly divisible by 100 short tons for a closed pond operation or 35 tons for an open pond operation, the harvest option will be rounded up or down to the nearest evenly divisible yield.

### 3.6.1 Haida Gwaii (Area 2E)

Haida Gwaii major stock assessment area is closed in 2020. HG will remain closed to support stock rebuilding until May 2021. Natural mortality has been determined to be a dominant factor in Pacific Herring stock dynamics, and HG has not shown evidence of recovery, even in the absence of fishing.

### 3.6.2 Area 2W

Area 2W (west coast of Haida Gwaii) has a maximum expected use of 300 short tons for the 2020 Spawn-on-Kelp season, which can accommodate three licenses with full quota. Licence holders in the area are encouraged to work together to develop a plan for the area in discussions with DFO. A lottery has been held in the past for this area if needed to select the operation.

### 3.6.3 Prince Rupert (PRD)

The Prince Rupert District is closed to commercial fishing in 2020.

### 3.6.4 Central Coast (CC)

The Central Coast SOK commercial fisheries (Areas 6, 7, 8) have an expected use up to 665 short tons for the Heiltsuk First Nation and 450 short tons for the other SOK licenses. The Heiltsuk commercial SOK operations will proceed with a target quota of 342,000 lbs (including a 38,000 lbs underage from 2019) to support the cconstitutionally protected Aboriginal rights fishery. There are three commercial J SOK licenses that operate in Kitasoo Bay (Area 6) that will proceed with a full allocation of 300 tons. There are three commercial SOK licenses in lower Area 7 and Area 8 that were not licensed in 2019. This year, there is a 150 ton allocation, based on the proportion of spawn in Area 8 in 2019 (Area 8 accounted for 3.5% of the spawn compared to Area 6 and 7) and the proportion is applied to the 2020 forecast and a 10% harvest rate resulting in 150 tons of potential quota. This quota amount would permit 1.5 closed pond SOK operations (quotas). Discussions with the three licence holders in this area will be undertaken to determine interest and process for operating, such as a lottery.

### 3.6.5 Area 10

This area is outside both major and minor stock assessment areas, and a DFO stock assessment program is not conducted. However, spawn reconnaissance, dive and/or surface surveys have been conducted in Area 10 by the Gwa'sala-Nakaxda'xw First Nation (GNN) since 2009 through AFS funding and occasionally by Fisheries and Oceans. This area was closed to commercial harvest from 2010-2015 while stocks in the Central Coast were low and commercial fisheries were closed. In 2018, there was a decrease in spawn observed and the 2019 dive survey data was received from the GNN dive survey team in January so it has not been analyzed yet. DFO observations and other observations from 2019 are that the spawn was longer in length than 2018 which may indicate a higher abundance than in 2018. There are two open and once closed operation in this area.

A maximum of one closed (held by the GNN) and one open (35 tons) pond operation will be permitted, subject to further consultations. If a commercial fishery proceeds, areas closed to commercial fishing will be established to allow for successful FSC fisheries.

### 3.6.6 Area 12

This area is outside both major and minor stock assessment areas and a DFO stock assessment program is not conducted. Area 12 has an expected use of 100 short tons for one closed pond operation.

### 3.6.7 West Coast Vancouver Island

The West Coast of Vancouver Island major stock assessment area is closed in 2020. WCVI is forecast to be at or below the Limit Reference Point (LRP).

### 3.6.8 Area 27

Area 27 (located on the North West coast of Vancouver Island) has an expected use of 35 short tons for the 2020 Spawn-on-Kelp season which provides a harvest option for 1 open pond operation.

Licence holders in the area are encouraged to work together to develop a plan for the area in discussions with DFO. A lottery has been held in the past for this area if needed to select the operation.

## 3.7 Quota Allocations

The majority of J and FJ licences have an individual quota of 16,000 lbs of drained product, adjusted annually based on the previous year for overages and underages. The Heiltsuk First Nation holds nine licence eligibilities with varying quota amounts, totalling 19 equivalent SOK license eligibilities with a total quota of 304,000 lbs.

## 3.8 Catch in Excess of Quota (Overage)

Operators must operate in a manner that ensures that over-harvest does not occur. Any licence holder landing spawn on kelp product in excess of the licensed amount may be subject to prosecution and seizure of the overage as a violation of their conditions of licence.

No person who is fishing under the authority of a licence issued for the purpose of commercial fishing shall dump from a vessel any fish that has been caught in accordance with the *Fisheries Act* and the *Regulations* made thereunder.

### 3.8.1 Carry Over of Quota Overage and Underage

First introduced in 1996, this program allows the spawn on kelp licence holder to carry over quota overages or quota underages from one year to the next based on the following rules:

**The Rules for Carry-Over of Individual Quota Underages**
Licence holders whose product weight is under their quota by 2,000 pounds or less, at the end of the season, will have the equivalent weight of the underage added to their individual quota in the next year the license is active.

Licence holders whose product weight is under the quota by more than 2,000 pounds, at the end of the season, will have only 2000 pounds added to their individual quota in the following season and will forego the remainder.

**The Rules for Carry-Over of Individual Quota Overages**
Licence holders, whose product weight is over their quota by as much as 1,000 pounds at the end of the season, may retain the overage. Any product landed in excess of 1,000 lbs. will be seized and charges may result. The equivalent weight of any overage will be subtracted from the quota for that licence in the next year it is active.

# 3.9 Compliance with Federal and Provincial Legislation and Regulations

### 3.8.2 Gwaii Haanas National Marine Conservation Area and Haida Heritage Site

The Gwaii Haanas Agreement (1993) specifies "no extraction or harvesting by anyone of the resources of the lands and non-tidal waters of the Archipelago for or in support of commercial enterprise" (s3.3). Log harvesting for SOK pond frames is not permitted within the boundaries of the Gwaii Haanas National Park Reserve.

### 3.8.3 Province of BC Kelp Harvest Requirements

The BC Ministry of Agriculture licence and enforce the harvesting of Marine Plants. The harvest of *Macrocystis integrifolia* kelp used in spawn on kelp operations is carried out under the authority of a Marine Plant Harvest Licence issued by the BC Ministry of Agriculture. Conditions of licence include area of harvest, quantity of kelp that may be harvested, harvesting equipment, harvesting techniques, and harvest log and royalty submission.

The Ministry of Agriculture is obliged to consult with First Nations prior to the issuance of the Marine Plant Harvesting Licence. Licensees can assist the Ministry in this process in a number of ways, including:

- participating directly with the First Nations in the consultation process;
- providing direct support to the First Nations in the consultation process; and
- building new or maintaining any existing relationships with First Nations;
- providing the BC Ministry of Agriculture with any further information that you think could assist in our consultation process.

The following application requirements apply:

- Application deadline is October 1 for harvest proposed for the following year;
- Each application must include the relevant J licence holder information;
- The applicable licence fee payable to the provincial Minister of Finance is $110;
- As per the *BC Fisheries Act*, the person harvesting the kelp must have a valid licence. It is the responsibility of the J licence holder to ensure the product received was legally harvested.

For information regarding kelp harvesting, licensing and First Nation consultation contact:

BC Ministry of Agriculture 2500 Cliffe Avenue
Courtenay, BC V9N 5M6
Phone: (250) 897-7540

Website: http://www2.gov.bc.ca/gov/content/industry/agriculture-seafood/fisheries-and-aquaculture/commercial-fisheries/aquatic-plant-harvesting

Fish Inspectors may conduct checks for proof of a valid Marine Plant Harvest Licence and may conduct audits at processing facilities to ensure compliance with the *BC Fisheries Act*

To apply for a marine plant harvest license, visit:
https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/agriculture-and-seafood/fisheries-and-aquaculture/marine_plant_harvesting_application.pdf

### 3.8.4 Canadian Food Inspection Agency Requirements

**Spawn on Kelp Sanitary Guidelines**
Potential contamination of fish products may occur if adequate controls over sanitation and hygiene are not followed during the fishing and handling, both on board the vessel, and during holding and transporting to the processing plant.

For information on the sanitary requirements and preventive controls that apply to fishers, please see the CFIA website at https://inspection.gc.ca/food/requirements-and-guidance/preventive-controls/fish/information-on-the-requirements-that-apply-to-fish/eng/1564699982413/1564699982647

and https://inspection.gc.ca/food/requirements-and-guidance/preventive-controls/fish/maintenance-and-operation-of-a-vessel/eng/1564717053871/1564717054137

**Licensing Requirements for Food**

**1)** Licensing

Under the *Safe Food for Canadians Act* (SFCA) and *Safe Food for Canadians Regulations* (SFCR), many food businesses require a license to carry out activities with respect to food.

Fishers **need** a license to:

- manufacture, process, treat, preserve or grade fish
- package and label fish unless the fish is **not** consumer prepackaged, **and** will be subsequently manufactured, processed, treated, preserved, graded, packaged or labelled by a license holder in another province.

Fishers **do not need** a license to conduct activities that are necessary to protect the fish you catch or harvest from contamination, damage and spoilage. These are handling practices associated with catching, harvesting, unloading, holding and moving fish. The steps taken by the fishing vessel at the time of harvest serves to prevent further deterioration of the spawn-on-kelp prior to delivery to a license holder.

For more information, please see section 5.11 of "*Food business activities that require a license under the Safe Food for Canadians Regulations"*

For a list of license holders, please see the Safe Food for Canadians License Registry.

2) Export Requirements for Food

Food exports, including their preparation and packaging, are subject to Canadian acts and regulations. Exporters must meet basic requirements to be eligible to export food products from Canada.

To be eligible for export, the spawn on kelp must meet Canadian requirements, and must be produced by a person who holds a license under the Safe Food for Canadians Act and Regulations.

Besides meeting Canadian standards, most food, food commodities and food-related products exported from Canada must comply with additional requirements set by destination countries or markets. The particular requirements you need to comply with differ depending on the product you export and the destination country. The known requirements for various countries are located in the Export requirements library. Depending on the country to which the spawn on kelp is exported, a Health Certificate from the CFIA may be required.

More information on exporting can be found on the CFIA website at
https://inspection.gc.ca/food/exporting-food/eng/1323723342834/1323723662195

If you have any questions, please contact the Canadian Food Inspection Agency at:

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

## 3.9 Best Practices

Operators are encouraged to conserve and minimize herring handling and usage during the fishery. DFO would like to improve estimates of herring mortality associated with spawn on kelp ponding operations. In order to minimize impact, a number of measures are recommended:

### 3.9.1 Herring Capture

During the seining of herring for closed pond operations there are a number of measures that may be taken to minimize impacts:

a. Sets should be as close to the intended ponding amount as possible

b. Jigging herring prior to making a set may provide an indication of maturity.
c. Drying up of sets to the point of causing fish to boil may result in undue stress and mortality.
d. Nets should be drummed slowly to reduce fish stress.

### 3.9.2 Towing

Slow towing speeds are better for fish health. The maximum towing speed recommended is 0.3knots. This rate maintains the shape of the net, and reduces the occurrence of folding or "bagging" of the net, which tends to trap fish against the web causing increased scale loss, bruising and other injuries. The maximum towing distance is recommended to be 3nm.

### 3.9.3 Density

Density is an important aspect to herring mortality. Gillis et al. (1982) found that herring should not be impounded at loading densities exceeding 1.0 lb./$ft^3$ for 4 or 5 days. So for a 50x50x50 ft. pond, the maximum loading density is 60 tons. Retaining herring to the maximum of 7 days means operators should reduce the herring in the pond proportionally. The behavior of the fish in the higher density ponds includes undefined schooling and continual boiling over the entire surface and in the pond web. In addition, stress of impoundment and overloading in SOK fisheries is sufficient to precipitate an outbreak of disease resulting in subsequent mortality.

### 3.9.4 Predator Deterrence

Herring enclosures should deploy a predator deterrence system that meets one or more of the following conditions:

- Attended continually by the operator.
- A 1m or higher fence attached vertically to the frame to deter seals and sea lions.
- Contiguous webbing pulled tight across the impoundment above the surface of the water to deter bird predation.
- A predator net consisting of contiguous netting with a maximum mesh size of 35 mm (1 5/16 inches). The predator net must surround the webbing of the impoundment completely, maintain a space of at least 30 cm (12 inches) between the predator net and the webbing, and not exceed the requirements set out in section 4.2.1

# 4 GEAR

This section is a general description of gear used in both closed and open pond operations. Please refer to the license conditions for specifics on eligible gear for each license.

## 4.1 Seine

- A herring purse seine shall not be greater than 410 m (225 fathoms) in length, and mesh size not less than 25 mm (1 inch) extension measure.

- The bunt of the seine net must be knotless web and a minimum of 40 metres (20 fathoms) in length.

## 4.2 Closed Ponds (Herring Enclosures)

- Note that a valid J or FJ licence is required before putting any webbing in the water for use as a herring enclosure. All captured or impounded herring must be released following harvest of the spawn on kelp product, except where specific arrangements have been made with the Department.
- A maximum of two (2) enclosures may contain herring at one time for the production of spawn-on-kelp unless each enclosure is attended continually. If attended continually, a maximum of three (3) ponds with herring can be maintained.
- Herring are to be released following the harvest of the spawn-on-kelp or after a maximum of 7 impoundment days beginning when the first herring is added to the enclosure.

### 4.2.1 Enclosure Construction

- Enclosures must be constructed so that the floating frame can support the weight of an impoundment net and enclosed herring without collapsing.
- The maximum area of a closed pond enclosure frame is 3600 $ft^2$ (334 $m^2$) or approximately 60ft x 60ft (18.3m).
- The bottom of the herring enclosure net must be maintained so that the bottom of the net is a minimum of 3 m (9 feet) above the substrate under the enclosure at all times.

### 4.2.2 Enclosure Marking

- Every individual herring enclosure (i.e. floating frame with impoundment net) must be marked with the Category J licence number under the authority of which it is operated, in accordance with the licence conditions. Enclosures must also be numbered in a sequential fashion (i.e. Pond 1, Pond 2, etc.) This numbering requirement also applies to single enclosures (i.e. Pond 1).

### 4.2.3 Webbing

- Any net used in a herring enclosure must be made of knotless web with a mesh size not greater than 25 mm (1 inch).
- Any net used to impound herring for spawn on kelp production must remain suspended and stationary in the water column for a minimum of 21 days or until all of the eggs have hatched following the release of the impounded herring.

## 4.3 Open Ponds (No Herring Enclosures or Seine Nets)

- Note that a valid J or FJ licence is required before putting any webbing or other device in the water for use to direct herring towards suspended kelp. Herring may not be enclosed or otherwise impounded in any manner.
- Nets may be suspended in the water to direct herring towards the suspended kelp, but may not impound or trap herring. Suspended nets must meet the following specifications:

- Any net used must be of a knotless web with a mesh size not greater than 25 mm (1 inch).
- Floating frames, used to suspend the nets, must be capable of supporting the weight of the net without collapsing.
- The bottom of any nets must be a minimum of 3 m (9 feet) above the substrate at all times.
- The net must remain in the water a minimum of 21 days following the most recent herring spawn deposition
- Each net must be marked with the Category J licence number under the authority of which it is operated, in accordance with the licence conditions.

# 5 MONITORING PROGRAM

Timely and accurate information on harvest and harvesting practices is essential to assess the status of fish stocks and to ensure the conservation and the long term sustainability of fish resources. Effective monitoring and accurate catch reporting in the spawn on kelp herring fishery is integral to the effective management of the fishery and herring resource.

The spawn on kelp Fishery Monitoring Program is industry funded and has been in place since 1996. This program receives hails from on-grounds operators and provides dockside validation of landed and processed spawn on kelp by port monitors. In season, all monitoring activities are directed by an independent program coordinator or by a DFO representative.

