Terms of Reference

Assessment of the northern contingent of Atlantic Mackerel (*Scomber scombrus*)

Regional Peer Review - Quebec Region

February 25-26, 2021
Virtual meeting

Chairperson: Martin Castonguay

Context

Atlantic Mackerel (*Scomber scombrus*) are a highly migratory transboundary species with two distinct spawning contingents in the Northwest Atlantic. The southern contingent has historically spawned in the Mid-Atlantic Bight from April to May whereas the northern contingent spawns primarily in the Southern Gulf of St. Lawrence in June and July. Both contingents overwinter in deeper warmer waters off the continental shelf. The U.S. fishery takes place during the winter along the New England coast and lands both contingents, whereas landings in Canadian waters are thought to consist entirely of mackerel from the northern contingent. Canada evaluates the northern contingent every two years and as of the last assessment in 2019, this stock was still in the Critical Zone according to the Precautionary Approach.

Mackerel are harvested commercially across the Atlantic Provinces and Quebec. It is an open competitive fishery that occurs primarily inshore where a variety of gear types are used (gillnets, mechanical jiggers, seines, weirs, and traps) and which vary by region and time of year. Mackerel are also harvested through a food fishery, bait fishery as well as a popular recreational fishery. While each fishery has its own regional harvest control rules, mackerel are managed on a national level. Representatives from the industry, Indigenous Groups, and other stakeholders participate in “Rebuilding Plan Working Group” organised by Fisheries Management. In 2019 and 2020, the commercial Total Allowable Catch (TAC) was 8000 t and the minimum legal size was 26.8 cm.

In contrast to Canada, the U.S.A. assesses both spawning contingents. Their last full stock assessment occurred in 2017 and DFO scientists were in attendance to contribute to the peer review process. Their stock assessment indicated that the stock was overfished and overfishing was occurring.

The spawning stock biomass, fishing mortality, and recruitment of age-1 northern contingent of mackerel are estimated using a censored statistical catch-at-age model. Data used in the model include recorded landings, an annual egg index, catch and mass-at-age, the proportion of mature females in the population, and an estimate of natural mortality. The uncertainty in unaccounted for landings as well as landings by the fishery in the U.S.A. are accounted for explicitly in the model by imposing both upper and lower bounds on the estimated annual catch.

The last assessment of mackerel in Canada took place in March of 2019. The Fisheries Resource Management Branch has requested scientific advice on Atlantic Mackerel for the 2021 and 2022 fishing seasons.

Objectives

Provide scientific advice on the status of the northern contingent of Atlantic Mackerel for the 2021 and 2022 fishing seasons. This advice will include:

- A summary of mackerel genomics describing the population structure across the Atlantic and within the Northwest Atlantic.
- A synthesis of the data in support of our understanding of mackerel population dynamics.
- A summary of how mackerel recruitment varies with respect to the environment.
- An update on the status of Atlantic mackerel, including:

  - A summary of the commercial fishery statistics up to the 2020 fishing season (Canada and U.S.A.).
  - A summary of the biological data used as input into the stock assessment model.
  - A summary of the egg survey index data up to 2020.
  - A presentation on the results of the stock assessment model (estimates of fishing mortality, spawning stock biomass, catch-at-age, abundance at age, age-1 recruitment, and spawning stock biomass projections for the years 2021-2023 under different TAC scenarios.
  - An update of stock status with respect to the Precautionary Approach's reference points.
- Specific elements related to the update of the relevant data to the management of Atlantic Mackerel such as:
  - The determination of the process to provide advice during the interim years, including a description of conditions that may warrant a full stock assessment earlier than originally planned.
  - Identification and prioritization of research projects to be considered for the future.

Expected Publications

- Science Advisory Report
- Proceedings
- Research Document

Participation

- Fisheries and Oceans Canada (DFO) Science and Fisheries Management
- Fishing industry
- Provincial government representatives
- Aboriginal Communities / Organizations
- Academia
- Environmental NGOs