Baynes Sound / Lambert Channel
Ecosystem Forum | November 2019

# Summary Report

## Appendix D: DFO Presentation Re: Herring

# Baynes Sound / Lambert Channel Ecosystem Forum

Deep Bay Marine Field Station, Bowser | November 15, 2019

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Canada

# Objectives

1. Overview DFO Herring Programs and staff
2. Discuss Pacific Herring Management Strategy Evaluation; application to Strait of Georgia
3. Respond to questions on herring science or management

# Fisheries and Ocean Canada: Who We Are

## Fisheries Management

**Regional Headquarters – Vancouver**
**Regional Director, Fisheries Management Branch: Andrew Thomson**
Director, Res. Management, Program Delivery: Neil Davis
A/Regional Pelagics Coordinator: Brenda Spence
Regional Herring Officer /Special Use Fishery Manager: Victoria Postlethwaite

**South Coast Area – Nanaimo**
**A/Area Director: Linda Higgins**
A/Fisheries Management Coordinator (WCVI/Herring): Peter Hall
Fisheries Resource Manager - Food and Bait/Roe Herring: Jim Meldrum
Fisheries Resource Manager - Gillnet: Terry Palfrey
Fisheries Resource Manager - Seine: Jim Meldrum

## Science Branch

Website: http://www.dfo-mpo.gc.ca/science/index-eng.htm
**Director: Dr. Carmel Lowe**
Section Head, Quantitative Assessment Methods: Chris Rooper
Head, Pacific Herring Assessment Program: Jaclyn Cleary

# Pacific Herring

Herring: common features with other commercial fisheries:

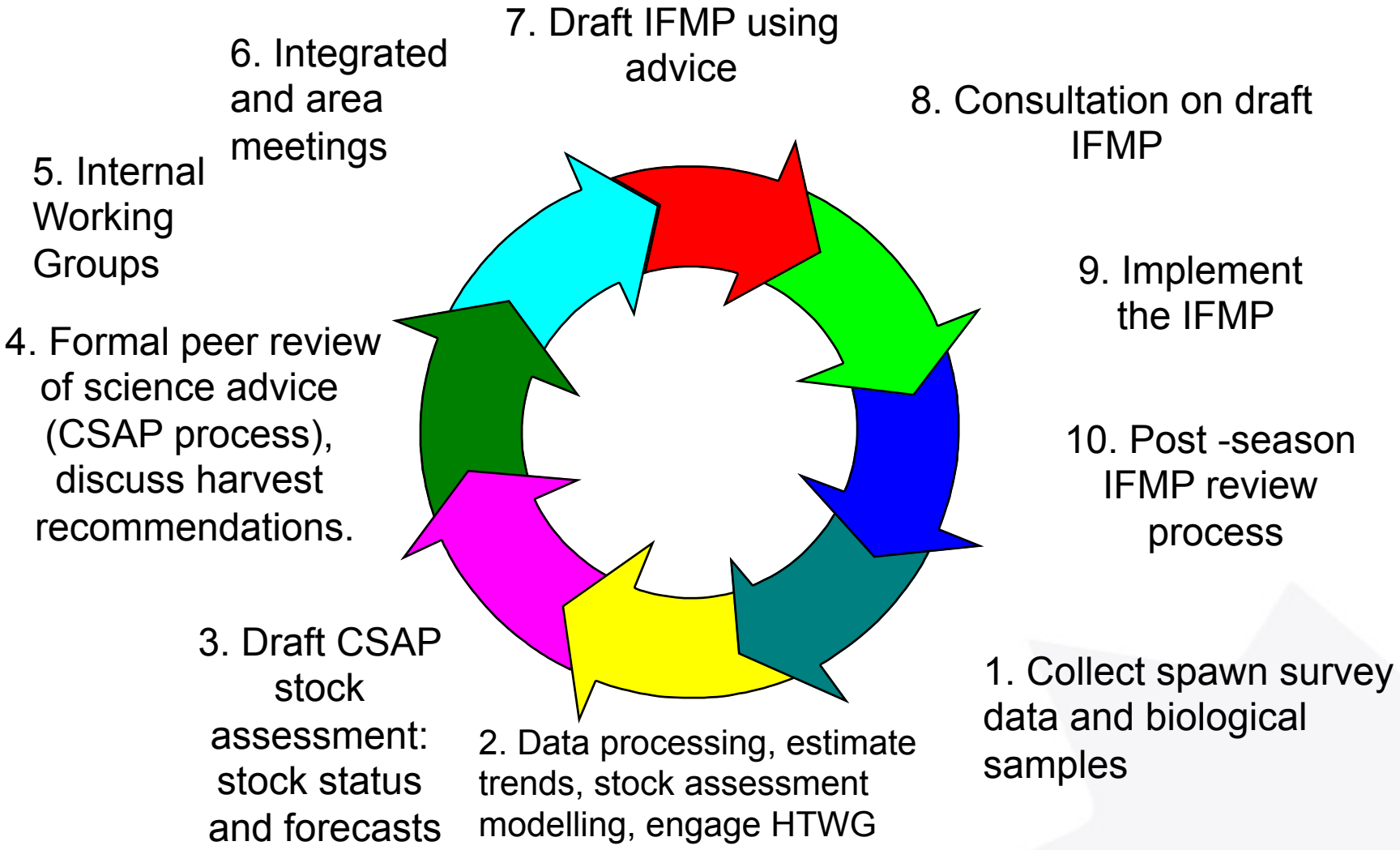
1. Integrated Fisheries Management Plans
2. Regulatory Framework
3. Management model