The Heiltsuk First Nation has monitoring program that provides dockside validation of landed and processed spawn on kelp by port monitors.

Additional information on the monitoring program will be provided at the time of licence issuance. Please note that compliance with the monitoring program is a condition of licence. Proof of monitoring via a letter from the service provider will be required prior to licence issuance.

## 5.1 Service Provider

J.O. Thomas and Associates Ltd. is the selected service provider for the Monitoring Program and port monitors. Contact information may be found in the Contacts section.

## 5.2 Letter of Agreement

Prior to licence issuance, proof of monitoring will be required via a letter of agreement from the service provider verifying their agreement with the delivery of a fishery monitoring program. Upon receipt of payment for services, the service provider will provide the PFLU with the required letter of agreement.

The intention to participate in the spawn on kelp fishery must be made to the service provider before February 1, 2020, in order for monitoring fees to be calculated. Failure to meet this deadline may result in increased monitoring fees or an inability for the service provider to arrange an approved monitoring program.

## 5.3 Hail Reports

In 2006, a program of hailing information from the grounds was initiated. This program involves regular and frequent communications with the service provider at each stage of the spawn on kelp operations.

All operators will require a method of reliable communication to ensure their hail requirements are met. Operators may use whatever communication device that they have available (e.g. landline, cell-phone, sat. phone or email). Though it is acceptable for operators in the same area to use a common communication device (such as a sat phone or email etc.) or a 3rd party that relays hails to the service provider, each operator ultimately is required to ensure their hails are current and meet their license conditions.

Each stage of the spawn on kelp operation will need to be hailed to the service provider during weekday office hours (08:00 to 16:00). Confirmation numbers will be provided with each hail (coded for activity type), as proof of hail and for review at point of landing. If an operator is open ponding some of the hail-in points may not apply. Operators are requested to refer to their Conditions of Licence for their specific hailing requirements.

An enhanced protocol for identifying and reporting occurrences of non-compliance with licence conditions was implemented in 2015 and will continue. Failure to meet conditions of licence may result in enforcement action.

## 5.4 Reporting and Notification Requirements

### 5.4.1 General

When harvesting under a category J or FJ licence, the vessel master shall report all required information to the designated service provider as detailed in the spawn on kelp operator's logbook and conditions of licence.

### 5.4.2 Importing Product from Alaska

In the past, spawn-on-kelp product from outside Canada, mainly Alaska, was imported without notification or validation requirements for transport vessels. As of 2006, the conditions for importing spawn on kelp include notification to the spawn on kelp Coordinator in the North Coast office, and validation of the offload weight by a qualified third party service provider. An information package has been developed for importers and can be obtained from the Spawn on Kelp Coordinator (see Contacts).

### 5.4.3 Marine Mammal and Seabird Incidence Reports

Fishers shall take precautions to avoid fishing among seabirds. Fishers are requested to retain all dead birds which are entangled and to release live and unharmed birds by placing them in the water. Please contact Laurie Wilson with the capture date and location at 1-866-431-2473 (BIRD) or by the email below. Handle birds with gloves, double bag dead birds and label each bird with date, time, and location and store them on ice. Please call your local charter patrol to organize pick-up or drop them off at a local DFO office. Alternatively, please send photographs of birds with a reference object such as a coin, and the date, time and location to laurie.wilson@canada.ca. Your names and vessel names do not need to be identified or included.

All fishing operations are required to complete an incident report for each interaction with a marine mammal. Interactions refer to cases of incidental mortality and serious injury to marine mammals. This includes accidental drowning, bycatch, entanglements, collisions, and fatalities. The vessel master shall complete the DFO reporting form "MARINE MAMMAL INTERACTION FORM." The Marine Mammal Interaction Form shall be submitted as per the instructions provided on the form. Once completed, this form must be submitted to DFO as per the conditions of licence.

The Marine Mammal Interaction Form is available from:
https://dfo-mpo.gc.ca/species-especes/documents/mammals-mammiferes/report-rapport/Fish-Harvester-Form-Eng.pdf

### 5.4.4 Lost Gear Reporting

Lost, abandoned or otherwise discarded fishing gear (ghost gear) can cause large-scale damage to marine ecosystems through habitat disturbance and causes direct harm to the welfare and conservation of marine animals via entanglement and/or ingestion. It is estimated that between 5% - 30% of harvestable fish stocks are impacted by ghost gear across the world, posing a major threat to human health and livelihoods as well as to global food security. In 2009, the United Nations Environment Programme (UNEP) estimated that at least 640,000 tonnes of fishing gear was lost or abandoned in the world's oceans every year, making up approximately 10% of all marine litter when measured by weight. Ghost gear has many causes, but the primary ones are snags on rocks, reefs or spires beneath the surface of the water; conflict / entanglement with other deployed fishing gear; severe weather and gear being cut loose incidentally by other marine traffic crossing over top of it.

DFO is committed to showing leadership in the management of ghost gear by developing an action plan that will focus efforts on science, prevention, mitigation, as well as recovery and management. We are also working with others to advance this initiative internationally such as in regional fisheries bodies and through the Global Ghost Gear Initiative. DFO has expanded mandatory reporting requirements for lost gear to additional commercial fisheries as well as introduce a new requirement to report any retrieved gear previously reported lost has been

introduced in commercial fisheries. This information will allow for targeted retrieval efforts and more robust analysis of the ghost gear issue in Canada.

### 5.4.5 Logbooks

Logbooks are available from the service provider. The vessel master is responsible for the provision and maintenance of an accurate record of daily harvest operations. Catch information must be recorded in the harvest log by midnight of the day in which the activity occurred. The logbook must be kept aboard the licensed vessel, and must be produced for examination on demand of a fishery officer, fishery guardian, or port monitor.

These books must be submitted to the service provider within one week of final validation for the season. The logbooks will have double copies, so that a copy of the pages can be distributed to the licence holder, the service provider and the Department.

## 5.5 Catch Validation and Fishery Validation Form

To ensure the continuity of catch information from the time of spawn on kelp harvest to delivery and processing, a Herring Spawn on Kelp Fishery Validation Form must be completed for each harvest operation. The operator will be responsible for documenting spawn on kelp harvest on the Validation Form and in the Logbook.

The original copy of the Herring Spawn on Kelp Fishery Validation Form must accompany the spawn on kelp product to the landing port and to the processing plant, where the port monitor will record the landed weight and processed weight on the Validation form.

A port monitor will monitor all spawn on kelp harvested and landed. The total drained weight of spawn on kelp product validated at the landing port will be applied against an individual quota. A salt allowance, equal to five percent of the total drained weight, shall be subtracted to compensate for salt and entrained water (i.e. the total validated weight will equal the drained weight minus five percent of the drained weight).

## 5.6 Transfer of Product

On-grounds and in-plant transfers of product may occur between operating spawn on kelp licence holders licensed for the same management and stock assessment area. Operators licensed for the same fishery management area may consolidate fishing operations; however, they must identify their pooling relationship to the service provider prior to initiating fishing activities.

In-plant transfers of product between licence holders from different management areas, but the same stock assessment area are subject to the prior approval of a Fisheries and Oceans Canada representative. In such cases, a completed Herring Spawn on Kelp Product Transfer Document will be required.

In-plant transfers will only be allowed to a licence that has made a significant fishing effort to achieve their quota but has been unsuccessful. Priority of spawn on kelp product transfers will be to the operators licensed within the same Fishery Management Area(s) and secondly to other operators located within the same stock assessment area.

Transfer of product between licence holders is permitted to allow the flexibility of licence holders to harvest their quota and to facilitate other licences to achieve their licensed quota with minimal herring usage. This allowance does not authorize a licence holder to exceed their licensed quota.

## 5.7 Containers Used For Export of Product

To facilitate control of spawn on kelp product processed for transport to the Japanese market, a plastic container has been developed for use in the industry. The dimensions of the container are approximately 50cm x 35cm x 20cm, and product capacity is approximately 14 kg (30 pounds). A limited number of containers (600) are available for issuance to each licence holder. The service provider will maintain an inventory of containers from year to year and control the release and recovery of buckets.

In season, the port monitors will monitor containers used in processing plants and ensure their appropriate disposition utilizing the Herring Spawn on Kelp Pail Transfer Document. Fisheries and Oceans Canada will audit the quantities utilized by each licence holder.

## 5.8 Sales Report

It is the responsibility of the licence holder to complete an accurate sales report after the spawn on kelp product has been sold. Licence holders are required to submit the form to Fisheries and Oceans Canada Regional Data Unit no later than September 15, 2020 at the following address:

Fisheries and Oceans Canada
Regional Data Unit
#200 - 401 Burrard St
Vancouver, B.C. V6C 3S4
Fax: (604) 666-9008

# 6 LICENSING

## 6.1 Fisher Identification Number

In 2006 and 2007 DFO introduced unique Fisher Identification Numbers (FIN) that have been assigned to all Pacific commercial harvesters. The FIN allows for fast, easy, and reliable on-grounds identification of fish harvesters for data collection, fisheries management and enforcement purposes. Once a FIN is assigned to a fish harvester, that individual will reference

the FIN when identifying him or herself in subsequent business dealings with both the department and service contractors; for example filling in the FIN field on logbooks, noting the FIN when hailing, landing catch, etc. As the FIN is now used during normal business interactions with DFO and contractors, fish harvesters will no longer need to provide detailed personal information identifying such items as gender or date of birth. Once the FIN is issued to a fisher, it will not change from year to year. More information on FIN may be obtained from your DFO fisheries manager, or the Pacific Fishery Licensing Unit (PFLU).

The spawn on kelp fishery is a limited entry fishery, open to those licence eligibility holders who meet the specific licence requirements described in Section 6.5.

A valid spawn on kelp licence is required prior to any spawn on kelp activity (i.e. "fishing") including the setting of any spawn on kelp enclosures (i.e. floating frame with web).

## 6.2 Licence Categories

A spawn-on-kelp category J or a communal commercial category FJ licence is required to participate in this fishery. Spawn on kelp category J or FJ licence eligibilities are limited entry and party-based.

### 6.2.1 Number of Licences by Area

**Table 8.2. Number of Licences Assigned by Area**

| Stock Assessment Area | Area | Number of Licences | |
|---|---|---|---|
| | | All Licenses | Licences in Open Areas |
| HG | Area 2 East - closed | 10 | 0 |
| PRD | Area 3/4 - closed | 7 | 0 |
| | Area 5 - closed | 3 | 0 |
| CC | Area 6 | 3 | 3 |
| | Area 7 | 9 | 9 |
| | Area 7/8 (Illahie Inlet) | 3 | 1.5[3] |
| WCVI | Area 23/24/25 - closed | 4 | 0 |
| Minor Areas | Area 27 | 3 | 1 |
| | Area 2 West[1] | (10[2]) | 3 |
| Other | Area 12 | 1 | 1 |
| | Area 10 | 3 | 2 |
| Total | | 46 | 20 |

[1]The number of opportunities may change each year and are available to Haida Gwaii Area licence eligibility holders only. See Sections 3.7.1 and 3.7.2 for more detail.
[2]The eligibilities are the same licences as Area 2 East.
[3]Subject to consultations with Area 7/8 license holders.
TBD = To Be Determined

# 6.3 Licence Fees

The annual spawn on kelp licence fee for a category J licence is $10,009.59 and is not affected by overages and underages from the previous year. Licence fees for communal commercial licences are collected through the Aboriginal Fisheries Strategy Comprehensive Fisheries Agreement.

### 6.3.1 Zero Quota - Zero Fee Option

Spawn on kelp licence eligibility holders have the option of electing a zero quota option for the 2020 season. The licence fee associated with this option is zero.

Spawn on kelp licence eligibility holders electing a zero quota are still required to submit a licence application in order to maintain the licence eligibility. License holders selecting this option are requested to renew their license after August 1, but before December 31, 2020. An application form for the zero quota - zero fee option may be obtained by contacting the Prince Rupert Pacific Fishery Licence Unit (PFLU).

# 6.4 Licence Application

Spawn-on-Kelp licence eligibility holders must submit an application with the required fees to the National Online Licensing Service (NOLS), by December 31, 2020 in order to maintain their eligibility, whether harvesting will take place or not. Where the licence eligibility holder is a company or a First Nations group, only the authorized signatory(s) on record may authorize the application. The NOLS must have on record a current BC Company Summary and a copy of either a Confirmation of Signing Authorities or an Amendment to Confirmation of Signing Authorities identifying the signing authorities for a company or First Nations group.

For Spawn-on-Kelp licences introduced for Indigenous groups in 1991 and 1992, where all Roe herring gill net retirement obligations have not yet been met, the annual requirement to designate roe herring licences as inactive must be met by January 20, 2020. This deadline must be adhered to for both inactive and/or any roe herring gill net retirements as they may have an impact on quota allocations for the remainder of the Roe herring gill net fleet.

# 6.5 Licence Requirements

Prior to licence issue, the licence eligibility holder must ensure that:

- A registered commercial fishing vessel is designated as the operating vessel (a maximum of three operating vessels may be designated). Designated vessels must be registered as a commercial vessel with the PFLU although vessels do not have to hold a vessel based licence eligibility.

- Proof of participation in a DFO approved spawn on kelp port monitoring program.
- If an operating vessel is not currently a registered Canadian commercial fishing vessel, details on registration can be obtained by contacting a PFLU or are available online at: http://www.pac.dfo-mpo.gc.ca/fm-gp/licence-permis/forms/comm-vess-bat-en-reg-eng.htm

Note that pond set up or harvesting is not permitted prior to licence issue.

## 6.6 Area 2W Licensing Process

DFO currently provides opportunities for Haida Gwaii licence eligibility holders to harvest in Area 2 West. A maximum expected use of 300 tons in this area is available allowing a maximum of 3 of the 10 eligible licences to operate in this area. As a first priority, the Spawn-on-Kelp Coordinator (See Contacts) will accept a consensus-based proposal for the selection of participants to fish the area. Otherwise, if more applications are received than is allowed, a lottery will be held.

License holders selecting to fish in Area 2W may not fish in Haida Gwaii (closed area for 2020).

## 6.7 Licence Documents

### 6.7.1 Valid Period

Spawn on kelp licence documents are valid from the date of issue to December 31 of each calendar year. Licenses that are not renewed by December 31 will be deemed to have expired and will not be renewed without receiving a written request by the eligibility holder and successful completion of the licensing review board hearing.

### 6.7.2 Replacements

Replacement for lost or destroyed licence documents may be obtained by completing a Declaration Concerning Licence Document form. Contact a PFLU for further details.

### 6.7.3 Vessel Redesignation

Vessel redesignation after licence issuance is permitted. An Application for Vessel Redesignation must be completed and submitted to a PFLU for approval. The application form may be found online at:
http://www.pac.dfo-mpo.gc.ca/fm-gp/licence-permis/licence-commercial-eng.html
Licence holders must:

- Ensure all requirements for licence issuance, detailed above are met with regard to the replacement vessel.
- Return the current year licence documents with the redesignation application

# APPENDIX 9. COMMERCIAL FISHING PLAN FOR FOOD & BAIT HERRING

## Table of Contents

# 1 PURPOSE

This document is a Commercial Fishing Plan for Food and Bait herring in British Columbia, for the period from November 26, 2019 to February 25, 2020.

This plan recognizes priority access of Indigenous harvest of herring for Food, Social, and Ceremonial (FSC) purposes as determined by the 1990 Sparrow decision. In addition there are fishing opportunities under Treaty rights for a number of First Nations in British Columbia.

