

SCIENTIFIC AND STATISTICAL COMMITTEE REPORT ON  
PACIFIC HALIBUT CATCH APPORTIONMENT METHODOLOGY

The International Pacific Halibut Commission (IPHC) recently adopted a coast-wide assessment model for the Pacific halibut stock. Previously, assessments were conducted by regulatory area and harvest recommendations were based on results of the closed area models. A long-standing management objective of the IPHC is to equalize fishing mortality rates throughout the range of the stock. If Pacific halibut conform perfectly to a unit stock, as assumed by the current assessment model, there would be little biological basis for equalizing fishing mortality rates by regulatory area. However, similar to most stocks, Pacific halibut is unlikely to conform perfectly to a unit stock assumption, and is likely to be situated on a continuum between that extreme and the other extreme of multiple independent stocks. In these circumstances, equalizing fishing mortality rates would help maintain the spatial structure of spawning output, which would be advantageous if recruitment to an area depends on the spawning biomass in that area. It would also be appropriate if spawning in different areas contributes unequally to recruitment, i.e., there are sources and sinks, but the relative contribution of each area is unknown.

The IPHC is proposing a catch apportionment algorithm that uses a 3-year average of setline survey catch per unit of effort (CPUE) multiplied by the bottom area by regulatory area. This method is a standard approach to equalizing fishing mortality rates, and is based on the assumption that setline survey catchability is the same in all areas. Similar approaches have been used for other stocks on the west coast and the North Pacific. While the overall approach is reasonable, area apportionment using setline survey CPUE and bottom area is problematic in Area 2A for several reasons. First, hook competition appears to be higher in Area 2A than in any other area, which would depress catch rates. Second, coverage of habitat with a fixed station grid appears to be less representative in Area 2A than any other area. Finally, a greater percentage of the annual catch is removed in Area 2A before the survey occurs. All of these factors would cause a negative bias in the percent of exploitable biomass in Area 2A.

With respect to future assessments, the Scientific and Statistical Committee (SSC) recommends development of a spatially-explicit model that fully utilizes the available information. For example, a model that includes both the setline survey data and tagging data would allow evaluation of alternative model formulations by comparing model fits to both data sets. The National Marine Fisheries Service (NMFS) Gulf of Alaska bottom trawl survey provides a time series of relative abundance of Pacific halibut that has not been used for halibut assessment, nor has this data set been fully explored to address concerns about differences in setline survey catchability by area. Models that are intermediate between the coast-wide model and closed area models should be considered. Such models would be helpful in addressing issues such as the impact of migration between areas and unequal harvest rates by area.