

UPDATE ON THE MANAGEMENT STRATEGY EVALUATION PROCESS FOR PACIFIC HALIBUT

The International Pacific Halibut Commission's (IPHC) Management Strategy Advisory Board (MSAB) continues to focus its efforts to evaluate the coastwide fishing intensity in support of developing a long-term harvest strategy policy. In 2018, the MSAB refined its goals and objectives, reviewed alternative harvest control rules, and discussed a process and timeline to examine stock distribution on a regional scale, and reviewed and discussed model simulation results for the long-term (i.e., slightly more than 100 years) and medium-term (i.e., 14-23 years). A summary of the MSAB's activities, initial model simulation results, and recommendations is described below, and detailed descriptions are available on the IPHC website.

Goals and Objectives

The MSAB identified four goals: 1) biological sustainability, 2) optimize directed fishery opportunities, 3) minimize discard mortality, and 4) minimize bycatch mortality. General objectives are defined for each of these goals, except bycatch mortality, which is not being specifically addressed at this time, with more specific measurable objectives (i.e., desirable outcomes) defined for each general objective.

The MSAB identified three primary objectives, in priority order, for the evaluation:

1. Maintain female spawning biomass at or above a minimum of 20 percent at least 90 percent of the time.
2. Limit annual changes in the coastwide Total Constant Exploitation Yield (TCEY) or total mortality to a maximum of 15 percent—in either direction—at least 75 percent of the time.
3. Maximize the average TCEY coastwide—as this objective is measured annually, the median coastwide TCEY is included in the simulation results as a statistic of interest.

Harvest Control Rule

In general, the intent of the harvest rule is to manage harvest in response to stock status to ensure the primary objective of biomass sustainability is achieved. The MSAB is evaluating harvest rules that use a Spawning Potential Ratio (SPR) to determine fishing intensity, a fishery trigger based on stock status that determines when the fishing intensity begins to be reduced, and a fishery limit based on stock status to determine when the fishery would be closed. In general, this approach is similar to the way the Pacific Fishery Management Council manages groundfish.

Using rockfish as an example, the Council uses a fishing rate of F50%, applies the 40-10 adjustment when the stock is below 40 percent of unfished biomass, and manages the stock under a rebuilding plan when the unfished biomass is below the overfished threshold of 25 percent.

Simulation Results and Recommendations

The MSAB initially requested model runs with SPR values ranging from 30% to 56%. Due to the variability in weight-at-age and recruitment regimes, the simulations with no fishing (i.e., SPR of 100%) produced trajectories of female spawning biomass that increased and ranged from 200 million lbs. to 1,500 million lbs. The simulation results indicated that all SPRs greater than 30% met the biological sustainability objective; however, for SPR values less than 40%, the variability in total mortality increased rapidly for minimal gains in median total mortality. Therefore, the MSAB recommended a minimum coastwide SPR of 40% and a maximum coastwide SPR of 46%, with a target SPR of 42-43%.

For the harvest control rule, the MSAB reviewed a fishing trigger to reduce the fishing intensity when stock status is below a specified level (25%, 30%, and 40%), and a fishing limit to cease directed fishing when the stock status is below a specified level (20% and 10%). For comparison, these were examined in the following combinations: 40:20, 30:20, and 25:10. Again, after reviewing the simulation results, the MSAB recommended a harvest control rule of 30:20, which showed little risk of falling below the 20% dynamic biomass threshold.

With the 30:20 harvest control rule in combination with SPR values of 40% to 46%, the biological sustainability objective (# 1) was met under all options that constrained the annual change in total mortality; however, none of the management procedures met the fishery stability objective (# 2) at least 75 percent of the time. Of all the management procedures evaluated, an SPR of 40% with a 30:20 control rule and a constraint to not change the annual mortality limit by more than 15% in either direction met all objectives and was ranked the highest based on the primary objectives.

IPHC agreed with the MSAB's recommendations, and directed the MSAB to evaluate and present recommendations for potential adoption and subsequent implementation as a harvest strategy no later than the 97th Annual Meeting in 2021. The MSAB will review goals, evaluate additional management procedures, discuss spatial model complexity, and review the simulation framework at its next meeting, which is scheduled for May 6-9, 2019, in Sitka, Alaska.