

Purpose

This is the second assessment of the population status of cabezon (*Scorpaenichthys marmoratus* [Ayres]) along the California coast (Figure 1). Although commercial removals of cabezon have increased off Oregon in recent years because of the live-fish fishery (ODF&W 2002), and substantial recreational catches of cabezon occur in both Oregon and Washington waters (Cope *et al.* 2004), the available data sources remain insufficient to form the basis for a reliable assessment of cabezon in those areas. The current assessment is intended to provide information that will be of use by managers at both the state and federal levels. This document follows, to the extent possible given the available information, the Terms of Reference for stock assessments established by the PFMC Scientific and Statistical Committee.

Two objectives are addressed in this document. First, the life history of cabezon is described and all the available data sources that were considered for use in the assessment are explained. This document only provides detailed information for those data sources that were considered for use in the population modeling. Many other sources of information were considered, but ultimately rejected, and are not included in this document for brevity. Second, the document describes the results of the use of a new stock assessment technique (Stock Synthesis 2 [SS2], Methot 2005), and summarizes how the results from SS2 relate to those based on the assessment technique used for the 2003 assessment (the OC model). Unlike the 2003 assessment, increased attention is given to the spatial structure of the data for cabezon off California, with the consequence that the analyses of this document are based on two putative populations (“substocks”) separated at Point Conception, CA.

This assessment differs from those performed for most other west coast groundfish species because there is no fishery-independent index of abundance that covers the range of the stock. It consequently relies on indices of abundance based on recreational CPUE and spatially-restricted fishery-independent data, and information about larval and recruit abundance. Although no state- or federally-funded biomass indices are currently available for this species, these alternative data sources are considered to be adequate for estimating the values of the parameters of a population dynamics model. Much uncertainty remains in regard to the assumption that changes in recreational CPUE are linearly proportional to changes in population size. There is no information on the age-structure of the catches. Therefore, although the model is age-structured, it is fit to mean weights and length-composition data by converting the model-predicted catch age-compositions to catch size-compositions using growth curves and weight-length relationships.

Acronyms used in this document:

ABC – Allowable Biological Catch
AIC – Akaike Information Criterion
CalCOFI - California Cooperative Oceanic Fisheries Investigation
CalCOM - California Commercial Cooperative Groundfish Program
CDF&G – California Department of Fish and Game
CPFV – Commercial Passenger Fishing Vessel
CPUE – Catch per unit of effort
CRFS – California Recreational Fisheries Survey
CV – Coefficient of variation
EEZ – Economic Exclusive Zone
FMP – Groundfish Fishery Management Plan
GLM – Generalized Linear Model
IRI – Index of Relative Importance
MODE – Fishing Method (shore, private boat, charter boat)
MPD – Maximum of the posterior density function
MRFSS - Marine Recreational Fisheries Statistics Survey
NCS – Northern California Substock
NFMP – Nearshore Fishery Management Plan
NWFSC – Northwest Fisheries Science Center
OC – Original Cabezon model used in the 2004 assessment
PBR – Private Boat and Rental
PFEL – Pacific Fisheries Environmental Laboratory
PFMC – Pacific Fishery Management Council
PSFMC – Pacific States Marine Fisheries Commission
RecFIN – Recreational Fisheries Information Network
SCS – Southern California Substock
SS2 – Stock Synthesis 2
SWFSC – Southwest Fishery Science Center
WAVE – Bi-Monthly period of catches
OY- Optimum Yield