Fishery Specific:

- Timing/Fishery characteristics
- Gear
- Management – licensing and tools
- Issues and priorities

# ANNUAL CYCLE OF FISHING PLAN DEVELOPMENT

**Common process to most Pacific Region Fisheries- timing varies by fishery**



# Major & Minor Herring Stock Assessment Areas

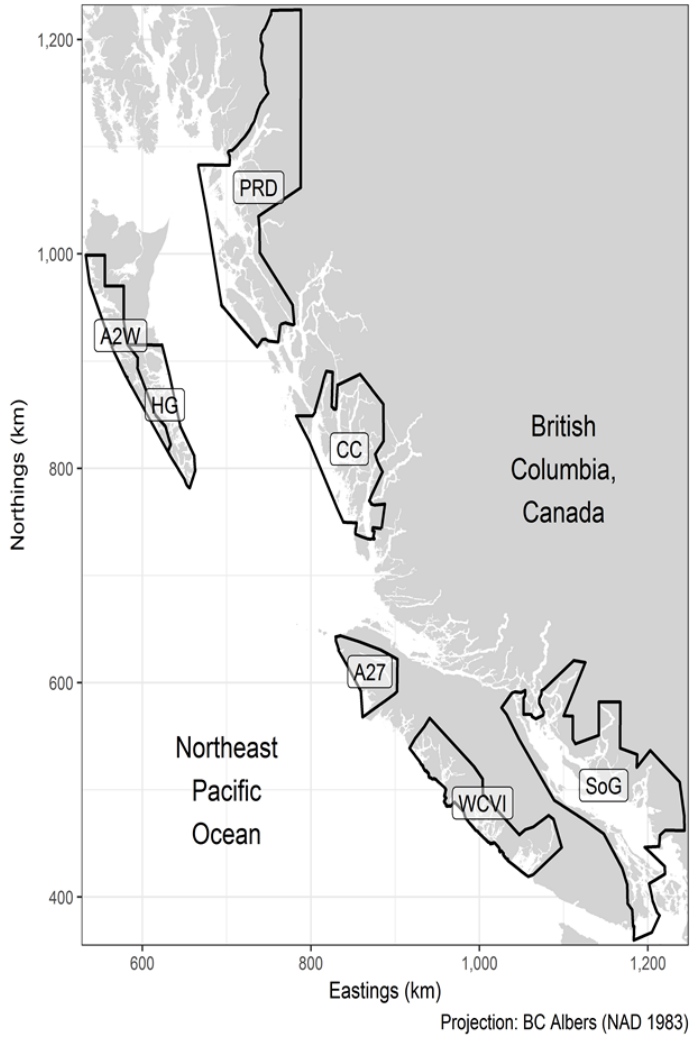
**Major:**

- Haida Gwaii (HG)
- Prince Rupert (PRD)
- Central Coast (CC)
- West Coast Vancouver Island (WCVI)
- Strait of Georgia (SOG)

