INTERNATIONAL PACIFIC HALIBUT COMMISSION 100 years

# IPHC 5-year program of Integrated Research and Monitoring (2022-26): updates

Agenda item: 3.7

IPHC-2024-AM100-06

(D. Wilson, J. Planas, I. Stewart,
A. Hicks, B. Hutniczak, & R. Webster)

# Purpose

To provide the Commission with an annual opportunity to comment and amend the IPHC's 5-year Program of Integrated Research and Monitoring (2022-26) (the Plan).

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**INTERNATIONAL PACIFIC HALIBUT COMMISSION**

**5-YEAR PROGRAM OF INTEGRATED RESEARCH AND MONITORING**

**(2022 - 2026)**

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David T. Wilson, Ph.D.

**BIBLIOGRAPHIC ENTRY**

IPHC 2023. International Pacific Halibut Commission 5-Year program of integrated research and monitoring (2022-26). Seattle, WA, U.S.A. *IPHC–2023-5YPIRM, 58 pp.*

# Background

The overarching goal of the IPHC 5-year Program of Integrated Research and Monitoring (2022-26) is to promote integration and synergies among the various research and monitoring activities of the IPHC Secretariat in order to improve knowledge of key inputs into the Pacific halibut stock assessment, and Management Strategy Evaluation (MSE) processes, thereby providing the best possible advice for management decision making processes.

The Plan has been through two (2) years of implementation, review, and updating.

# Background

The Commission should note that:

a) the intention is to ensure that the new integrated plan is kept as a 'living plan', and is reviewed and updated annually based on the resources available to undertake the work of the Commission (e.g. internal and external fiscal resources, collaborations, internal expertise);

b) the plan focuses on core responsibilities of the Commission; and any redirection provided by the Commission;

c) each year the SRB may choose to recommend modifications to the current Plan, and that any modifications subsequently made would be documented both in the Plan itself, and through reporting back to the SRB and then the Commission.

# 2023 updates

1) List of ongoing and planned research projects (Appendix V of the Plan)
2) Minor updates throughout
3) Age composition data and Artificial Intelligence

# The use of AI for ageing

- The IPHC Secretariat is looking at options for supplementing current Pacific halibut ageing protocol with automatized ageing that does not require extensive otolith-reader training.

  - Investigation of the potential use of **artificial intelligence (AI)** for determining the age of Pacific halibut from images of collected otoliths.

# Database

- IPHC to date aged over 1.5 million otoliths – aged otoliths are stored in our archives
- Already aged otoliths provide a resource that can be used in creating a database of pictures with expert-provided labels for ageing use
- Taking pictures can be incorporated into the ageing process at relatively minor time added

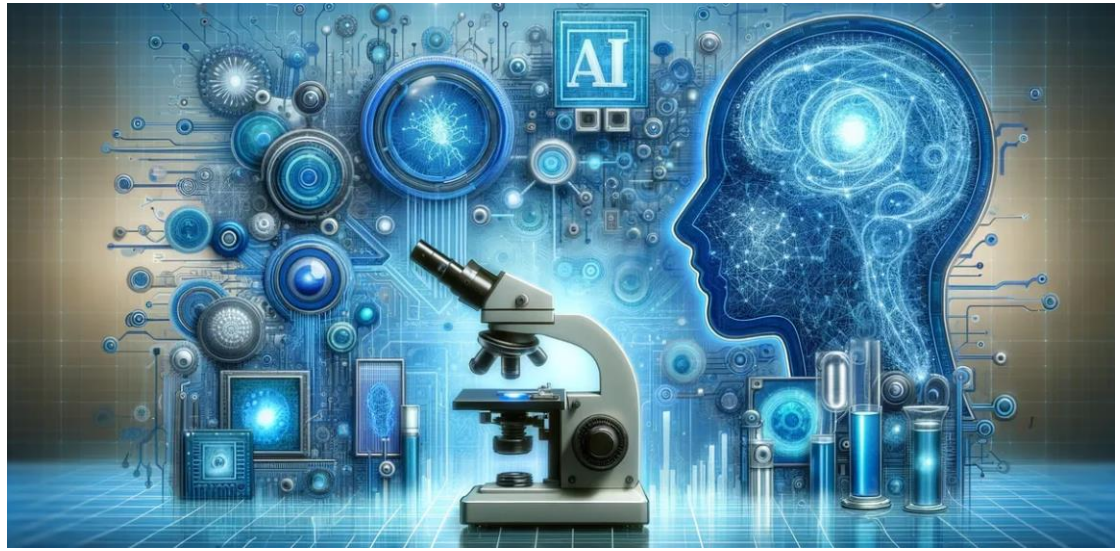
8.5MP USB 3.0 High-performance Color CMOS C-Mount Microscope Camera

# Modeling approach

- Application of a convolutional neural network (CNN) model (deep learning application) with initial modeling framework adapted from Deep Otolith project (http://otoliths.ath.hcmr.gr/) applied to Greenland halibut, red mullet and salmon (scales)
- The trial is intended to determine whether the approach offers accuracy of ageing suitable for IPHC stock assessment
- AI is evolving rapidly and adapting to new developments may improve results over time
- Utilizing automated ageing will continuously rely on trained readers for training the model with inputs that capture temporal changes – this may be particularly important in the context of changing environmental conditions/climate change

# Recommendation

That the Commission **NOTE** paper IPHC-2024-AM100-06 which provides the latest iteration of the IPHC 5-year program of Integrated Research and Monitoring (2022-26).

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