# 2 COMMERCIAL FISHERY OVERVIEW

The Pacific commercial herring fishery began in 1877 with the first commercial harvest taken by beach seine. Between 1877 and 1906, annual harvest increased to 500 tons, with the majority of fishing occurring near Vancouver and on the east coast of Vancouver Island. In 1906 the dry salt market developed in China and demand for herring increased dramatically. By 1909 the annual harvest rose to 30,000 tons and between 1909 and 1919 ranged from 15,000 to 35,000 tons. During World War I the dry salt market decreased but the demand for canned herring increased, and between 1919 and 1927 85,000 tons were harvested. The dry salt market began declining by the mid-1930s while the reduction fishery developed. Between 1968 and 1971 the reduction fishery was shut down due to a collapse of the B.C. herring stocks. During this period the Food and Bait fishery continued with harvests in the range of 5,000 tons, primarily for use as halibut bait.

In the mid-1970s, the European herring stocks collapsed and a European market for British Columbia herring developed. As a result, harvest increased to a peak of 20,000 tons in 1977. In 1988, a 50 ton individual vessel quota system was implemented with a coast-wide quota limited to 1,500 tons due to concerns that large catches in this fishery were impacting development of the higher value roe fishery. Since that time, quotas for Food and Bait herring have fluctuated from 500 to 9,585 tons annually.

A Food and Bait herring (Category ZM) licence is required to participate in this fishery. Food and Bait herring licences are party based and are not limited. Prior to 2014 there was a lottery for a ZM licence, applicants had to be the owner of a vessel that was designated for a herring seine (HS) or licensed catcher vessel for a spawn on kelp (J licence) within the past five years. In 2014/15 ZM licences moved to an equal share criteria - available for application by each of the parties who hold a valid roe herring seine licence and quota is allocated on an equal share basis.

# 3 FOOD AND BAIT HERRING FISHERY REPRESENTATION

The Integrated Herring Harvest Planning Committee (IHHPC) is the primary multi-stakeholder body providing input and advice to DFO's decision making processes for Pacific Herring fisheries. The IHHPC was established by DFO to promote a more streamlined, representative, cross-sectoral advisory process related to herring harvest planning, management, and post-season review. The Herring Industry Advisory Board (HIAB) provides advice to the Department on issues affecting commercial Roe Herring and Food and Bait fisheries; this includes providing recommendations for Food and Bait Herring and Roe Herring harvesting plans for all areas with available commercial quota.

# 4 MANAGEMENT MEASURES FOR THE DURATION OF THIS PLAN

The quota on each ZM licence will be an equal share of the available quota for the area divided by the number of roe herring seine licence eligibilities for the area. The initial quota for the Food and Bait is 500 tons in the Strait of Georgia (SOG). The initial allocation may be adjusted following the release of herring maximum total allowable catches for the upcoming season. An additional 100 tons is provided to a ZM designated license for the "*Fishermen Helping Kids with Cancer"* at the request of license holders, for a total allocation of 600 tons to the fishery.

Roe seine licence holders may have the option to select the quota share in the SOG Food and Bait fishery or have the quota share remain in the Roe Seine fishery. The SOG Roe fishery allocations will be reduced by the same amount that the Food and Bait fisheries are increased (see Section 5.3 and 5.4). Quota caught in the Food and Bait fishery option will not be eligible to participate in the Roe herring fishery for that season.

## 4.1 Management Considerations for 2019/2020

### 4.1.1 Prince Rupert District

The Food and Bait fishery was not opened in 2017/2018 or 2018/2019 seasons, and will not be open for the 2019/2020 season.

### 4.1.2 Strait of Georgia

The estimated spawning biomass in the Strait of Georgia decreased in 2019 from 2018. Estimated median spawning biomass in 2019 was 64,281 t and the forecasted median spawning biomass in 2020 is 54,242 t, with a range from 27,200 t to 110,000 t.

The Food and Bait fishery will open on November 26, 2019 (delayed from the normal opening date of November 7). Science advice in the *Science Response Stock Status Update with Application of Management Procedures for Pacific Herring (Clupea pallasii) in British Columbia: Status in 2019 and Forecast for 2020* (October 2019) is used to inform management approaches such as harvest levels, therefore the opening date has been adjusted to consult on these results.

Concerns and observations have been noted regarding recent levels of herring spawn and potential impacts on First Nations food, social, and ceremonial opportunities in the areas south of Dodd Narrows (PFMAs 17-1 to 17-9, portions of 17-16, 17-17, PFMA 18) and the adjacent PFMA, Subarea 29-5. To address these concerns, for the 2019/20 season these areas will not be open to Food and Bait fishing.

Since the 2016/2017 season, a number of closures and catch ceilings or "caps" have been implemented in these areas:

- 2016/2017: 2,000 short ton catch cap in Areas 17S and 18
- 2017/2018: a 1,000 short ton catch cap in Areas 17S and 18 and a catch cap of 4,000 short ton for Subarea 29-5.
- 2018/2019: a closure in Area 17S and 18 and a 4,000 short ton catch cap in Subarea 29-5

## 4.2 Highlights and changes from the previous season

Area selection will not be required for the 2019/2020 season because quota has initially only been allocated to the Strait of Georgia area.

As detailed in the previous section, Subareas 17-1 to 17-9, portions of 17-16, 17-17, PFMA 18 (all subareas), and Subarea 29-5 will not be opened for the 2019/2020 season.

### 4.2.1 Updates to License Conditions

Conditions of licence for Food & Bait operators will include several new provisions in the 2019/20 fishing season:

3. A provision has been added to prohibit sorting prior to landing and validation (aligns with Roe and Special Use conditions)
4. A provision has been added to allow transporting or "packing" of fish by a D license category licensed transport vessel, as of January 1, 2020 when the D licence category conditions are updated.
5. A provision has been added to require reporting of any lost fishing gear.

## 4.3 Current Management Issues

Catch monitoring and safe fishing practices continue to be important to all fisheries in the Pacific Region. In order to monitor and address potential issues in the Food and Bait fishery, there is 100% at sea observer coverage. In addition, fishing hails, vessel logbooks, and 100%

dockside weight validation are required. The Food and Bait fishery is conducted with seine gear only. To reduce the impacts of fish loss from compression in the net during the pumping process, there is a licence condition in place that requires all herring from a set to be retained, unless the set has to be released due to vessel safety concerns. The monitoring program is provided by an independent, third party service provider. The management controls and measures for this fishery will be assessed, and future management adjustments may be made to address emerging fishery developments.

In order to address identified issues regarding the difficulty of achieving the precise catch amounts with seine gear, a process to allow reallocation of unfished quota assigned to another ZM designated vessel will be continued. The transfer documents and procedures are available from the lead Resource Manager as described in Section 4.11 of this Plan. Multiple licences may be designated to a single vessel, including ZY3 and ZY4 special use herring licences, and there is no restriction on the number of licences which may be placed on a vessel.

Fish harvesters are requested to operate cooperatively in this fishery both to increase safety for all vessels, and work within licence quotas while minimizing impact on the herring resource. HIAB in conjunction with FishSafe, the department, and the industry selected service provider have developed a Food and Bait Best Practices booklet to highlight fishing practices to address safety considerations for this fishery. Pre and in season meetings will be conducted as required to address management and safety issues.

## 4.4 Financial Responsibilities

All eligible parties are responsible for ensuring they are compliant with all DFO monitoring requirements for this fishery, including all associated monitoring costs.

## 4.5 Allocation and Harvest Levels

Due to forecasted spawning biomass declines for 2019/2020, small quotas will be provided at the commencement of the season. Quota adjustments may be required following overall Strait of Georgia quota decisions as provided in the 2019/2020 Pacific Herring Integrated Fisheries Management Plan in January 2020. Each eligible seine applicant will have an equal share of the quota. In season quota adjustments will be provided by way of Fishery Notice and will be in effect at the times, areas, and levels specific in the fishery notice.

The quota allocation for 2019/2020 for Food and Bait seine gear is 600 tons for the Strait of Georgia area. 500 tons will be provided to eligible seine applicants on an equal share basis (1.98 short tons per licence) and 100 tons will be allocated to the identified ZM license to facilitate the Fishermen Helping Kids with Cancer charity sale.

## 4.6 Open Times

The fishery is planned to be open from November 26, 2019 to February 12, 2020. The fishing season was extended starting in 2012/2013 from February 9 to February 12 in the Strait of

Georgia, to accommodate fishing late in the season. When open, Prince Rupert District fishing season is November 7 to February 25 to accommodate fish distribution and timing in that area.

Fishing will be permitted to eligible vessels designated with a ZM licence from: November 26, 2019 to February 12, 2020 in the Strait of Georgia area only.

## 4.7 Fishing Areas

The following areas are identified as fishing areas, subject to in season decisions on specific areas that will be opened by Variation Order following the process as described by gear type and area, and subject to the permanent area closures detailed in the following section. Areas may be closed in the event that small or unsuitable fish are being released, or if substantial incidental bycatch occurs. If stock concerns are identified, some Areas or Subareas may close on short notice.

Vessel masters are advised to check the DFO fishery notice internet site, prior to commencing fishing, at:

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

Fishing will be permitted by eligible vessels in the following Areas and Subareas, with the exception of the closures noted in the Permanent Area Closures, and subject to Conditions of Licence, and fishery notices.

Commercial fleets are requested to avoid locations where local First Nations are gathering fish, or fishing for herring spawn on boughs or spawn on kelp. Additionally, the Department works collaboratively with First Nations on communication regarding herring stocks and spawning locations for FSC fishery planning and information on FSC activities. As the fishery season progresses, in some cases, specific requirements to remain out of particular locations to support FSC harvest will be broadcast for adherence by fish harvesters.

### 4.7.1 Prince Rupert District – When Open

Area 3: Subareas 3-1 to 3-3, and portions of Subarea 3-4 inside a line commencing at Sarah Point northward to a red can buoy located at Inskip Passage, thence easterly to the northernmost point of the estuary of Neaxtoalk Lake, thence northward along shore to the markers in Dudevoir Pass, thence along the shore of Maskelyne Island to a marker approximately one half mile southerly of Maskelyne Point, thence to Pointer Rocks light thence southward to Gordon Point on Finlayson Island, thence southward along the shore to Sarah Point. Subarea 3-4 will also be open south of a line from Sarah Point to Hook Point, Subarea 3-7

Area 4: All Subareas will be open. The Harbour Authority of Prince Rupert and Port Edward must be notified prior to any fishing activity within harbour limits as shown on chart No. 3957 published by the Canadian Hydrographic Service.

Area 5: Subareas 5-1, 5-2, 5-3 and 5-10.

### 4.7.2 Strait of Georgia

Area 13:
Subareas 13-8 to 13-10; and

Subarea 13-7 ***excluding:***
Deepwater Bay, east of a line drawn from a boundary sign at 50°11.434'N 125°20.268'W on Quadra Island to a boundary sign at 50°10.861'N 125°20.885'W near Separation Head on Quadra Island.

Area 14:
Subareas 14-1 to 14-13, and 14-15.

Area 17:
Subareas 17-11, 17-12, 17-13, 17-15, 17-18, 17-19 and 17-21; and

Subareas 17-10 ***excluding:***
the waters of Gabriola Pass bounded by a line from Dibuxante Point at 49°07.625'N and 123°42.913'W on Valdes Island, thence following the northerly shore of Valdes Island to Cordero Point at 49°07.700'N and 123°42.126'W on Valdes Island, thence to the most southerly tip of Breakwater Island at 49°07.546'N and 123°40.897'W, thence following the westerly shore of Breakwater Island to the most northerly point on Breakwater Island at 49°08.360'N and 123°40.872'W, thence due west to Gabriola Island at 49°08.355'N and 123°41.4770'W, thence following the southerly shore of Gabriola Island to the point of land located at 49°07.777'N and 123°43.045'W, thence in a straight line southerly to the point of commencement at Dibuxante Point; and

Subarea 17-16 ***excluding:***
that portion south of a line at Dodd Narrows, drawn from Joan Point at 49°08.150'N 123°49.145'W on Vancouver Island easterly to Purvis Point at 40°08.174N 123°49.016'W on Mudge Island;

## 4.8 Permanent Area Closures

### 4.8.1 Strait of Georgia

Area closures are detailed below. These areas are closed due to navigation concerns, sensitive fish habitat, or concerns regarding bycatch of other species or other management considerations. There may be additional closures in season by Variation Order and fishery notice.

Area 13:
Deepwater Bay: That portion of Subarea 13-7, east of a line drawn from a boundary sign at 50°11.434'N 125°20.268'W to a boundary sign at 50°10.861' N 125°20.885' W near Separation Head on Quadra Island.

Area 14:
14-14 (Comox Harbour)

Area 17:
Porlier Pass: A portion of Subarea 17-3 north-easterly of a line from Cayetano Point at 49°00.767'N 123°36.014'W on Valdes Island to Alcala Point at 49°00.099'N 123°35.3730'W on Galiano Island.

Ladysmith Harbour: Subarea 17-7.

Nanaimo Harbour: Subarea 17-14.

Nanoose Harbour: Subarea 17-20.

Kulleet Bay: A portion of Subarea 17-5 westerly of a line from Coffin Point at 48°59.250'N 123°45.474 W on Vancouver Island to Yellow Point at 49°02.395'N 123°44.810'W on Vancouver Island.

Gabriola Pass: The waters of Gabriola Pass described as portions of Subareas 17-10 and 17-17 bounded by a line from Dibuxante Point at 49°07.625'N 123°42.913'W on Valdes Island, thence following the northerly shore of Valdes Island to Cordero Point at 49°07.700'N 123°42.126'W on Valdes Island, thence to the most southerly tip of Breakwater Island at 49°07.546'N 123°40.897'W, thence following the westerly shore of Breakwater Island to the most northerly point on Breakwater Island at 49°08.360'N 123°40.872'W, thence due west to Gabriola Island at 49°08.355'N 123°41.4770'W, thence following the southerly shore of Gabriola Island to the point of land located at 49°07.777'N 123°43.045'W, thence in a straight line southerly to the point of commencement at Dibuxante Point.

Area 18:

Maple Bay: Subarea 18-7.

Cowichan Bay: Subarea 18-8.

Fulford Harbour: Subarea 18-10.

Active Pass: That portion of Subarea 18-2 north-easterly of a line from Collinson Point at 48°51.583'N 123°21.172'W on Galiano Island to Enterprise Reef Buoy at 48°50.694'N 123°20.882'W to Crane Point at 48°50.497'N 123°20.040'W on Mayne Island.

Area 29:
Fraser River: All Subareas except 29-5.

### 4.8.2 Prince Rupert

No closed areas identified.

## 4.9 Participation Requirements - Gear

A herring purse seine must not exceed 410m (225 fathoms) in length, and the mesh size shall not be less than 25mm (1 inch) extension measure.

Vessels should have a full sized herring seine, along with all the associated gear (i.e. pumps, winches, power skiffs), to fish and haul the gear, as well as adequate electronic equipment for locating and estimating herring schools.

A properly functioning chilled seawater (C.S.W.), or refrigerated seawater (R.S.W.), system is required for all vessels participating in the fishery.

To maintain manageability and safety in this fishery, vessels will be requested to operate in a minimum of pairs during fishing operations.

Under the Canada Shipping Act, all vessels fishing or packing herring or capelin are required to have a valid stability certificate/booklet on board the vessel.

## 4.10 Harvest Practices

Once the pumping of herring from the seine net has commenced, all herring from that set shall be retained, unless the set must be released due to vessel safety concerns.

## 4.11 Catch in Excess of Quota

Vessel masters must operate in a manner that ensures that over harvest does not occur. The licensed vessel is permitted to catch and retain a maximum of tonnage of herring per license based on the share. The program to allow for reallocation of unfished quota assigned to another vessel will be continued. The quota reallocation documents and procedures will be available to eligible applicants by contacting the lead Resource Manager.