**Minor:**

Area 2 West (A2W)

Area 27 (a27)

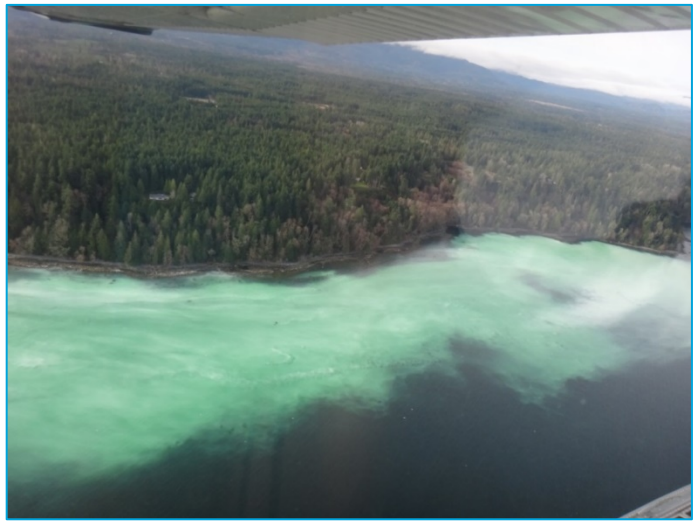


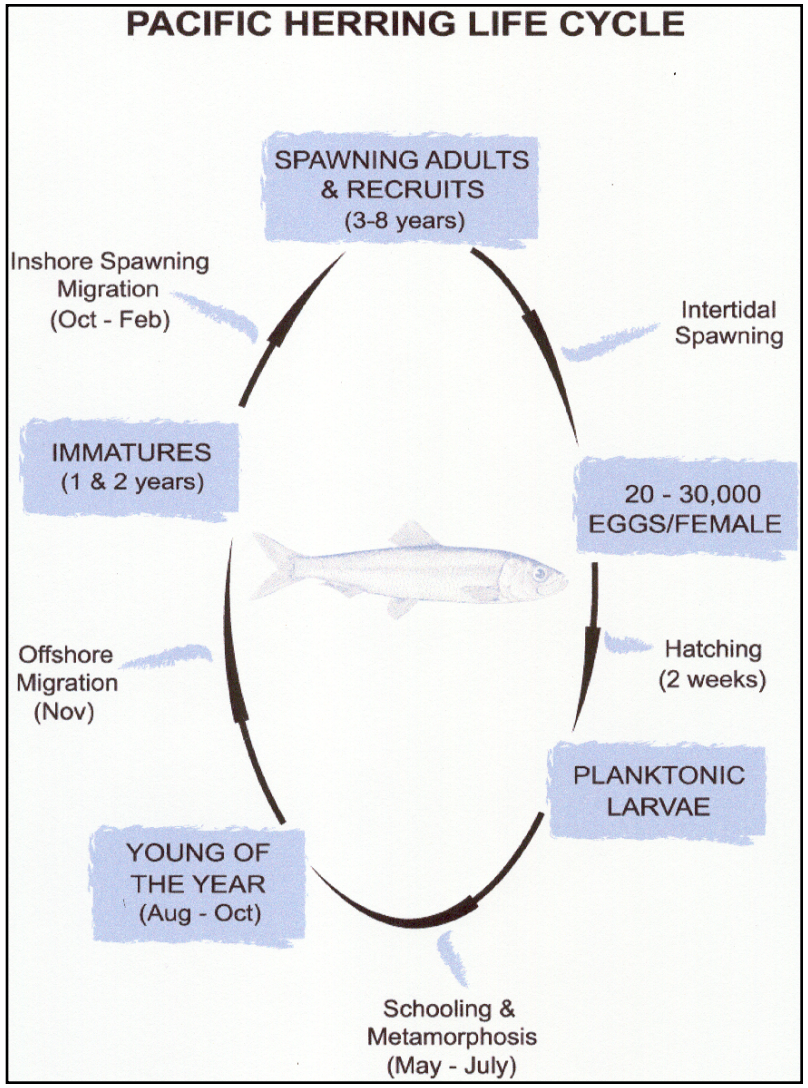

**Fisheries:**

- First Nations Food, Social and Ceremonial

- Commercial:
- Roe Herring, seine and gillnet
- Food and Bait, seine
- Spawn on Kelp
- Special Use, seine

