

A photograph of a man in a dark jacket and yellow boots on a boat, handling a large flatfish (likely a sole or flounder) suspended by a chain. The background shows the blue ocean and a yellow sky. The image is split vertically, with the left side showing the man and fish, and the right side showing a plain yellow background.

# **IPHC Five-Year Research Plan**

**IPHC Staff**

# Mandate and Core Research Themes

- Mandate: The Convention and the associated 1979 Protocol broadly define the role of the Commission research:

*“The Commission shall make such investigations as are necessary into the life history of the halibut...for the purpose of developing the stocks of halibut of the Northern Pacific Ocean and Bering Sea to levels which will permit the optimum yield from that fishery, and of maintaining the stocks at those levels...”*

- The core objective of Commission research is to support this mandate. This is accomplished under four main research themes.
- The research themes are further expanded into eight topic area foci, each with primary objectives, specific projects, and identified tasks



# Research Development

- The Five-year Research Plan will be updated biennially and guide the development of annual research proposals
- An Annual Research Plan (ARP) will be initially developed by staff to align research with the Five-year Plan
- Candidate research proposals will be reviewed with the Research Advisory Board and then the Scientific Review Board
- Proposals endorsed by the review process will be presented to the Commission for its consideration, modification where required, prioritized, and approved
- An annual review of research progress will be prepared for the Commission



# Research Themes

1. Stock identification, monitoring, assessment, forecasting, and incorporation of uncertainty in both data and processes into management advice;
2. Development and evaluation of appropriate management strategies, including target harvest rate, harvest control rules, reference points, performance metrics, and harvest management tools, that respond to objectives set by the Commission in consultation with resource users;
3. Advancement of the understanding of the biology of the species, including growth, spawning, movement/migration, maturity, natural mortality; and
4. Advancement of the understanding of ecological context for halibut, including feeding, predation, competition, fishing effort distribution, environmental effects on recruitment and distribution, and ecosystem effects on the halibut population and its dynamics.



# Primary Objectives

1. *Stock identification, monitoring, assessment and forecasting of biomass, and incorporation of uncertainty in data and process*

## **Stock structure and identification**

- Understand and define the stock structure for Pacific halibut to establish whether there are distinct units within the Commission's management range that need to be accommodated in assessment and management.
- Develop understanding of the influence of age, size, and sex on halibut movements, as they relates to stock components



# Primary Objectives

## 1. *Stock identification, monitoring, assessment* (cont'd)

### **Stock monitoring**

- Collect statistically reliable data from fishery removals to estimate fishing effort, gear characteristics, amount of catch, and location of capture
- Annually conduct a fishery-independent, coastwide setline assessment survey, collecting size, age, maturity, and relative abundance data by location in a standardized fashion
- Monitor the pre-recruit portion of the stock, collaborating with other agencies as appropriate or necessary. Collect size, age, maturity, and relative abundance data by location and gear sector in a statistically representative manner



# Primary Objectives

## 1. *Stock identification, monitoring, assessment* (cont'd)

### **Stock monitoring (cont'd)**

- Develop collaborative programs for participation in research efforts by other agencies to gather critical data on the halibut stock, particularly bycatch mortality and recreational harvest data.
- Ensure continued provision of adequate data on age and size composition of fishery landings, survey samples, and research programs.
- Ensure maintenance, access, and archiving of fishery and research data necessary for Commission programs



# Primary Objectives

## 1. *Stock identification, monitoring, assessment* (cont'd)

### **Stock assessment**

- Conduct annual assessment including current and forecast abundance levels and trends, as well as estimates of uncertainty in them, based on a comprehensive suite of fishery-dependent and -independent variables
- Determine and reduce the level of uncertainty associated with stock assessments through improved data collection and advanced analytical techniques
- Undertake regular scientific peer review of assessment via Scientific Advisory Board or other fora to ensure that IPHC's information and advice are developed through an open and collaborative process.
- Communicate IPHC's scientific information and advice, along with the associated uncertainties, to appropriate Canadian and U.S. management authorities, and to the public.



# Primary Objectives

- 2. Development of management strategies including target harvest rate, harvest control rules, stock status reference points, stock and fishery performance metrics, and harvest management tools*

## **Harvest policy and abundance forecasting**

- Perform annual evaluations of IPHC's harvest policy with regard to the current stock dynamics and management goals
- Develop stock projection procedures which incorporate a realistic range of alternative hypotheses about stock behaviour, environmental influences, and fishing effects on stock abundance and halibut characteristics
- Provide harvest management advice to the Commission and user groups in a form which allows the consideration of uncertainty in the assessment and forecasting processes
- Initiate a Management Strategy Evaluation in conjunction with user groups and experts to evaluate optimum management measures to address conservation and economic goals



# Primary Objectives

3. *Advance the understanding of the biology of the species, including growth, spawning, migration, maturity, and natural mortality*

## **Biology, physiology, and ecosystem interactions**

- Collect and monitor primary biological characteristics of all sizes of halibut throughout the species range.
- Incorporate studies monitoring the size at age of halibut within ongoing data programs wherever possible.
- Collaborate with other institutions and agencies to obtain biological and ecosystem information on halibut not otherwise available through IPHC programs and incorporate into understanding and prediction of halibut population dynamics.



# Primary Objectives

## 3. (cont'd)

### **Ontogenetic and seasonal movements of halibut**

- Develop estimate movement rates among regulatory areas by age, size, sex, and time to the extent allowed by data.
- Derive finely resolved estimates of the impact of “upstream” removals (both targeted and non-targeted) on downstream short- and long-term yield and biomass distribution.
- Evaluate the impact of exploitation patterns on the distribution of spawning stock biomass relative to the historical “unfished” condition, with attention to both in-season (fishable) biomass distribution and the abundance, characteristics, and origin of spawners on winter grounds.
- Continue evaluation of the impact of fishing seasons on inter-area fishery interceptions, interference with reproduction, or shifts in stock demographic structure.
- Evaluate impacts of temporal variation in fish movements on potential for alteration of area-specific stock composition and the associated harvest policy implications.



# Primary Objectives

4. *Advance the understanding of the ecological context for halibut, including predation and competition, as well as fishing and environmental effects on recruitment and distribution*

## **Environmental Influences**

- Understand the relationship between environmental influences and halibut distribution and behaviour.
- Annually monitor relevant environmental variables from IPHC research platforms.
- Share the IPHC data set of environmental information with other institutions.
- Collaborate with other researchers on assessing the influence of environmental and ecosystem variables on halibut and other fishery resources; include user groups when appropriate/possible.



# Primary Objectives

- Each of the Primary Objectives are developed with an achievement plan using specific projects and identified tasks
- The Commission's Annual Research Plan is derived from and addresses the elements of the Five-Year Research Plan