## 4.12 Fisher Identification Numbers

Unique Fisher Identification Numbers (FIN) have been assigned to all Pacific commercial harvesters. The FIN allows identification of fish harvesters for data collection, fisheries

management and enforcement purposes. Once a FIN has been assigned to a fish harvester, that individual will reference the FIN when identifying him or herself in subsequent business dealings with both the department and service contractors; for example filling in the FIN field on logbooks, noting the FIN when hailing, landing catch, etc. Once the FIN is issued to a fisher, it will not change from year to year. More information on FIN may be obtained from your DFO fisheries manager, or the Pacific Fishery Licensing Unit (PFLU).

## 4.13 Licence Category

A Food and Bait herring, category ZM licence is required to participate in this fishery. Food and Bait herring licences are party based.

## 4.14 Licence Application and Issuance

LICENSING SERVICE INFORMATION:

Fisheries and Oceans Canada's licensing services are available using the National Online Licensing System located at https://fishing-peche.dfo-mpo.gc.ca. The National Online Licensing System enables secure and reliable online service delivery to both commercial and communal commercial users. Fish harvesters are now able to access licensing services using the system. Services include:

- renewing licences and paying licence fees;
- submitting licensing requests (such as vessel transfers) and checking the status of requests;
- submitting electronic documents in support of licensing requests;

printing licences, licence conditions, receipts, and other licensing documents; and

- appointing representatives to perform licensing transactions on a user's behalf.

The system provides fish harvesters with the ability to view their account information and manage their licensing requirements online, replacing traditional services previously offered over-the-counter or by regular mail. For instance, licence renewal notices are no longer sent by mail; rather, clients are now notified via email that a licence fee is available to be paid. Payment of a licence fee is your request for issuance of that licence.

Upon the Department receiving the required payment, and the appropriate information (e.g. designated vessel) and any required documentation, the licence will be issued and notification will be sent via email to advise licence holders/vessel owners that a document has been made available in their online account. The licence documents, licence conditions and receipts may be downloaded and printed at that time.

CLIENT SUPPORT:

Training materials, including step-by-step guides and a detailed user training manual, are available online (http://www.dfo-mpo.gc.ca/FM-GP/SDC-CPS/licence-permis-eng.htm) to guide

users of the system in completing their licensing transactions. The Department also provides client support and assistance on how to use the system via e-mail at fishing-peche@dfo-mpo.gc.ca or by calling toll-free at 1-877-535-7307 (7:00 AM to 8:00 PM Eastern, Monday to Friday).

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

LICENCE ISSUANCE:

The available quota for SOG will be shared on a percentage basis by the 252 roe herring seine licence eligibility holders. Roe seine licence holders may have the option to select harvest in the SOG Food and Bait fisheries instead of the roe seine fishery. Roe seine licence holders who select the Food and Bait fishery option may not be eligible to participate in the 2020 roe herring fishery.

The licence application and issuance process, target dates, and deadline dates will be provided by way of Fishery Notice prior to the fishery opening date of November 26, 2019.

Prior to licence issuance, eligible applicants must designate a registered vessel, in Canada, in accordance with the provisions set forth in Part 2 of the Canada Shipping Act.

## 4.15 Licence Documents

Food and Bait herring licences are valid from the date of issuance to February 12th, 2020.

Replacements for lost or destroyed licence documents may be obtained by logging into the National Online Licensing System and reprinting the licence documents.

For those roe seine applicants who select the Food and Bait option will be issued amended Food and Bait licence conditions with an additional fixed quota amount dependent on roe seine herring allocations. The timelines and process are provided in Section 7 of the Roe Herring Commercial Plan (Appendix 7) and will be announced by way of Fishery Notice.

# 5 FISHERY MONITORING REQUIREMENTS

The fishery monitoring requirements for this fishery include fishing hails, at sea observers, harvest logs and dockside weight validation. These components are an integral part of the sustainable management of this fishery, and ensure alignment with the DFO monitoring policy.

# 5.1 Harvest log

Harvest set logs are available from the service provider. The vessel master is responsible for the provision and maintenance of an accurate record of daily harvest operations. Catch information must be recorded in the harvest log by midnight of the day in which the activity occurred, or prior to the at sea observer disembarking the vessel, whichever occurs first. The log must be kept aboard the licensed vessel, and must be produced for examination on demand of a fishery officer or fishery guardian.

The original white page copy of the log must be received by the designated service provider no later than 14 days following the last active fishing day by the licensed vessel for the season.

# 5.2 Hails

Telephone hails to the Service Provider must be made between the hours of 0800 to 1600 hours, Monday to Friday, but not on statutory holidays. Upon failure to arrive at the fishing location within 48 hours of the hail out time, the vessel master shall hail the vessel name, Vessel Registration Number (VRN), and details of the change in fishing plans.

The vessel master shall be responsible for making an oral report (hail) to the service provider to report events and information required by the licence conditions.

Each hail will be documented with a unique Hail Confirmation Number in the appropriate location in the Harvest Log as detailed in the licence conditions and information sheets provided with the logbooks from the service provider.

### 5.2.1 Notification of Fishing (Hail Out)

The master of a vessel participating in the Food and Bait fishery will be required to notify the monitoring program service provider, a minimum of 24 hours prior to the intended fishing date. The information that shall be provided is detailed in the Licence Conditions issued with the ZM licence, and includes:

- Vessel Master name
- Vessel Master FIN
- Vessel name
- Vessel registration number (VRN)
- Onboard Observer name
- The subarea (s) to be fished
- The anticipated date and time fishing will begin

### 5.2.2 Notification of Fishing (Hail In)

The master of a vessel participating in the Food and Bait fishery will be required to notify the monitoring program service provider, a minimum of 12 hours prior to the intended landing time. The information that shall be provided is detailed in the Licence Conditions issued with the ZM licence, and includes:

- Vessel master name
- Vessel Master FIN
- Vessel name
- Vessel registration number (VRN)
- Onboard Observer name
- Catch Location
- Catch estimate
- Anticipated landing time
- Landing Location

## 5.3 At Sea Observers

Fishing vessels will be required to have at-sea observer coverage by a DFO designated observer while carrying out fishing operations. An observer must be on board prior to the vessel making a seine set. An observer may transfer to another vessel at sea, once the observer duties for the first vessel have been completed, and at the discretion of the observer.

## 5.4 Landing

All herring shall be delivered to a British Columbia port and must be offloaded within 18 hours of capture. A certified observer must validate the weight of all herring offloaded. Vessel masters are required to make offloading arrangements with the designated service provider. The following landing locations may be used:

- Metro Vancouver
- French Creek
- Prince Rupert
- Quadra Island

To land at another location other than those listed above, contact the Service Provider. It is possible that a surcharge will be charged and additional costs for port monitoring. **Please contact the service provider well ahead of fishing if there is an intention to land at another port.**

Schedule B (Part I Section 11.1) of the B.C. Fish Inspection Regulations states: "Where fresh herring is for human consumption, its processing, except icing or chilling, must commence within 24 hours of delivery at the processing establishment and must not be discontinued until the herring is preserved to a degree that assures maximum quality of the product."

## 5.5 Dockside Validation

All landed fish must be verified by a dockside observer provided by the service provider. All herring harvested under the authority of this licence must be validated at the point and time of landing. The landing of any fish is not permitted unless an observer is present to authorize the commencement of weight verification. All weights must be determined using a scale approved by Industry Canada.

The observer may inspect fish holds, freezers and other areas where fish may be stored. It is the responsibility of the vessel owner or master to provide safe access to the vessel holds for inspection and to ensure that the vessel does not leave the offloading site prior to completion of the fish hold inspection by the observer.

## 5.6 Fish Slip Requirements

It is a Condition of Licence that an accurate written report shall be furnished on a fish slip of all herring caught and retained under the authority of this licence. The report shall be mailed within seven days of off-loading to:
Fisheries and Oceans Canada
Regional Data Unit
200 - 401 Burrard Street
Vancouver, B.C. V6C 3S4

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

## 5.7 Marine Mammal and Seabird Reporting

Fishers shall take precautions to avoid fishing among seabirds. Fishers are requested to retain all dead birds which are entangled and to release live and unharmed birds by placing them in the water. Please contact Laurie Wilson with the capture date and location at 1-866-431-2473 (BIRD) or by the email below. Handle birds with gloves, double bag dead birds and label each bird with date, time, and location and store them on ice. Please call your local charter patrol to organize pick-up or drop them off at a local DFO office. Alternatively, please send photographs of birds with a reference object such as a coin, and the date, time and location to laurie.wilson@canada.ca. Your names and vessel names do not need to be identified or included.

All fishing operations are required to complete an incident report for each interaction with a marine mammal. Interactions refer to cases of incidental mortality and serious injury to marine mammals. This includes accidental drowning, bycatch, entanglements, collisions, and fatalities. The vessel master shall complete the DFO reporting form "MARINE MAMMAL INTERACTION FORM." The Marine Mammal Interaction Form shall be submitted as per the instructions provided on the form. Once completed, this form must be submitted to DFO as per the conditions of licence.

The Marine Mammal Interaction Form is available from: https://dfo-mpo.gc.ca/species-especes/documents/mammals-mammiferes/report-rapport/Fish-Harvester-Form-Eng.pdf

## 5.8 Ghost Gear Reporting

Lost, abandoned or otherwise discarded fishing gear (ghost gear) can cause large-scale damage to marine ecosystems through habitat disturbance and causes direct harm to the welfare and conservation of marine animals via entanglement and/or ingestion. It is estimated that between 5% - 30% of harvestable fish stocks are impacted by ghost gear across the world, posing a major threat to human health and livelihoods as well as to global food security. In 2009, the United Nations Environment Programme (UNEP) estimated that at least 640,000 tonnes of fishing gear was lost or abandoned in the world's oceans every year, making up approximately 10% of all marine litter when measured by weight. Ghost gear has many causes, but the primary ones are snags on rocks, reefs or spires beneath the surface of the water; conflict / entanglement with other deployed fishing gear; severe weather and gear being cut loose incidentally by other marine traffic crossing over top of it.

DFO is committed to showing leadership in the management of ghost gear by developing an action plan that will focus efforts on science, prevention, mitigation, as well as recovery and management. We are also working with others to advance this initiative internationally such as in regional fisheries bodies and through the Global Ghost Gear Initiative. DFO has expanded mandatory reporting requirements for lost gear to additional commercial fisheries as well as introduce a new requirement to report any retrieved gear previously reported lost has been introduced in commercial fisheries. This information will allow for targeted retrieval efforts and more robust analysis of the ghost gear issue in Canada

## 5.9 Compliance with other Federal and Provincial Legislation and Regulations

Fish harvesters are responsible for compliance with all federal and provincial laws and regulations pertaining to fishing operations.

# APPENDIX 10. COMMERCIAL FISHING PLAN FOR SPECIAL USE HERRING

## Table of Contents

# 1 PURPOSE

This document is a Commercial Fishing Plan for Special Use herring in British Columbia. The Special Use fishery provides opportunities to harvest Pacific Herring for a variety of different uses, such as bait, food, and feed for aquarium animals.

This plan recognizes priority access of Indigenous harvest of herring for Food, Social, and Ceremonial (FSC) purposes as determined by the 1990 Sparrow decision. In addition there are fishing opportunities under Treaty rights for a number of First Nations in British Columbia.

# 2 COMMERCIAL FISHERY OVERVIEW

While small, the Special Use herring fishery has a complicated and varied history, due to the evolution of its complex licensing structure, which was originally developed to track the end use of herring.

In 1995, DFO replaced the use of locally issued permits with centrally issued licences. The specific end uses of the permits were retained as licence purposes, which directed how the harvested fish was to be used. While there have been as many as seven licence categories in this fishery, there are currently five categories remaining; the Sport Bait (ZY1), Commercial Bait (ZY2), Human Food and Bait (ZY3), Zoo and Aquarium (ZY4), and Personal Bait (ZX) categories. These fisheries take place only in the Strait of Georgia management area currently. There was originally some quota allocated to the Prince Rupert District, however that quota was removed in 2017/18 as it had not been accessed in over ten years, and therefore no quota is allocated. The specific histories of the active ZY licence categories follow.

## 2.1 Sport Bait Herring (ZY1)

In the late 1970s and through the 1980s there were strong recreational fisheries. To supply bait to these fisheries, 3 ton impoundment permits were issued to the small live bait operations that had become prolific throughout the Strait of Georgia, with scattered operations into the North Coast area. These permits were to be used in conjunction with fishing permits which permitted harvest of herring for personal use or for the delivery of herring to a processor or operator possessing a valid impoundment permit.

As the recreational fisheries declined, the number of live bait operators also declined. While some interest remained in small live bait operations, other parties became interested in increasing the scale of their operations and producing fresh and frozen bait. In the majority of cases, this increase was, and is, accomplished by using the ability to stack multiple licences on one vessel to harvest herring for one individual or company's operations, as opposed to the original intent of harvesting for multiple operations worked by multiple licence holders. In

2007, the number of licences that could be held on a vessel was increased from one to five at one time (licence stacking). There are also unique quotas in this category (See Section. 7.3.1)

## 2.2 Commercial Bait Herring (ZY2)

The ZY2 licence category was developed in 1995 as a means of providing quota for the purpose of producing bait to be used in commercial fisheries such as halibut. Prior to this date, fishing activity for commercial bait had been underway for many years, especially in the Prince Rupert District, and was managed through the issuance of permits. The ZY2 category is operationally the same as the ZY1 category, permitting the ponding of herring using 3 ton licences. Since 2017/18 there has been no allocation for ZY2 licenses, since the removal of the quota allocated in Prince Rupert District.

## 2.3 Human Food and Bait (ZY3)

In the early 1980s, opportunity to harvest herring for human food was provided through the issuance of 3 ton permits for fresh, local sales only, although four 50 ton permits were made available to Fjord Pacific Marine Industries Ltd. (Fjord) for more industrialized food processing as a unique quota.

When the ZY3 licence category was introduced in 1995, the 3 ton and four 50 ton quotas continued to be issued through licences. The 3 ton licences were made available until 2006/07; although they were not accounted for in the ZY3 expected use allocation. In 2007/08, these 3 ton licences were discontinued, and in 2009 the allocation for ZY3 was reduced to 150 tons, distributed across three 50 ton licences as a unique quota to one applicant.

## 2.4 Zoo and Aquarium (ZY4)

Historically the quota in this licence category was available to any zoo or aquarium operating in Canada or the United States, upon request to DFO Fisheries Management. Successive management decisions were made that first restricted the eligibility to Canadian operations only, and then to BC operations only. Currently the ZY4 quota is available only to the Vancouver Aquarium, as a unique quota. Should a future request be made by a zoo or aquarium other than the current participant it would not be granted, as there is no additional allocation for the ZY4 licence category.

## 2.5 Personal Bait (ZX)

This licence category provides commercial fishers with the opportunity to harvest up to 1 ton of herring for personal (non-sale) use.

# 3 MANAGEMENT MEASURES FOR THE DURATION OF THIS PLAN

## 3.1 Management Considerations For 2019/2020

The estimated spawning biomass in the Strait of Georgia decreased in 2019 from 2018, and the uncertainty of model estimates of recent spawning biomass and forecast biomass is large. This is a function of model fits to an averaged trajectory through the spawn index values. Estimated median spawning biomass in 2019 was 64,281t and the forecasted median spawning biomass in 2020 is 54,242 t, with a range from 27,200 t to 110,000 t.