# HERRING BIOLOGY

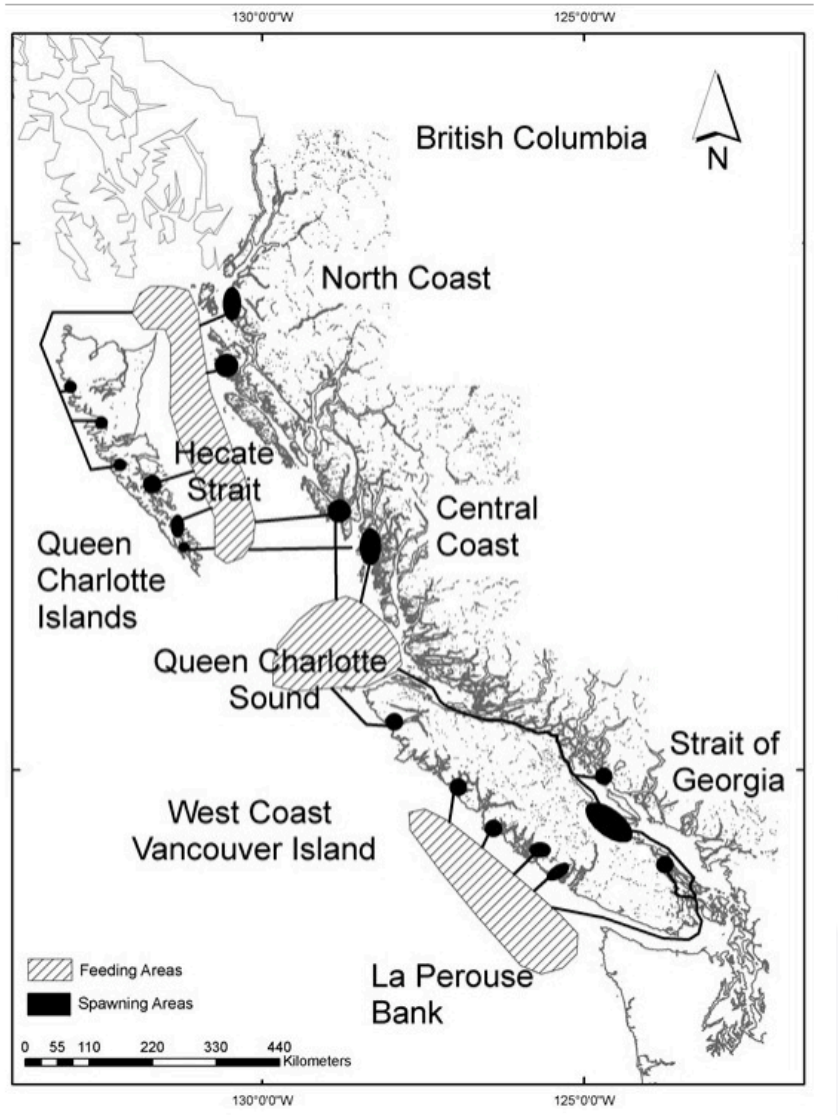





# Herring Migratory Patterns

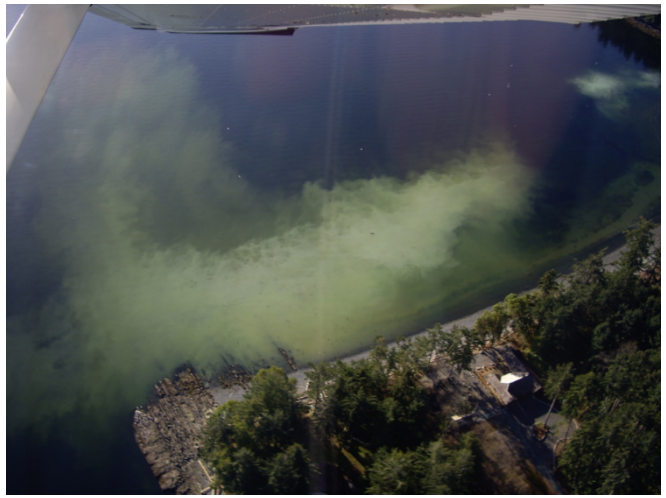
- General migratory pattern is for mature herring to move out of SOG after spawning (April/ May) and move to the west coast feeding areas

- Juvenile herring are thought to remain within the Strait of Georgia until at least 2 yrs old

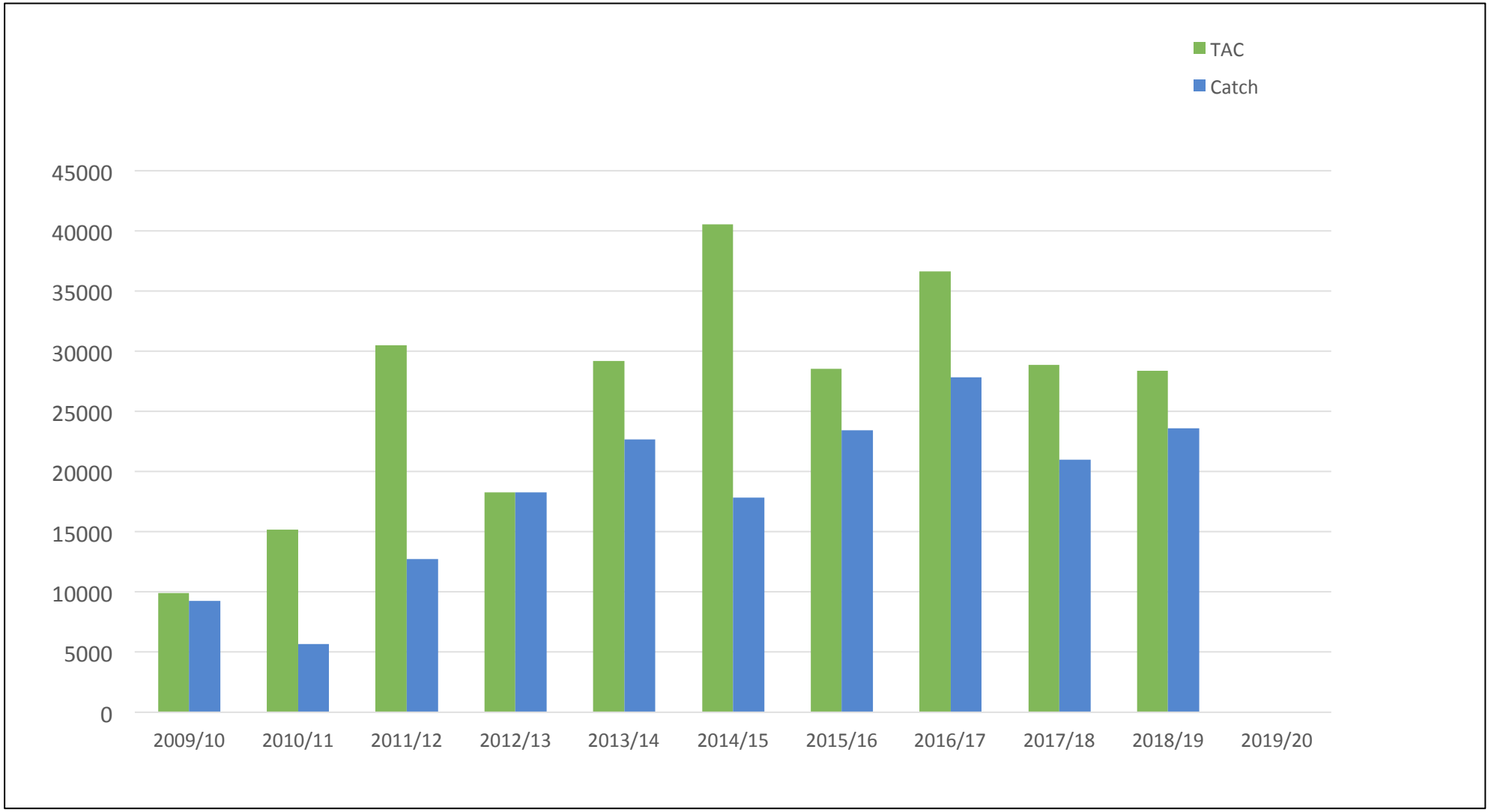


# Herring Stock Assessment

- OVERFLIGHTS to identify area of spawn
- SPAWN SURVEYS scuba
- SOUNDING seine vessels
- BIOLOGICAL SAMPLES, from seine test fishing and dockside