The Special Use fishery will open on November 26, 2019 (delayed from the normal opening date of November 7). Science advice in the *Science Response Stock Status Update with Application of Management Procedures for Pacific Herring (Clupea pallasii) in British Columbia: Status in 2019 and Forecast for 2020* (October 2019) is used to inform management approaches such as harvest levels, therefore the opening date has been adjusted to consult on these results.

Since 2016/17, concerns and observations have been noted regarding recent levels of herring spawn and potential impacts on First Nations food, social, and ceremonial opportunities in the areas south of Dodd Narrows (PFMAs 17-1 to 17-9, portions of 17-16, 17-17, PFMA 18) and the adjacent PFMA, Subarea 29-5. To address these concerns, for the 2019/20 season these areas will not be open to Special Use fishing.

## 3.2 Allocation and Harvest Levels

Stable allocations have been provided for the Special Use herring fishery, as provided in Table 10.1

**Table 10.1. Special Use allocation by licence category.**

| Licence Type | Area | Available Licences | Quota Available |
|---|---|---|---|
| ZX – Personal Use | SOG | 25 | 25 |
| | PRD | 0 | 0 |
| ZY1 – Sport Bait | SOG | 67* | 617 |
| | PRD | 0 | 0 |
| ZY2 – Commercial Bait | PRD | 0 | 0 |
| ZY3 – Human Food and Bait | SOG | 3* | 150 |
| ZY4 – Zoo and Aquarium | SOG | 1* | 110 |
| Grand Total | | 96 | 902 |

*Includes unique quotas. See section 7.3.1

Vessel masters must operate in a manner that ensures that over harvest does not occur. The harvest of fish in excess of the licensed amount is unlawful.

Small amounts of catch in excess of licensed quota amounts for ZY3 and ZY4 licenses against ZY3, ZY4 and ZM licenses may be designated to other vessels. This will be assessed post-season for continuation or modification in subsequent years.

No person who is fishing under the authority of a licence issued for the purpose of commercial fishing shall dump from a vessel any fish that has been caught in accordance with the Fisheries Act and the Regulations made thereunder.

## 3.3 License Condition Changes from 2018/19

Conditions of licence for Special Use license holders will include several new provisions in the 2019/20 fishing season:

6. A provision has been added to prohibit sorting prior to landing and validation (aligns with Roe and Food & Bait conditions)
7. A provision has been added to allow transporting or "packing" of fish by a D license category licensed transport vessel, as of January 1, 2020, when the D licence category conditions are updated.
8. A provision has been added to require reporting of any lost fishing gear.

## 3.4 Participation Requirements

The Special Use herring fishery is an unlimited fishery in that licences are not limited entry and eligibility to obtain licence issuance is not carried forward from one year to the next. Licences for participation in the Special Use herring fishery are open to any interested party provided that the specific licence requirements and eligibility criteria described in Section 7.2 have been met. Unique quotas for specific parties for specific purposes are described in Section 7.3.

A valid Special Use herring licence is required prior to any special use fishing activity, including the set-up of any herring enclosure (i.e. floating frame with web).

## 3.5 Open Times

Fishing for Special Use herring is permitted from 00:01 hours November 26, 2019 until 23:59 hours February 15, 2020, and 00:01 hours May 1, 2020 to 23:59 hours November 6, 2020.

## 3.6 Open and Closed Areas for 2019/20

The following areas are identified as fishing areas, subject to in season decisions on specific areas that will be opened by Variation Order following the process as described by gear type and area, and subject to the permanent area closures detailed in Section 3.7.

As noted above, PFMAs 17-1 to 17-9, portions of 17-16, 17-17, 18, and 29-5 will be closed to Special Use fishing this year.

**Table 10.2: Open and closed areas in the Strait of Georgia for 2019/20.**

| Area | Exceptions |
|---|---|
| **Area 13** | Area 13 is open except that portion of Subarea 13-7, east of a line drawn from a boundary sign at 50°11.434'N 125°20.268'W to a boundary sign at 50°10.861' N 125°20.885' W near Separation Head on Quadra Island [Deepwater Bay] |
| **Area 14** | Area 14 is open except Subarea 14-14 [Comox Harbour] |
| **Area 16** | Area 16 is open except: |

| | |
|---|---|
| | Subarea 16-3 [Bargain Bay]<br>Subarea 16-4 [Pender Harbour]<br>Subarea 16-5 [portion of Sechelt Inlet]<br>That portion of Subarea 16-10 within a radius of 0.3 nautical miles from the mouth of Sakinaw River |
| **Area 17** | Area 17 is open except:<br>Subarea 17-1 to 17-9<br>Subarea 17-14 [Nanaimo Harbour]<br>Subarea 17-20 [Nanoose Harbour]<br>The waters of Gabriola Pass described as portions of Subareas 17-10 and 17-17 bounded by a line from Dibuxante Point at 49°07.625'N 123°42.913'W on Valdes Island, thence following the northerly shore of Valdes Island to Cordero Point at 49°07.700'N and 123°42.126'W on Valdes Island, thence to the most southerly tip of Breakwater Island at 49°07.546'N 123°40.897'W, thence following the westerly shore of Breakwater Island to the most northerly point on Breakwater Island at 49°08.360'N 123°40.872'W, thence due west to Gabriola Island at 49°08.355'N 123°41.4770'W, thence following the southerly shore of Gabriola Island to the point of land located at 49°07.777'N 123°43.045'W , thence in a straight line southerly to the point of commencement at Dibuxante Point [Gabriola Pass].<br>That portion of Subarea 17-16 south of a line at Dodd Narrows, drawn from Joan Point at 49°08.150'N 123°49.145'W on Vancouver Island easterly to Purvis Point at 40°08.174N 123°49.016'W on Mudge Island; |
| **Area 18** | All of Area 18 is closed this year. |
| **Area 19** | Area 19 is open except:<br>Subarea 19-1 [Victoria Harbour]<br>Subarea 19-2 [Esquimalt Harbour]<br>Subarea 19-6 [Sidney Spit Marine Park]<br>Subareas 19-7 to 19-12 [Saanich Inlet] |
| **Area 28** | All Subareas open |
| **Area 29** | All of Area 29 is closed this year. |

Note that these areas may be closed in season in the event that small or unsuitable fish are being released, or if substantial incidental bycatch occurs. If stock concerns are identified, some Areas or Subareas may close on short notice.

Note that requests to harvest in regions outside the major stock assessment areas or areas with limited assessment information will require additional consideration and may not be approved.

Vessel masters are advised to check the DFO fishery notice internet site, prior to commencing fishing, at: http://notices.dfo-mpo.gc.ca/fns-sap/index-eng.cfm

Commercial fleets are requested to avoid locations where local First Nations are gathering fish, or fishing for herring spawn on boughs or spawn on kelp. Additionally, the Department works collaboratively with First Nations on communication regarding herring stocks and spawning locations for FSC fishery planning and information on FSC activities. As the fishery season progresses, in some cases, specific requirements to remain out of particular locations to support FSC harvest will be broadcast for adherence by fish harvesters.

## 3.7 Permanent Area Closures

The following areas are permanently closed to the Special Use fishery. Note that there may be additional closures in-season by Variation Order and Fishery Notice. Consult with the local fisheries office before fishing in an area.

Where a major stock assessment area is closed for conservation concerns, the permanent closures of specific Subareas are not listed. To obtain a detailed list of all permanent Subarea closures, contact your local Area Resource Manager (see Contacts).

### 3.7.1 Strait of Georgia

**Table 10.3: Permanent subarea closures in the Strait of Georgia.**

| | |
|---|---|
| **Area 13** | That portion of Subarea 13-7, east of a line drawn from a boundary sign at 50°11.434'N 125°20.268'W to a boundary sign at 50°10.861' N 125°20.885' W near Separation Head on Quadra Island [Deepwater Bay] |
| **Area 14** | Subarea 14-14 [Comox Harbour] |
| **Area 16** | Subarea 16-3 [Bargain Bay]<br>Subarea 16-4 [Pender Harbour]<br>Subarea 16-5 [portion of Sechelt Inlet]<br>That portion of Subarea 16-10 within a radius of 0.3 nautical miles from the mouth of Sakinaw River |

| | |
|---|---|
| **Area 17** | A portion of Subarea 17-3 northeasterly of a line from Cayetano Point at 49°00.767'N 123°36.014'W on Valdes Island to Alcala Point at 49°00.099'N 123°35.3730'W on Galiano Island [Porlier Pass].<br><br>A portion of Subarea 17-5 westerly of a line from Coffin Point at 48°59.250'N and 123°45.474'W on Vancouver Island to Yellow Point at 49°02.395'N and 123°44.810'W on Vancouver Island [Kulleet Bay].<br><br>The waters of Gabriola Pass described as portions of Subareas 17-10 and 17-17 bounded by a line from Dibuxante Point at 49°07.625'N 123°42.913'W on Valdes Island, thence following the northerly shore of Valdes Island to Cordero Point at 49°07.700'N and 123°42.126'W on Valdes Island, thence to the most southerly tip of Breakwater Island at 49°07.546'N 123°40.897'W, thence following the westerly shore of Breakwater Island to the most northerly point on Breakwater Island at 49°08.360'N 123°40.872'W, thence due west to Gabriola Island at 49°08.355'N 123°41.4770'W, thence following the southerly shore of Gabriola Island to the point of land located at 49°07.777'N 123°43.045'W , thence in a straight line southerly to the point of commencement at Dibuxante Point [Gabriola Pass].<br><br>Subarea 17-7 [Ladysmith Harbour]<br><br>Subarea 17-14 [Nanaimo Harbour]<br><br>Subarea 17-20 [Nanoose Harbour] |
| **Area 18** | That portion of Subarea 18-2 northeasterly of a line from Collinson Point at 48°51.583'N 123°21.172'W on Galiano Island to Enterprise Reef Buoy at 48°50.694'N 123°20.882'W to Crane Point at 48°50.497'N 123°20.040'W on Mayne Island [Active Pass]<br><br>Subarea 18-7 [Maple Bay]<br><br>Subarea 18-8 [Cowichan Bay]<br><br>Subarea 18-10 [Fulford Harbour] |
| **Area 19** | Subarea 19-1 [Victoria Harbour]<br><br>Subarea 19-2 [Esquimalt Harbour]<br><br>Subarea 19-6 [Sidney Spit Marine Park]<br><br>Subareas 19-7 to 19-12 [Saanich Inlet] |
| **Area 28** | All Subareas |
| **Area 29** | 29-7 to 29-17 [Fraser River] |

### 3.7.2 Prince Rupert District

No Subarea closures identified.

### 3.7.3 Other Areas

**Table 10.4: Other subarea closures.**

| | |
|---|---|
| **Area 12** | That portion of Subarea 12-4 inside a line running from Lewis Point to Ella Point [Beaver Cove]<br><br>Subarea 12-20 [Parsons Bay]<br><br>Subarea 12-3 (portion). From a point on shore due north to a point at 50°30.33′ N 126°37.47′ W then east to a point at 50°29.65′ N 126°30.23′ W then due south to the shoreline [Robson Bight - Michael Bigg Ecological Reserve] |

## 3.8 Compliance with other Federal and Provincial Legislation and Regulations

Fish harvesters are responsible for compliance with all federal and provincial laws and regulations pertaining to fishing operations. This includes compliance with the Navigable Waters Protection Act for any structures related to fishing operations.

# 4 GEAR

This section is a general description of gear used in fishing for Special Use herring. Please refer to the license conditions for specifics on eligible gear for each license.

## 4.1 Gill Net

- Gill nets are permitted for use by ZX licence eligibility holders only.
- No person shall use more than one section of herring gill net. No person shall use a herring gill net that exceeds 135 m in length.
- No person shall have a gill net that is more than 100 meshes in depth. The gill net mesh size shall not be greater than 64 mm (2.5 inches).
- Shaker panels shall not exceed a depth of 2 m with a mesh size no less than 150 mm (6 inches).
- Gill nets must be marked on both ends with buoys of similar colour, no less than 125 cm in circumference.

## 4.2 Seine

- Seine nets are permitted for use by ZY licence eligibility holders only.

- A herring purse seine shall not be greater than 410 m (225 fathoms) in length, and mesh size not less than 25 mm (1 inch) extension measure.
- When herring are caught for holding in a herring enclosure, the bunt of the seine net must be knotless web. Web used in the construction of impoundments must also be knotless.

## 4.3 Hoop Nets and Dip Nets

- A bag-shaped net that is hung on a frame to which a line (hoop net) or a handle (dip net) is attached.

## 4.4 Herring Enclosures (ponds)

Note that a valid ZY1 or ZY2 licence is required before putting any webbing in the water for use as a herring enclosure.

### 4.4.1 Enclosure Construction

- Enclosures must be constructed so that the floating frame can support the weight of an impoundment net and enclosed herring without collapsing.
- The bottom of the herring enclosure net must be maintained so that the bottom of the net is a minimum of 3 m (9 feet) above the substrate under the enclosure at all times.

### 4.4.2 Enclosure Marking

- Every individual herring enclosure (i.e. floating frame with web) must be marked with the vessel registration number and vessel name in accordance with the licence conditions. Enclosures must also be numbered in a sequential fashion (i.e. Pond 1, Pond 2, etc.) This numbering requirement also applies to single enclosures (i.e. Pond 1).

### 4.4.3 Webbing

- Any net used in a herring enclosure must be made of knotless web.
- When impounding herring the mesh size of the enclosure shall not be greater than 25 mm.
- Herring impoundments which will not be used within 14 days of cessation of fishing activities (indicated by date of hail) must have all web pulled up or removed.

### 4.4.4 Predator Deterrence

- Impoundments that employ a predator deterrence system must meet the following conditions:
- A bird net consisting of contiguous netting with a maximum mesh size of 50 mm by 50 mm (2 inch by 2 inch). The bird net must be pulled tight across the frame of the impoundment.
- A predator net consisting of contiguous netting with a maximum mesh size of 25 mm. The predator net must surround the webbing of the impoundment completely, maintain a space of at least 30 cm (12 inches) between the predator net and the webbing, and

maintain a minimum distance of 3 m (9 feet) above the substrate under the enclosure at all times.

# 5 MONITORING PROGRAM

Timely and accurate information on harvest and harvesting practices is essential to assess the status of fish stocks and to ensure the conservation and the long-term sustainability of fish resources. Effective monitoring and accurate catch reporting in the Special Use herring fishery is integral to the effective management of the fishery and herring resource.

The ZY Special Use Herring Fishery Monitoring Program is industry-funded and has been in place since 2007. The program is comprised of a telephone hail-in system, vessel harvest logbooks, and dockside weight validation. ZX licences do not participate in the commercial fishery monitoring program, but do submit a landing report at the end of the season. Additional information on the monitoring program will be provided at the time of licence issuance. Please note that compliance with the monitoring program is a condition of licence. Proof of monitoring via a letter from the service provider will be required prior to licence issuance.

## 5.1 Service Provider

J.O. Thomas and Associates Ltd. is the industry selected service provider for the Special Use fishery. Contact information may be found in the Contacts section or at:

http://www.jothomas.com/contacts.htm

J.O. Thomas and Associates
1370 Kootenay Street
Vancouver BC
V5K 4R1

Tel: (604) 291-6340
Fax: (604) 291-6496

The vessel master shall report all required information to the designated service provider as detailed in the logbooks and conditions of licence. No notification is required for fishing under a ZX licence.

## 5.2 Letter of Agreement

Prior to ZY licence issuance, proof of monitoring is required via a Letter of Agreement from the service provider verifying their agreement with the delivery of a fishery monitoring program.

## 5.3 Hail Reports

Each vessel master shall be responsible for making an oral report (hail) to the service provider to report events and information required by the licence conditions. The vessel master may designate a person to make hails on his/her behalf, but retains accountability for hails to be performed.