# Strait of Georgia: TAC and catch



# Pacific Herring Renewal

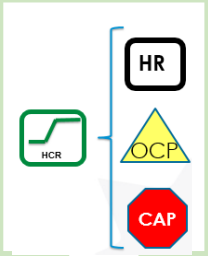
- Initiated in 2015 to address a range of challenges facing the management of Pacific Herring
  - Key focus: modernizing science and harvest control rules and improving alignment with the Precautionary Approach (PA).
    - Reference points, stock status zones (Limit Reference Point, Upper Stock Reference);
    - Harvest strategy and decision rules (e.g. harvest rate)
    - Tools for considering uncertainty and risk
  - We are using a MSE approach to identify management procedures compliant with the PA

# Pacific Herring Management Strategy Evaluation Results: 2018 and 2019

**OBJECTIVES TESTED**

**Conservation**: Keep stock above 30% unfished biomass at least 75% of the time

**Biomass**: Keep stock above 60% unfished biomass at least 50% of the time **Catch**: Maximize catch, and vary catch less than 25% each year



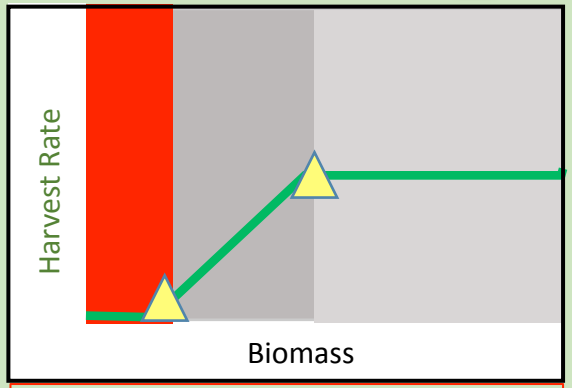

- Harvest rate: 5%, 10% or 20%
- Control Points: Lower 0.3 or 0.5
  Upper 0.6
- Catch Cap

**Management Procedures Tested**

- Fixed cutoff with 20% Harvest
- OCP 0.5 with 20% harvest
- OCP 0.5 with 10% harvest
- OCP 0.3 and 0.6 with 20% harvest
- OCP 0.3 and 0.6 with 10% harvest
- OCP 0.3 and 0.6 with 10% harvest and catch cap
- OCP 0.3 and 0.6 with 5% harvest
- No fishing
- Food, Social, Ceremonial fishing (150 tons)
- OCP 0.3 and 0.6 with 3 years slow up
- OCP 0.5 and 0.6 with 20% harvest and catch cap

Biomass point where the harvest rate is adjusted

Applied over 15 years



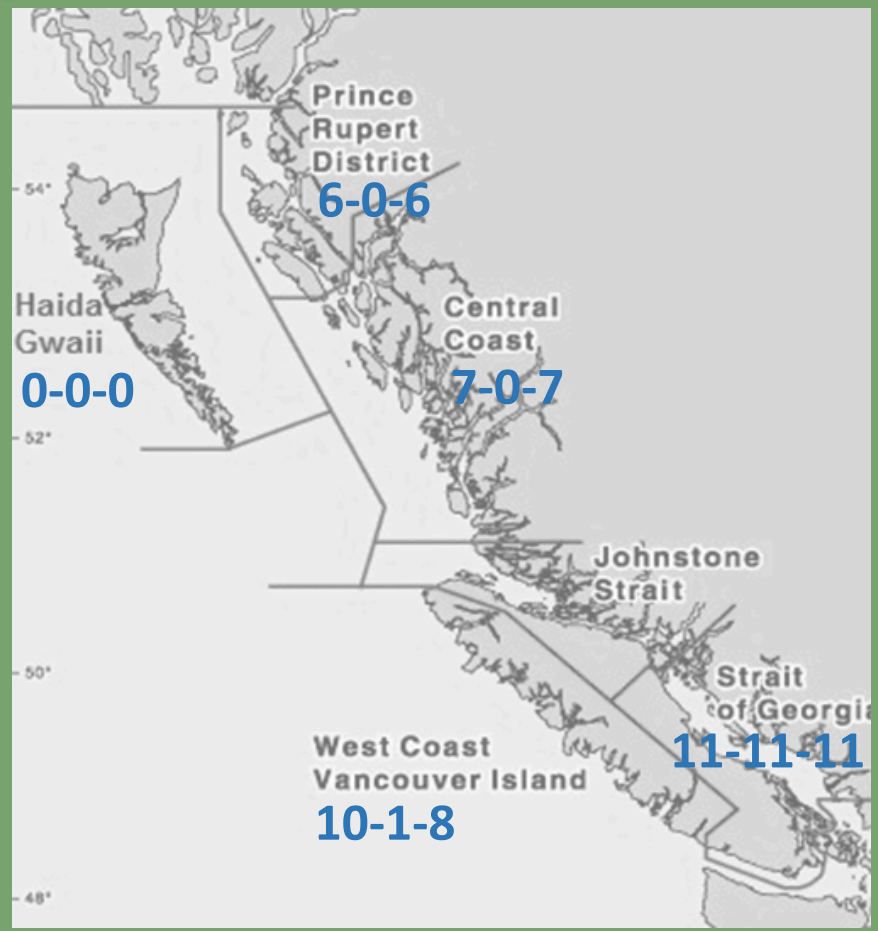

Critical zone
30% average unfished biomass

**Mortality Assumptions**

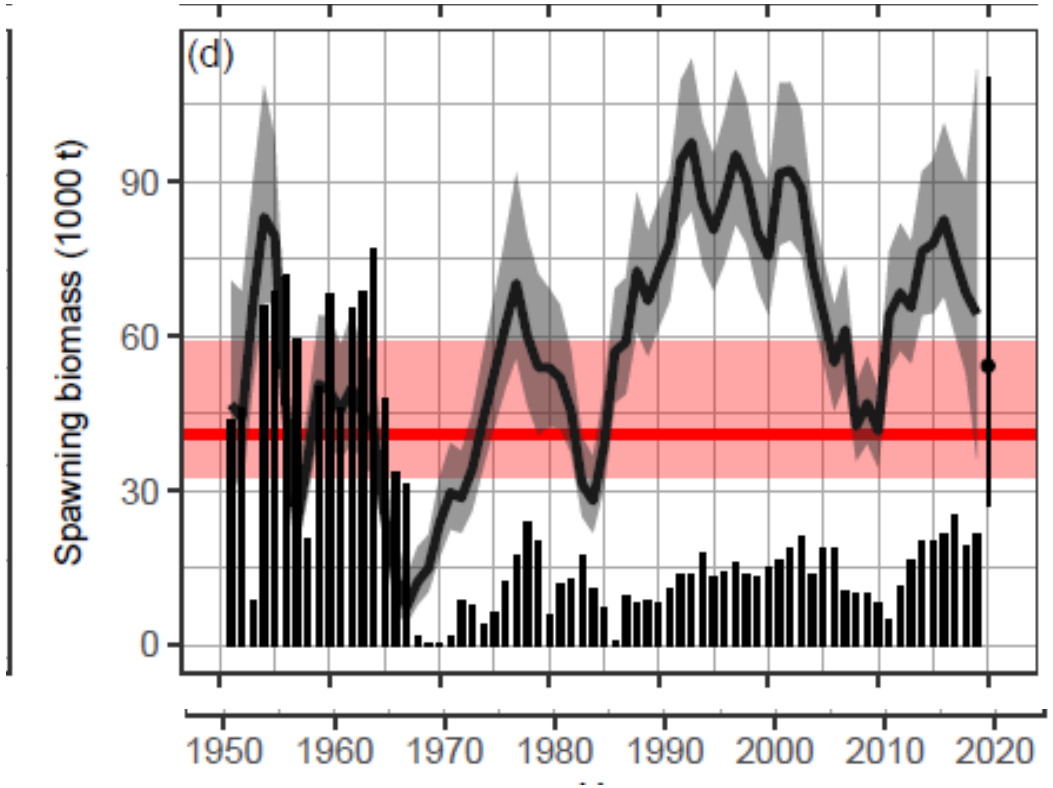
Over 15 years it could be:

1. Long-term average (DDM)
2. 10 year average (DIM)
3. Fixed (ConM)

The number of Management Procedures (MP) that meet the **conservation objective** under each of the three mortality assumptions



# Strait of Georgia Stock



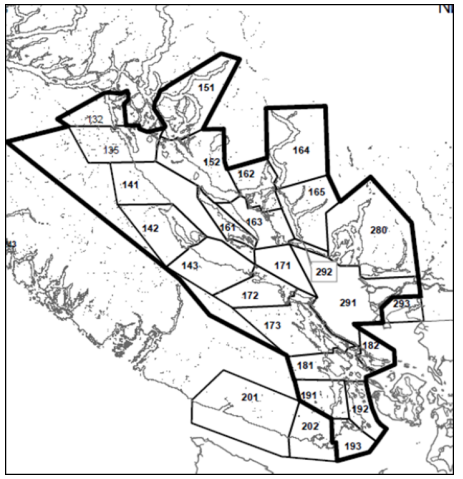

**2019 status**:

- Decline from 2017-2019
- $SB_{2019}$= 64,300 mt (36,200 -111,800 mt)
- $SB_{2019}/SB_0$= 0.46

**2020 projections**:

- 2020 lower than 2019
- Projected $SB_{2020}$= 54,200 mt (27,200-110,000 mt)
- Projected $SB_{2020}/SB_0$= 0.39

# Strait of Georgia Stock Profile




**2018 MSE Simulation Results**

- All MPs, including the fixed cutoff MP, met the conservation objective

**2019 MSE Simulation Results**

- Catch caps from 30,000 tonnes to 5,000 tonnes had no discernable gain in conservation performance
- MP with catch cap of 20,000 tonnes rarely exceeds the 20% target harvest rate

**Fisheries:**

- FSC "expected use" is 35 tons
- Commercial gillnet, seine roe and food and bait/special use.
- catches average 20,000 tonnes in past decade
- Area catch caps/closures in place in some areas due to spawn concentration

**2019 status:**

Decline from 2017-2019

$SB_{2019}$= **64.3 kt** (36.2 -111.8 t)

$SB_{2019}/SB0$= 0.46

**2020 projections:**

2020 lower than 2019

Projected $SB_{2020}$= **54.2 kt** (27.2-110.0 kt)

Projected $SB_{2020}/SB0$= 0.39

**2019/2020 catch outcomes generated by suite of harvest approaches:**

- Several MP have zero catch options
- HS30-60_HR0.1_cap30.0 1,600 mt
- minE21.2_HR0.1 5,420 mt
- HS30-60_HR0.2_cap30.0 3,220 mt
- minE21.2_HR0.2 10,850 mt

**What we have heard:**

- Some First Nations do not support commercial fisheries in some areas due to stock concerns and FSC impacts, area and long term closures requested. Some First Nations support and participate in commercial fisheries.
- Commercial harvesters heavily rely on this area as other areas have been closed to roe fishing in recent years; harvesters need stable supply for markets and multiple areas open to maintain economic viability
- Public opposition to commercial fisheries due to conservation/ecosystem concerns

# A fully specified set of objectives has not yet been developed

Core objectives are a starting point for:

- Operationalizing the LRP as a conservation objective
- Exploring a biomass target and catch-related objectives

DFO will continue to collaborate with coastal First Nations to develop area- and fishery-specific objectives

DFO will continue to engage with the herring industry and other herring stakeholders to describe broader objectives such as economics and access

# Additional items/Discussions

- Norovirus Action Working Group – Developed in 2018 to address shellfish aquaculture closures and risks to human health
- Meetings with Conservancy Hornby Island and stakeholders