Each hail will be documented with a unique Hail Confirmation Number in the appropriate location in the Special Use Herring Fishery Log Book as detailed in the licence conditions and information sheets provided with the logbooks from the service provider.

Hail Reports provide DFO Resource Management with key information required for timely in-season management and are therefore a priority requirement of the Special Use Fishery Monitoring Program.

## 5.4 Logbooks

Logbooks are available from the service provider. The vessel master is responsible for the provision and maintenance of an accurate record of daily harvest operations. Catch information must be recorded in the harvest log by midnight of the day in which the activity occurred. The logbook must be kept aboard the licensed vessel, and must be produced for examination on demand of a fishery officer or fishery guardian.

The original white page copy of the log must be received by the designated service provider by December 15, 2018.

## 5.5 Dockside Monitoring

All landed fish must be verified by a dockside observer and coordinated through the service provider.

Live herring in a quantity less than 500 pieces that are not landed but are removed from the enclosure and sold directly to the public do not require weight verification. However, on the last day of each month, DFO requires the provision of a report via email or fax to the service provider that provides the quantity of individual herring removed from the enclosure. In addition, the number of pieces removed must be recorded in the vessel logbook.

## 5.6 At-Sea Observers

In the ZY3 and ZY4 licence categories, and for ZY1 category licences with deliveries of non-ponded herring, fishing vessels will be required to have at sea observer coverage by a DFO designated observer while carrying out fishing operations. An observer must be on board prior to the vessel making a seine set. An observer may transfer to another vessel at sea, once the observer duties for the first vessel have been completed, and at the discretion of the observer.

## 5.7 Marine Mammal and Seabird Reporting

Fishers shall take precautions to avoid fishing among seabirds. Fishers are requested to retain all dead birds which are entangled and to release live and unharmed birds by placing them in the water. Please contact Laurie Wilson with the capture date and location at 1-866-431-2473 (BIRD) or by the email below. Handle birds with gloves, double bag dead birds and label each bird with date, time, and location and store them on ice. Please call your local charter patrol to organize pick-up or drop them off at a local DFO office. Alternatively, please send photographs of birds with a reference object such as a coin, and the date, time and location to laurie.wilson@canada.ca. Your names and vessel names do not need to be identified or included.

All fishing operations are required to complete an incident report for each interaction with a marine mammal. Interactions refer to cases of incidental mortality and serious injury to marine mammals. This includes accidental drowning, bycatch, entanglements, collisions, and fatalities. The vessel master shall complete the DFO reporting form "MARINE MAMMAL INTERACTION FORM." The Marine Mammal Interaction Form shall be submitted as per the instructions provided on the form. Once completed, this form must be submitted to DFO as per the conditions of licence.

The Marine Mammal Interaction Form is available from:
https://dfo-mpo.gc.ca/species-especes/documents/mammals-mammiferes/report-rapport/Fish-Harvester-Form-Eng.pdf

## 5.8 Lost Gear Reporting

Lost, abandoned or otherwise discarded fishing gear (ghost gear) can cause large-scale damage to marine ecosystems through habitat disturbance and causes direct harm to the welfare and conservation of marine animals via entanglement and/or ingestion. It is estimated that between 5% - 30% of harvestable fish stocks are impacted by ghost gear across the world, posing a major threat to human health and livelihoods as well as to global food security. In 2009, the United Nations Environment Programme (UNEP) estimated that at least 640,000 tonnes of fishing gear was lost or abandoned in the world's oceans every year, making up approximately 10% of all marine litter when measured by weight. Ghost gear has many causes, but the primary ones are snags on rocks, reefs or spires beneath the surface of the water; conflict / entanglement with other deployed fishing gear; severe weather and gear being cut loose incidentally by other marine traffic crossing over top of it.

DFO is committed to showing leadership in the management of ghost gear by developing an action plan that will focus efforts on science, prevention, mitigation, as well as recovery and management. We are also working with others to advance this initiative internationally such as in regional fisheries bodies and through the Global Ghost Gear Initiative. DFO has expanded mandatory reporting requirements for lost gear to additional commercial fisheries as well as introduce a new requirement to report any retrieved gear previously reported lost has been

introduced in commercial fisheries. This information will allow for targeted retrieval efforts and more robust analysis of the ghost gear issue in Canada.

# 6 LANDING

## 6.1 Landing and Herring Release Times

All herring caught and retained under the authority of this licence from November 26, 2019 to February 15, 2020, shall be ponded no later than 23:59 hours February 15, 2020. Release or validation of all ponded herring must be completed by 23:59 hours March 1, 2020, except for herring that are ponded in Areas 14 or 17 where release or validation of all ponded herring must be completed by 23:59 hours February 15, 2020 to minimize coincident timing with the Roe season in these areas.

All herring caught and retained under the authority of this licence from May 1, 2020 to November 6, 2020, shall be ponded no later than 23:59 hours November 6, 2020. Release or validation of all ponded herring must be completed by 23:59 hours December 1, 2020.

Ponding activity is permitted for this short period as defined above after the February 15 or the November 6 end date of the Special Use herring fishery harvesting periods. An end of season ponding completion date is required to ensure catch validation occurs within a reasonable time frame after the close of the fishery.

Operations with a maximum annual quota of 3 tons do not need to release herring on the above dates, provided the conditions of licence are met.

## 6.2 Offloading Regulations

Schedule B (Part I Section 11.1) of the B.C. Fish Inspection Regulations states: "Where fresh herring is for human consumption, its processing, except icing or chilling, must commence within 24 hours of delivery at the processing establishment and must not be discontinued until the herring is preserved to a degree that assures maximum quality of the product."

## 6.3 Designated Landing Ports

Special Use herring may be landed at ports that meet the following requirements:

- Is a Designated Landing Station as per Section 17 of the Pacific Fisheries Regulations[2];
- Has an Industry Canada Approved weigh scale (valid for duration of fishing season); and,

[2] A Landing Station is a building or barge permanently affixed to the shore, provincially licensed as a Fish Buying Station or a Fish Processing Plant.

- Is provincially licensed as a Fish Buying Station or Fish Processing Plant for Roe Herring or for Finfish other than Salmon (valid for duration of fishing season)

OR

Is a Federal Government dock registered with the Harbour Authority Association of BC.

The following landing ports may be used:

- Metro Vancouver
- French Creek
- Prince Rupert
- Quadra Island
- Campbell River

To land at another port other than those listed above, contact the Service Provider. It is possible that a surcharge will be charged to the operator for travel costs of the port monitor. Alternative landing ports must meet the criteria for a designated landing port.

# 7 LICENCING

## 7.1 Fisher Identification Number

The FIN allows for fast, easy, and reliable on-grounds identification of fish harvesters for data collection, fisheries management and enforcement purposes. Once a FIN is assigned to a fish harvester, that individual will reference the FIN when identifying him or herself in subsequent business dealings with both the department and service contractors. As the FIN is now used during normal business interactions with DFO and contractors, fish harvesters will no longer need to provide detailed personal information identifying such items as gender or date of birth.

Once the FIN is issued to a fish harvester, it will not change from year to year. More information on FIN may be obtained from your DFO fisheries manager, or the Pacific Fishery Licensing Unit (PFLU).

## 7.2 Licence Categories

The Special Use fishery is not a limited entry fishery. Therefore licence eligibilities are not carried forward from one year to the next based on an established eligibility criteria. All bait herring licences are party based, and must be designated to a registered Canadian commercial fishing vessel that is eligible for a vessel based commercial licence.

When licences were introduced to the Special Use fishery in 1995, they were developed with specific licence purposes that dictated the end use of the fish for that licence. The Special Use

fishery is organized into five licence types, to accommodate for specific needs of the products of this fishery. These licence purposes/types are described for each licence category below.

### 7.2.1 ZX – Personal Use Herring

- Licence purpose: Fish caught under the authority of this licence cannot be sold and are for the sole use of the licence holder.
- 1 ton licences issued to anyone that owns or operates a licensed commercial vessel.
- Licences issued on a first come, first served basis, until the allocation for ZX licences has been reached.

### 7.2.2 ZY1 – Sport Bait

- Licence purpose: Fish caught under the authority of this licence may only be sold as live bait to sport fishers or frozen for domestic or export sport bait.
- 3 ton licences issued to anyone that owns or operates a licensed commercial vessel.
- Three unique quotas exist for this licence type. These licences are for larger tonnages and as such are restricted to fishing between the dates of November 26, 2019 (00:01h) to February 15, 2020 (23:59h); and October 1, 2020 (00:01h) to November 6, 2020 (23:59h).
- Multiple 3 ton ZY1 licences (up to five per vessel) will only be issued between November 26, 2019 to February 15, 2020, and October 1, 2020 to November 6, 2020. Vessels with ZY1 licences may not stack licences from other herring licence categories at the same time. Licences will be issued on a first come, first serve basis, until the allocation for ZY1 licenses has been reached.

### 7.2.3 ZY2 – Commercial Bait

- Licence purpose: Fish caught under authority of this licence may be sold only as fresh or frozen bait for commercial use to commercial fishers.
- There is currently no quota assigned to this licence category.
- If quota were to be assigned, licenses would be in the form of 3 ton licences issued to anyone that owns or operates a licensed commercial vessel.
- Licences would be issued on a first come, first served basis, until the allocation for ZY2 licenses had been reached.
- Vessels with a ZY2 licence would not be permitted to stack licences from other herring licence categories at the same time.

### 7.2.4 ZY3 – Domestic Food and Bait Herring

- Licence purpose: Fish caught under authority of this licence may only be sold fresh for non-commercial or non-sport use.
- In full quota years, three 50 ton licences are available as a 150 ton unique quota. In the 2019/20 season, as indicated in section 3.2, this quota has been reduced to 75 tons, and will be issued as one 75 ton license. These licences are for larger tonnages and as such are restricted to fishing between the dates of November 26, 2019 (00:01h) to February 15, 2020 (23:59h); and October 1, 2020 (00:01h) and November 6, 2020 (23:59h).

- Up to three ZY3 licences may be stacked on a vessel. Vessels may also stack licences from the ZY4 and ZM (Food & Bait) licence categories at the same time. The vessels(s) must be a licensed commercial fishing vessel that meets the criteria for licence issuance.

### 7.2.5 ZY4 – Zoo and Aquarium Animal Food

- Fish caught under authority of this licence may only be used to feed animals resident at the zoo or aquarium of the named licence holder.
- In full quota years, one 110 ton licence is issued as a unique quota to the Vancouver Aquarium to a licensed commercial fishing vessel that meets the criteria for licence issuance. The vessel may also stack licences from the ZY3 and ZM licence categories at the same time. This year, as indicated in section 3.2, this quota has been reduced to 55 tons.
- This unique quota is for a larger tonnage and as such is restricted to fishing between the dates of November 26, 2019 (00:01h) to February 15, 2020 (23:59h) and October 1, 2020 (00:01h) to November 6, 2020 (23:59h).

## 7.3 Unique Quotas

As the Special Use fishery was developed, there arose a practice of providing unique quotas (previously referred to as "grandfathered licences") to specific parties for specific purposes within different licence categories. While DFO will no longer provide for the development of new unique quotas, based on historical participation, the existing unique quotas will continue to be made available to the past participants subject to the conditions described in this section. There are currently five unique quotas in the Special Use fishery.

**Minister's Discretion under the *Fisheries Act***
Previously called "grandfathered" or "historical" licences, these allocations are more accurately called "unique quotas". In the context of the development of the Special Use fishery, the technical definition of "grandfathering"[3] does not apply as it implies that there is an eligibility for access to these allocations and implies there is a statutory or regulatory clause that describes how allocations must be made (or that "grandfathers" certain licence holders). On the contrary, the Minister has absolute discretion regarding the issuance of fishing licences as per the *Fisheries Act* S7.

### 7.3.1 Expected Use of Fish

The unique quotas are issued to specific parties for specific purposes, as described below:

- ZY1 Sport Bait:
    - Walcan Seafood Ltd (300 tons, SOG)
    - Charlie's Live Bait (15 tons, SOG)

[3] To be "grandfathered" means that one benefits from a grandfather clause, which is a statutory or regulatory clause that exempts a class of persons or transactions because of circumstances existing before the new rule or regulation takes effect.

  - Martin Lowe (9 tons, SOG)
  - A-Tlegay Fisheries Society (100 tons, SOG) – pilot allocation

- ZY3 Human Food and Bait
  - Seven Seas Fish Co. Ltd. (150 tons, SOG)

- ZY4 Zoo and Aquarium Food
  - Vancouver Aquarium (110 tons, SOG)

## 7.4 Licence Renewal Fees

The licence fee is $30.00 per licence.

## 7.5 Licence Application and Issuance Information

Special Use herring licence application forms are available from the Special Use herring manager:

Victoria Postlethwaite
Tel: (604) 666-7851
Fax: (604) 666-3341
Email: victoria.postlethwaite@dfo-mpo.gc.ca

Or, 'Submit a Request' (Request type: Application for New Licence: Bait – Herring/Mackerel) through your NOLS account. You can download and print the application by checking your request 'Request Status'. Follow the instructions found at the link below:

http://www.dfo-mpo.gc.ca/fm-gp/sdc-cps/products-produits/request-demande-eng.htm

Eligible applicants must submit a completed Application for Special Use Herring Licence and pay the required fee of $30.00 through the NOLS. A separate application must be submitted for each special use herring licence.

The applicant must sign the application form. Where the applicant is a company, a Confirmation of Signing Authorities or an Amendment to Confirmation of Signing Authorities, is required to be submitted and kept on record by the PFLU. This must correspond with the information on the current BC Company Summary on record with the PFLU.

The applicant must designate a Canadian commercial fishing vessel, registered in the Department's Commercial Fishing Vessel Registry, that is eligible for any limited vessel based licence (i.e. salmon, schedule II, geoduck, sablefish, halibut, crab, shrimp by trawl, groundfish trawl and shrimp and prawn by trap), a valid communal commercial licence or a valid salmon category N licence.

The application must list the name of the vessel master; however, the applicant is not required to be the owner of the designated vessel. Licences may be issued to the applicant who is intending to use or receive the herring. If the herring is to be impounded, then the applicant can be the impoundment operator.

No party may hold more than one Special Use herring licence at a time (except in the ZY3 licence category). Where a special use herring licence has been landed and validated and all conditions have been met, the licence holder may apply for another special use herring licence.

No fishing may commence until the licence is received and is on board the vessel.

## 7.6 Licence Valid Period

Special Use herring (category ZX or ZY) licences are valid from the date of issue to November 6 of the next calendar year, unless otherwise specified on the licence conditions. The Special Use fishery is closed from 00:01 hours February 16, 2020 to 23:59 hours April 30, 2020 for the Roe herring season.

Licences that have been obtained prior to the February 15 closure but have remaining quota may be used after the fishery re-opens May 1.

## 7.7 Vessel Redesignation

Vessel re-designation requests are submitted via the Applicant's NOLS account by logging onto the NOLS and navigating to 'Submit a Request' Type: Vessel Transaction, Sub-Type: Attach/detach Vessel to/from Vessel.

http://www.dfo-mpo.gc.ca/fm-gp/sdc-cps/products-produits/request-demande-eng.htm

Vessel re-designation after licence issuance is permitted for the ZY3 and ZY4 licence categories only, or at the discretion of the lead resource manager. Vessel re-designation is completed by submitting another vessel designation request via the applicant's NOLS account.

All vessel designation requirements must be met by the replacing designated vessel.

**National Online Licensing System (NOLS) Client Support:**

Training materials, including step-by-step guides and a detailed user training manual, are available online (http://www.dfo-mpo.gc.ca/FM-GP/SDC-CPS/licence-permis-eng.htm) to guide users of the system in completing their licensing transactions. The Department also provides client support and assistance on how to use the system via e-mail at fishing-peche@dfo-mpo.gc.ca or by calling toll-free at 1-877-535-7307 (7:00 AM to 8:00 PM Eastern, Monday to Friday).

# 8 SPECIAL USE CALENDAR

| Month | Date | Event |
|---|---|---|
| | | **2019** |
| October | 1 | Special Use fishery re-opens at 00:01h to quota ≥ 3 tons |
| | 4 | *2019 Stock Assessment and 2020 Forecast* results presented |
| | 8/9 | IHHPC / HIAB Pre-Season Planning meeting |
| | 17 | DFO-First Nations Tier II Pre-Season Planning meeting |
| | 25 | *2019 Stock Assessment and 2020 Forecast* results available |
| November | 6 | Special Use 2018/19 fishery closes at 23:59h |
| | 15 | ZX Landing Report for 2018/19 deadline to be submitted to DFO |
| | 19 | 2019/20 Special Use applications available (through National Online Licensing System) |
| | 26 | Special Use 2019/20 fishery opens at 00:01h |
| December | 1 | Release or validation of ponded herring from 2018/19 by 23:59 hours as required by conditions of licence |
| | 15 | Original white page copy of logbook from 2018/19 to service provider (ZY only) |
| | | **2020** |
| January | | |
| February | 15 | Special Use 2019/20 fishery closes at 23:59h. All herring must be ponded or landed by this time. |
| March | 1 | Release or validation of ponded herring by 23:59 hours as required by conditions of licence |
| May | 1 | Special Use fishery re-opens at 00:01h to quota ≤ 3 tons |
| | | IHHPC / HIAB Post-Season Review meeting |

# APPENDIX 11. COMMERCIAL HERRING FISHERIES COMPLIANCE PLAN

**Conservation and Protection Program Description**
Fisheries and Oceans Canada (DFO's) Conservation and Protection (C&P) program is responsible for enforcing the *Fisheries Act* and pursuant regulations and related legislation. Enforcement activities are carried out by Fishery Officers across Canada who conduct patrols on land, at sea and in the air.

The Department promotes compliance with the law through a range of activities from education and awareness activities that encourage Canadians to protect fishery resources and habitats, patrol activities to detect violations, and major case management. These activities are further outlined in the C&P National Compliance Framework.

There are approximately 173 fishery officers stationed in the Pacific Region, which encompasses British Columbia and Yukon. They are designated as "Fishery Officers" under Section 5 of the *Fisheries Act*. The *Fisheries Act* and the *Criminal Code of Canad*a are the primary pieces of legislation outlining the powers and responsibilities of Fishery Officers. Officers are designated under other Acts as well, such as the *Coastal Fisheries Protection Act* and *Species at Risk Act*.

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

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

**Regional Compliance Program Delivery**
Enforcement of the herring fishery will be tempered by commitments to higher priority issues, such as species at risk and Canadian Shellfish Sanitation Program (CSSP) fisheries that have conservation concerns. C&P staff will pursue opportunities to monitor and enforce issues and problems related to the herring fishery in conjunction with the monitoring and enforcement activities dedicated to the identified priority fisheries in the Pacific Region.

Fishery Officers conduct a range of activities to promote compliance during herring fisheries. These activities include attending industry and herring working group meetings, defining key enforcement concerns with Fisheries Management prior to the commercial fishery, conducting patrols, at sea boardings and plant inspections during the fishery and detailed post season reporting.

Fishery Officer's authority to inspect and the duty of owners or persons in charge to assist with the inspections come from *Section 49 of the Fisheries Act (R.S.C., 1985, c. F-14)* which states:

**49 (1)** Subject to subsection (2), for the purpose of ensuring compliance with this Act and the regulations, a fishery officer or fishery guardian may enter and inspect any place, including any premises, vessel or vehicle, in which the officer or guardian believes on reasonable grounds there is any work or undertaking or any fish or other thing in respect of which this Act or the regulations apply and may

**(a)** open any container that the officer or guardian believes on reasonable grounds contains any fish or other thing in respect of which this Act or the regulations apply;

**(b)** examine any fish or other thing that the officer or guardian finds and take samples of it;

**(c)** conduct any tests or analyses and take any measurements; and

**(d)** require any person to produce for examination or copying any records, books of account or other documents that the officer or guardian believes on reasonable grounds contain information that is relevant to the administration of this Act or the regulations.

**(1.1)** In carrying out an inspection of a place under subsection (1), a fishery officer or fishery guardian may,

**(a)** use or cause to be used any data processing system at the place to examine any data contained in or available to the data processing system;

**(b)** reproduce any record or cause it to be reproduced from the data in the form of a print-out or other intelligible output and remove the print-out or other output for examination or copying; and

**(c)** use or cause to be used any copying equipment at the place to make copies of any record, book of account or other document.

**Duty to assist**

**(1.2)** The owner or person in charge of a place that is inspected by a fishery officer or fishery guardian under subsection (1) and every person found in the place shall

**(a)** give the officer or guardian all reasonable assistance to enable the officer or guardian to carry out the inspection and exercise any power conferred by this section; and

**(b)** provide the officer or guardian with any information relevant to the administration of this Act or the regulations that the officer or guardian may reasonably require.

Dockside validation is a key component of the management of the herring fishery. C&P supports dockside validation by checking in with validators, attending offloads and monitoring offloading practices.

Air surveillance resources may be utilized to patrol boundaries and conduct gear and vessel counts. Charter aircraft as well as DFO aircraft may be utilized for these activities.

**Consultation**
C&P strives to meet with First Nations groups to build relationships. C&P seeks to conduct joint patrols with First Nations fisheries representatives and strives to complete enforcement protocols to better define our working relationship.

C&P attends industry meetings with Fisheries Management. These meetings occur in several geographic areas and are important to exchange information and share concerns.

**Compliance Performance**

***Roe Herring***
Officers attend openings and conduct regulatory monitoring activities throughout the fishery. Compliance monitoring activities will be conducted during offloads and after the fishery is closed. Fishery Officers work closely with Resource Managers and partners where possible.

Fishery Officers conducted patrols of the fishery, inspected plants and monitored validations.

During the Strait of Georgia fishery, Fishery Officers were deployed to patrol fishing activity. There was a decline in patrol effort due to higher priority enforcement issues.

In the Prince Rupert area, C&P conducted patrols by program vessel. Patrol effort was divided between on water patrols of Big Bay and Kitkatla and the offloads occurring at plants within Prince Rupert and Port Edward.

In the Central Coast, C&P worked closely with Resource Management and assisted with stock assessment activities. There was no commercial roe fishery on the Central Coast.

***Spawn on Kelp***
There is continued concern with non-compliance of fishery monitoring components, including hail requirements, as hails do not always reflect up to date activities on the grounds.
In the Central Coast, the service provider worked closely with Resource Management and the Heiltsuk First Nation in the monitoring of the spawn on kelp fishery.

***Food and Bait and Special Use***
Response and investigations regarding occurrence reports was provided as required.

**Current Compliance Issues**
Key priorities are to ensure fisheries are promulgated in an orderly manner and in compliance with legislation and license conditions.

# APPENDIX 12. FISHING VESSEL SAFETY

## OVERVIEW – FISHING VESSEL SAFETY

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

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

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

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

- Education and training programs
- Marine emergency duties training
- Fish Safe – Stability Education Program & 1 Day Stability Workshop
- Fish Safe – SVOP (Subsidized rate for BC commercial fishers provided)
- Fish Safe – Safest Catch Program – FREE for BC commercial fishers
- First Aid training
- Radio Operators Course (Subsidized rate for BC commercial fishers provided)
- Fishing Masters Certificate training
- Small Vessel Operators Certificate training
- Publications:

- Transport Canada Publication TP 10038 *Small Fishing Vessel Safety Manual* (can be obtained at Transport Canada Offices from their website at: http://www.tc.gc.ca/eng/marinesafety/tp-tp10038-menu-548.htm
- Amendments to the *Small Fishing Vessel Inspection Regulations* (can be obtained from: http://www.gazette.gc.ca/rp-pr/p2/2016/2016-07-13/html/sor-dors163-eng.php)
- Transportation Safety Board's investigation into fishing safety in Canada: https://ccga-gcac.ca/files/library/Safety_Issues_Investigation_into_Fishing_Safety_in_Canada.pdf
- Gearing Up for Safety – WorkSafeBC
- Safe At Sea DVD Series – Fish Safe
- Stability Handbook – Safe at Sea and Safest Catch – DVD Series
- Safest Catch Log Book
- Safety Quick

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

**IMPORTANT PRIORITIES FOR VESSEL SAFETY**

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

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

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

The *Fishing Vessel Safety Regulations* currently require, with certain exceptions, a full stability assessment for vessels between 15 and 150 gross tons that do not exceed 24.4 metres in length for fishing vessels involved in the catch of Herring or Capelin. In 2017, Transport Canada Marine Safety (TC) issued Ship Safety Bulletin (SSB) No. 03/2017 announcing the coming into force of the *New Fishing Vessel Safety Regulations*. The initial regulations were published in the Canada Gazette Part II on July 13, 2016 and came into force on July 13, 2017. The bulletin includes important information on changes to requirements for Written Safety Procedures, Safety Equipment and Vessel Stability.

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

- A new fishing vessel that has a hull length of more than 9 m – where the vessel construction was started or that a contract was signed for the construction after July 13, 2018;
- A fishing vessel more than 9 m and that has undergone a major modification or a change in activity that is likely to adversely affect its stability;
- A fishing vessel that is fitted with an anti-roll tank at any time;
- A fishing vessel more than 15 gross tonnage and used for catching herring or capelin during the period beginning on July 6, 1977 and ending on July 13, 2017.

A fishing vessel that is not required to undergo a stability assessment shall have adequate stability to safely carry out the vessel's intended operations. Guidelines have been developed and are available online to help small fishing vessel owners and operators meet their regulatory requirements. Additionally, Transport Canada published a Stability Questionnaire (SSB No. 04/2006) and Fishing Vessel Modifications Form (SSB No. 01/2008) which enable operators to identify the criteria which will trigger a stability assessment. Please contact the nearest Transport Canada office if you need to determine whether your vessel requires one or to receive guidance on obtaining competent assessor.

In 2008, TC is updating SSB No. 01/2008, which sets out a voluntary record of modifications for the benefit of owners/masters of any fishing vessels. For vessels of more than 15 gross tons, the record of modifications was to be reviewed by TC inspectors during regular inspections and entered on the vessel's inspection record. However, information gathered during the Transportation Safety Board's (TSB) Safety Issues Investigation into the fishing industry showed minimal recording of vessel modifications prior to this date.

The TSB has investigated several fishing vessel accidents since 2005 and found a variety of factors that effected the vessel's stability were identified as contributing factors in vessels capsizing, such as with: M05W0110 - *Morning Sunrise*, M07M0088 - *Big Sisters*, M08W0189 - *Love and Anarchy*, M09L0074 – *Le Marsouin I*, M10M0014 - *Craig and Justin*, M12W0054 – *Jessie G*, M12W0062 - *Pacific Siren*, M14P0121 – *Five Star*, M15P0286 – *Caledonian*, M16A0140 – *C19496NB*, M17C0061 – *Emma Joan*, M17P0052 – *Miss Cory* and *M18P0073* – *Western Commander*.

Vessel masters are advised to carefully consider stability when transporting gear. Care must be given to the stowage and securing of all traps, cargo, skiffs, equipment, fuel containers and supplies and also to correct ballasting. Know the limitations of your vessel; if you are unsure contact a reputable marine surveyor, naval architect or the local Transport Canada Marine Safety office.

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

Fish Safe has developed a code of best practices for the food and bait/roe herring fisheries and the prawn fishery: These Best Practices are available on Fish Safe's website for convenient download here: https://www.fishsafebc.com/best-practices. Alternatively, please contact Ryan Ford at Fish Safe for a copy of the program materials they developed to address safety and vessel stability in these fisheries. Ryan Ford – Cell phone: (604) 739-0540 - Email: ryan@fishsafebc.com.

**Emergency Drill Requirements**

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

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

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

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

Between 2011 and 2015 the TSB investigated 17 fishing vessel accidents which resulted in 17 fatalities. The reports findings highlighted the lack of safety drills and safety procedures and practices.

The Safest Catch program, delivered by Fish Safe and free to BC commercial fishers, includes comprehensive practice of drills such as abandon ship, man overboard and firefighting drills.

**Cold Water Immersion**

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

Under the recently amended (June 2019) OHS Regulation, section 24.96.1, a crewmember must wear a PFD or lifejacket when on board a fishing vessel that has no deck or deck structure or when on the deck of a fishing vessel that has a deck or deck structure.

Section 8.26, which requires workers to wear a PFD or lifejacket when working "under conditions which involve a risk of drowning", would continue to apply to fishing crewmembers and other workers (e.g. when they are working on shore, docks and other vessels).

Current WorkSafeBC regulations essentially require fishers to always wear a PFD when working on deck. The specific requirements can be found on WorkSafeBC's PFD Primer provided on Fish Safe's website here: https://www.fishsafebc.com/cold-water-survival. The use of a PFD will prepare a crew member to remain afloat, to survive the effects of cold shock, reduce the need to swim and give rescuers time to respond.

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

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

**Weather**

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

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

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

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

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

**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:

- every ship twenty metres or more in length,
- every ship engaged in towing or pushing any vessel or object, other than fishing gear,

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

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

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

**WORKSAFE BC**

WorkSafeBC exercises jurisdiction over workplace health and safety, including the activities of crews of fishing vessels. Commercial fishing, diving and other marine operations are subject to the provisions of the *Workers Compensation Act (WCA,)* and requirements in Part 24 of the Occupational Health and Safety Regulation (OHSR).

Examples of Part 24 regulatory requirements related to fishing include, but are not limited to, the requirement to establish emergency procedures, to conduct emergency drills, to provide immersion suits for the crew, to provide stability documentation for the vessel, safe work procedures, injury reporting, correction of unsafe working conditions, the requirement to wear personal flotation devices (PFDs), etc.

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

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

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

NOTE: Regarding the OHSR requirement to wear PFD's, WorkSafeBC has produced a video entitled "Turning the Tide – PFD's in the Fishing Industry". For more information on PFD use, including a link to the video, please access the following site: https://www.worksafebc.com/en/about-us/news-events/news-releases/2018/November/new-fishing-industry-safety-video?origin=s&returnurl=https%3A%2F%2Fwww.worksafebc.com%2Fen%2Fsearch%23q%3DTurning%2520the%2520Tide%26sort%3Drelevancy%26f%3Alanguage-facet%3D%5BEnglish%5D

For further information, contact an Occupational Safety Officer:

| | | |
|---|---|---|
| Bruce Logan | Vancouver/Richmond/Delta | (604) 244-6477 |
| Mark Lunny | Courtenay | (250) 334-8732 |
| Cody King | Courtenay | (250) 334-8733 |
| Gregory Matthews | Courtenay | (250) 334-8734 |
| Jessie Kunce | Victoria | (250) 881-3461 |
| Paul Matthews | Courtenay | (250) 334-8741 |
| Wayne Tracy | Port Moody | (604) 232-1939 |

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

For information on projects and initiatives related to commercial fishing health and safety please contact Tom Pawlowski, Manager, Industry and Labour Services, at (604) 233-4062 or by email: tom.pawlowski@worksafebc.com

**FISH SAFE BC**

Fish Safe encourages Vessel masters and crew to take ownership of fishing vessel safety. Through this industry driven and funded program, Fish Safe provides fishing relevant tools and programs to assist fishers in this goal. The Fish Safe Stability Education Program and 1 Day Stability Workshop are available to all fishers who want to improve their understanding of stability and find practical application to their vessel's operation. The SVOP (Small Vessel Operator Proficiency) Course is designed to equip crew with the skills they need to safely

navigate during their wheel watch. The Safest Catch Program, along with fisher-trained Safety Advisors, is designed to give fishers the tools they need to create a vessel specific safety management system.

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

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

Fish Safe also works closely with WorkSafeBC to improve the fishing injury claims process.

For further information contact:

| | |
|---|---|
| Ryan Ford | |
| Program Manager | Cell: (604) 739-0540 |
| Fish Safe | Office: (604) 261-9700 |
| #100, 12051 Horseshoe Way | Email: ryan@fishsafebc.com |
| Richmond, BC V7A 4V4 | www.fishsafebc.com |

**TRANSPORTATION SAFETY BOARD**

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

In 2014 the TSB released three investigation reports:

- the collision between trawl fishing vessel *Viking Storm* and US long line fishing vessel *Maverick* and the subsequent fatality,
- the person over board off the prawn fishing vessel *Diane Louise* and the subsequent fatality, and
- the capsizing of the crab fishing vessel *Five Star* and subsequent fatality.

In 2016 the TSB released one investigation report:

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

In 2018 the TSB released two investigation reports:

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

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

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

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

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

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

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

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

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

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

For further information contact:

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

# APPENDIX 13. RISK ASSESSMENTS

A risk assessment tool has been used to assess monitoring levels required for the Food and Bait, Roe (seine and gillnet) and Spawn-on-Kelp commercial fisheries. The risk assessments were drafted by the Department and reviewed with commercial harvesters in 2018, followed by a public comment period for the draft risk assessments as part of the draft IFMP consultation period, from December 7, 2018 to January 9, 2019. A summary of the final risk assessments for these fisheries are highlighted here. The full, final risk assessments are available on request from Victoria Postlethwaite (Victoria.postlethwaite@dfo-mpo.gc.ca).

Risk assessments for Indigenous FSC herring fisheries will be undertaken in the future.

The national Fishery Monitoring Policy has recently been finalized and is now available at: http://www.dfo-mpo.gc.ca/reports-rapports/regs/sff-cpd/fishery-monitoring-surveillance-des-peches-eng.htm. This policy aims to bring consistency in the development, delivery and evaluation of monitoring programs for all federally-managed wild capture fisheries in Canada, and will supersede the existing Pacific Region Strategic Framework.

## FOOD AND BAIT HERRING (SEINE)

### Fishery Overview

The commercial Food and Bait fishery is fished by seine gear only and has the potential to occur coastwide; however, has only occurred in two of the five major stock assessment areas in recent years. The Food and Bait fishery takes place from early November to mid-February and operates on party-based, equal share criteria where licenses are available for application by each of the parties who hold a valid roe herring seine licence. The 2015/16 and 2016/17 fisheries had a total allowable catch of approximately 8000 short tons, and 6000 short tons for the 2017/18 season. The Food and Bait fishery represents approximately 15-20% of the total allowable catch for Pacific Herring.

### Ecosystem Risks

Due to variability in stock status across and within stock assessment areas, the stock status of Pacific Herring is considered to be of moderate concern with a moderate likelihood  herring fisheries are driving the status of the stocks. However, the Food and Bait fishery is considered to have a low impact on the life history and behavior of the species. In terms of bycatch, the Food and Bait fishery is targets Pacific Herring only, and observed bycatch of other species is so minimal that it is generally not observed by the dockside monitors (100% dockside monitoring); therefore, this fishery has a low risk to retained bycatch. Interception of marine mammals does occur in the Food and Bait fishery, especially sea lions including SARA-listed Stellar Sea lions, however mortalities occur. There is a very low likelihood of impacting that species of special concern, and therefore a low risk to "released" by-catch. Finally, the fishery has a low impact on

herring as a key prey species. Even though herring are a forage fish species for many marine mammals, sea birds and other fish, the fishery is managed using a conservative approach and therefore was identified as having a low impact on ecosystem processes. There are very few direct or indirect habitat impacts in this fishery.

From this assessment, the preliminary fishery risk (comprised of risk to main species, bycatch, and community and habitat) was identified as moderate. Further analysis of additional resource management issues not incorporated into the preliminary risk calculations indicate there is a moderate to high potential to over-harvest in this fishery, which may pose a risk to the stocks. To account for this additional issue, the overall risk that the fishery poses to the stocks was changed to high.

**Monitoring Level**
An overall risk score of high requires an "enhanced" monitoring level. The Risk Assessment for the Food and Bait fishery also identifies that the fishery currently has enhanced monitoring, which includes a 100% dockside monitoring program, weight validation of fish landings and provision of validated data to DFO Science, requirements to hail-in, hail at-sea, and hail-out of the fishery, maintenance of paper logbooks, and submission of fish slips. The Food and Bait fishery also has 100% at-sea observer coverage, where the primary objective is to monitor compliance (e.g. with release after pumping restrictions), estimate the quantity of releases, review logbook entries, and notify DFO of any occurrences.

**Next Steps**
As the fishery currently meets the enhanced target monitoring level prescribed by the risk assessment, no changes to the monitoring program are expected in this risk assessment cycle (approximately five years, provided there are no significant changes to the fishery before the regular reassessment). Information gaps that may be used for future assessment of the risks of this fishery include the uncertain impact of the fishery on smaller spatial stock areas, and an unknown amount of herring mortality from releases— especially those after pumping has commenced—that are not included in catch estimates (however on-grounds estimates are low). There has also been recent discussion about herring stock structure; the current body of work that includes tagging, DNA assessments, and spawn surveys, support the current stock structure employed in the management of Pacific Herring.

**ROE HERRING (SEINE)**

Fishery Overview
The commercial Roe seine fishery may occur in any of the five major stock assessment areas: Haida Gwaii, Prince Rupert District, Central Coast, West Coast Vancouver Island, and Strait of Georgia. The Roe seine fishery takes place between late February to early April and licenses are party-based and limited to 252 licenses. The 2018 fishery had a quota of 10,543 tons and a total catch of 3429 tons; the 2017 fishery had a quota of 14,228 tons and a total catch of 10,819 tons. The Roe seine quota is approximately 30% of the total allowable catch for Pacific Herring.

**Ecosystem Risks**

Due to variability in stock status across and within stock assessment areas, the stock status of Pacific herring is considered to be of moderate concern, with a moderate likelihood herring fisheries are driving the status of the stocks. However, the Roe seine fishery is considered to have a low impact on the life history and behavior of the species. In terms of bycatch, the Roe seine fishery is highly targeted and observed bycatch of other species is so minimal that it is generally not observed by the dockside monitors (100% dockside monitoring); therefore, this fishery has a low risk to retained bycatch. Interception of marine mammals does occur in the Food and Bait fishery, especially sea lions including SARA-listed Stellar Sea lions, however mortalities occur. There is a very low likelihood of impacting that species of special concern, and therefore a low risk to "released" by-catch. Finally, the fishery has a low impact on herring as a key prey species. Even though herring are a forage fish species for many marine mammals, sea birds and other fish, the fishery is managed using a conservative approach and therefore was identified as having a low impact on ecosystem processes. There are very few direct or indirect habitat impacts in this fishery.

From this assessment, the preliminary fishery risk (comprised of risk to main species, bycatch, and community and habitat) was identified as moderate. Further analysis of additional resource management issues not incorporated into the preliminary risk calculations indicate there is a moderate to high potential to over-harvest in this fishery, which may pose a risk to the stocks. It should be noted, however, that all herring fisheries quotas are allocated from a single TAC and the risk to overharvesting that total TAC is low. Additionally, because the Roe herring seine fishery operates under a pool structure, compliance is difficult to enforce effectively, and there are negative public perceptions of this fishery. To account for these potential additional issues, the overall risk that the fishery poses to the stocks was changed to high.

**Monitoring Level**

An overall risk score of high requires an "enhanced" monitoring level. The Risk Assessment for the Roe seine fishery also identifies that the fishery currently has enhanced monitoring, which includes: a 100% dockside monitoring program, validation of quota landings and provision of validated data to DFO Science, hail requirements, and intensive on-grounds management and oversight by DFO staff. Further, in the 2018 Roe seine fishing season, a mobile at-sea observer program was piloted to assist with on-grounds management.

**Next Steps**

As the fishery currently meets the enhanced target monitoring level prescribed by the risk assessment, no changes to the monitoring program are expected in this risk assessment cycle (approximately five years, provided there are no significant changes to the fishery before the regular reassessment). Information gaps and potential issues that may be used for future assessment of the risks of this fishery include the lack of inclusion of herring release mortality during the fishery in catch estimates (although on-grounds estimates are low), the extensive financial and staffing burden of on-grounds management and lack of an adequate management platform in some areas, and a lack of logbooks. There has also been recent discussions about

herring stock structure; the current body of work that includes tagging, DNA assessments, and spawn surveys, support the current stock structure employed in the management of Pacific Herring.

## ROE HERRING (GILLNET)

### Fishery Overview

The commercial Roe gillnet fishery may occur in any of the five major stock assessment areas: Haida Gwaii, Prince Rupert District, Central Coast, West Coast Vancouver Island, and Strait of Georgia. The Roe gillnet fishery takes place between late February to early April and licenses are party-based and limited to 1267 licenses. The 2018 fishery had a quota of 12,705 tons and a total catch of 11,536 tons; the 2017 fishery had a quota of 16,672 tons and a total catch of 11,707 tons. The Roe gillnet quota is approximately 35% of the total allowable catch for Pacific Herring.

### Ecosystem Risks

Due to variability in stock status across and within stock assessment areas, the stock status of Pacific herring is considered to be of moderate concern, with a moderate likelihood that the set of herring fisheries are driving the status of the stocks. However, the Roe gillnet fishery is considered to have a low impact on the life history and behavior of the species. In terms of bycatch, the Roe gillnet fishery is highly targeted and observed bycatch of other species is so minimal that it is generally not observed by the dockside monitors (100% dockside monitoring); therefore, this fishery has a low risk to retained bycatch. Interception of marine mammals does occur in the Roe gillnet fishery, especially with sea lions, which can include SARA-listed Stellar Sea lions, but is rare. There is a very low likelihood of impacting that species of special concern, and therefore a low risk to "released" by-catch. Finally, the fishery has a low impact on herring as a key prey species. Even though herring are a forage fish species for many marine mammals, sea birds and other fish, the fishery is managed using a conservative approach and therefore was identified as having a low impact on ecosystem processes. There are very few direct or indirect habitat impacts in this fishery.

From this assessment, the preliminary fishery risk (comprised of risk to main species, bycatch, and community and habitat) was identified as moderate. Further analysis of additional resource management issues not incorporated into the preliminary risk calculations indicate there is a moderate to high potential to over-harvest in this fishery, which may pose a risk to the stocks. It should be noted, however, that all herring fisheries quotas are allocated from a single TAC and the risk to overharvesting that total TAC is low. Additionally, because the Roe herring gillnet fishery operates under a pool structure, compliance is difficult to enforce effectively, and there are negative public perceptions of this fishery. To account for these potential additional issues, the overall risk that the fishery poses to the stocks was changed to high.

### Monitoring Level

An overall risk score of high requires an "enhanced" monitoring level. The Risk Assessment for the Roe gillnet fishery also identifies that the fishery currently has enhanced monitoring, which

includes: a 100% dockside monitoring program, validation of quota landings and provision of validated data to DFO Science, and hail requirements. Additionally, DFO on-grounds management is used as necessary on the active fishing grounds.

**Next Steps**
As the fishery currently meets the enhanced target monitoring level prescribed by the risk assessment, no changes to the monitoring program are expected in this risk assessment cycle (approximately five years, provided there are no significant changes to the fishery before the regular reassessment). Information gaps that may be used for future assessment of the risks of this fishery include the uncertain impact of the fishery on smaller spatial areas, and an unknown amount of herring mortality from fish dropping out of the gillnet. There has also been recent discussion about herring stock structure; the current body of work that includes tagging, DNA assessments, and spawn surveys, support the current stock structure employed in the management of Pacific Herring.

**SPAWN-ON-KELP (OPEN AND CLOSED POND)**

**Fishery Overview**
The SOK fishery provides the opportunity to harvest herring eggs which have adhered to blades of kelp after herring have spawned. The open pond fishery allows fish to spawn and swim freely, whereas the closed pond fishery uses seine gear to catch herring and retain them in enclosures (or "ponds") for a specific amount of time to allow them to spawn on the hanging kelp, and are then released. The commercial Spawn-on-Kelp (SOK) fishery traditionally occurs in four of the five major stock assessment areas: Haida Gwaii, Prince Rupert District, Central Coast, and the West Coast of Vancouver Island. It does not occur in the Strait of Georgia because of the lack of suitable kelp. The fishery also has activity in the minor stock assessment areas: Area 2W, 27 and outside areas 10, and 12. The SOK fishery takes place from early February to late June.

There are 46 current SOK license eligibilities, and 12 of these are communal commercial, held by Indigenous groups. Licenses are currently non-transferable. The average catch in the total SOK fishery from 2014-2017 was 401,134 lbs., with an average of 21 operating licenses per year. The SOK fishery accounts for approximately 6% of the total allowable catch for Pacific Herring.

**Ecosystem Risks**
Due to variability in stock status across and within stock assessment areas, the stock status of Pacific Herring is considered to be of moderate concern, with a moderate likelihood that the set of herring fisheries are driving the status of the stocks. However, the SOK fishery is considered to have a low impact on the life history and behavior of the species. In terms of bycatch, the SOK fishery is highly targeted and observed bycatch of other species is negligible. There have been recorded instances of humpback whales, sea lions (which can include SARA-listed Stellar Sea lions), and seabirds becoming entangled in enclosure (pond) webbing, in the closed pond fishery. There is, however, a very low likelihood of the fishery driving the status of these

animals due to the limited frequency of encounters. Open ponding does not demonstrate these impacts. Finally, the open pond fishery has very few direct or indirect habitat impacts. The closed pond fishery has a moderate impact to benthic habitat in the event of gear contact and/or biofouling of substrate from mortalities and fish waste, as well as a moderate impact to surrounding habitat due to the potential for disease transmission from ponded to non-ponded fish.

From this assessment, the fishery risk (comprised of risk to main species, bycatch, and community and habitat) for open pond SOK fisheries was identified as low, and for closed pond SOK fisheries was identified as moderate.

**Monitoring Level**

An overall risk score of low requires a low level of monitoring level, whereas a moderate risk score requires a "generic" monitoring level. The Risk Assessment for the open and closed pond SOK fisheries identifies that these fisheries currently meet (and exceed, for open pond) their target monitoring level, which is considered generic. Monitoring of these fisheries includes a 100% dockside monitoring program, requirements to hail-in, hail at-sea, and hail-out of the fishery, maintenance of paper logbooks, and submission of fish slips.

**Next Steps**

As the fishery currently meets or exceeds the target monitoring level prescribed by the risk assessment, no changes to the monitoring program are expected in this risk assessment cycle (approximately five years, provided there are no significant changes to the fishery before the regular reassessment). Information gaps that may be used for future assessment of the risks of these fisheries include the unknown mortality from the ponding technique (e.g. the effect of towing herring to enclosure), the potential for disease spread to non-ponded herring and other species, and the unknown impact of kelp harvest. There has also been ongoing concerns regarding herring stock structure; the current body of work that includes tagging, DNA assessments, and spawn surveys, support the current stock structure employed in the management of Pacific Herring.