CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE REPORT ON ACCOUNTING FOR USE of Descending Devices in the California Recreational fishery

Introduction

At its November 2012 meeting, the Pacific Fishery Management Council (Council) reviewed a progress report by the Groundfish Management Team (GMT) regarding development of methods for estimating mortality rates for rockfish released with a descending device. Rockfish discard mortality estimates currently do not take into account the use of descending devices, yet research supports lower mortality rates for those rockfish released with a descending device than for those released without one (Scientific and Statistical Committee, I.3.b. Supplemental SSC Report, November 2012).

Mortality estimates for recreational fisheries could be improved by incorporating credible estimates of the proportions of rockfish released using descending devices. Thus, the Council requested that each state provide a description of their proposed methods for estimating the proportions of fish released using descending devices in the recreational fishery for review by the GMT and SSC at this meeting. The Council recommended methods focus specifically on canary, cowcod, and yelloweye rockfish since they pose the greatest constraint to recreational fisheries.

This report outlines California Department of Fish and Wildlife's (CDFW) proposed methods for estimating the proportion of canary, cowcod and yelloweye rockfish released using a descending device.

California Recreational Fisheries Survey (CRFS) Sampling Methods

CRFS generates estimates of total marine recreational finfish catch and effort in California. Catch and effort data are collected for the four major modes of fishing: party and charter boats (PC; also known as commercial passenger fishing vessels or CPFVs), private and rental boats (PR), man-made structures, and beaches and banks. Monthly estimates are produced for each fishing mode in each of six geographic districts[1]. A detailed description of CRFS sampling design and data collections methods is available at http://www.dfg.ca.gov/marine/crfs.asp.

In March 2012, CDFW started collecting data on descending device use for cowcod in the PC mode. In 2013, CRFS expanded data collection to include use of descending

[1] The southern boundary of District 1 is the California – Mexico border, and the northern boundary of District 6 is the California – Oregon border.

devices for all released rockfish in the boat fishing modes (PC and PR). CRFS is focusing descending device data collection efforts on the boat modes, since they comprise the majority (98 percent) of recreationally-caught rockfish in California, and fish released from shore modes suffer limited if any barotrauma.

Party and Charter Boats (PC)

Party and charter boats are licensed by CDFW to take paying passengers on sport fishing trips. Catch data are collected using an on-site intercept survey, which is conducted either onboard PC vessels at-sea or dockside at the end of the fishing trip. The data are a combination of onboard sampler-observed data, captain-reported data and angler-reported data, unlike the PR survey which exclusively collects angler-reported data. The frequency of sampling varies by month and district.

The following data elements are collected to inform descending device use in PC surveys:

1. Trip-level descending device use information (i.e., whether a descending device was used on the trip): These data are collected in both the onboard and dockside surveys.
2. Numbers of fish released (alive or dead) by species: Numbers are recorded based on angler-reported data and are collected in both the onboard and dockside PC surveys.
3. Species-level descending device use information: While sampling onboard PCs at sea, the sampler observes the fishing activity of a sub-set of anglers at each fishing stop and records numbers of fish released (alive or dead) by species and the number of fish released with a descending device by species.

In addition CDFW is in the process of modifying CPFV logbooks to gather information on the proportion of vessels that report using descending devices at the trip level for comparison to and supplementation of results from CRFS sampling.

Private and Rental Boats (PR)

The primary private and rental boats sites (PR1) include public ramps, hoists, and other launch facilities where at least 90 percent of fishing effort and catch of rockfish occurs in California. Private and rental boat sites where less rockfish catch and effort occurs are designated as PR2 sites. PR1 sites are sampled during daylight hours using an access point survey method (*i.e.*, on-site intercept design). Each PR1 site is sampled at least 20 percent of each day type (weekdays and weekends/holidays) in the month, where sampling days are randomly selected by day type.

PR1 catch data are strictly angler-reported unlike in the PC mode where catch data may be recorded by onboard CRFS samplers. Data on descending device use are not being collected at PR2 sites at this time; therefore data from the PR1 mode will be used.

Species-level information, including numbers of fish released (alive or dead) by species, and the number of fish released alive using a descending device are collected to inform descending device use in the PR1 survey.

Data Availability

Data are available to inform descending device use in the recreational fisheries; the amount varies by district and species. While catches of canary, yelloweye and particularly cowcod will continue to be rare events (due to management actions that are intended to avoid interactions with these species), CDFW expects that the use of descending devices will increase in the near-future in part due to extensive outreach and education.

The primary factor for selecting the estimation method for each species, district and fishing mode will be number of encounters. Pooling data across months and districts will be tested prior to application. If pooling isn't valid or does not provide sufficient encounters to generate a reliable estimate using direct observations, then proxies may be used. If the Council approves the use of revised mortality rates in management, CDFW will focus initial efforts on estimating descending device use in those areas where species are most likely to occur.

Canary Rockfish

Direct species-level observations for PC and PR modes are available to estimate the proportion of descending device use in Districts 3-6 (Point Conception to the California/Oregon border). Some pooling of data may be required across months and districts for PC trips.

Cowcod

Since cowcod encounters are rare, there are relatively few direct species-level observations to estimate the proportion of descending device use in either mode for all districts. For those districts where cowcod commonly occur (Districts 1-2, Point Conception to the California/Mexico border) proxies will be used to estimate the proportion of descending device use.

Yelloweye Rockfish

Direct species-level observations for the PR mode are available to estimate the proportion of descending device use in Districts 5-6 (Point Arena to the California/Oregon border) and possibly Districts 3-4 (Point Conception to Point Arena). Pooling of data across months and districts may be required for Districts 3-4. Few direct observations are available for Districts 3-6 for the PC mode and proxies may be used to estimate the proportion of descending device use.

Methods for Estimating Descending Device Use

Two methods are proposed to estimate the catch of fish released with a descending device. The intent of using multiple methods is to allow the use of best available data to estimate descending device use. Estimates will be made for each mode (PC and PR) separately and applied to estimates of released fish. The first method uses direct species-level observations and the other method uses proxies for each mode (PC and

PR). Direct species-level observations are preferred and will be used to estimate descending device use for as many modes and districts as possible; otherwise estimates will be made using proxy data.

The following caveats will apply to determining proportion of catch released using descending devices:

1. Estimates will be made at the end of the year and applied retrospectively. This will maximize the amount of data available for pooling. In addition, it will allow analyses to validate pooling assumptions and evaluate the statistical properties of the proxy methods using data collected in 2013
2. Estimates will not be made for district and months when the groundfish fishery is closed since data reveal that few canary, cowcod or yelloweye rockfish are caught "out-of-season".
3. Estimates will not be made for individual depth bins. This is likely to result in conservative estimates because it is expected that a higher proportion of fish are released with descending devices in deeper waters compared to shallower waters.

Species-Specific Observations

Species-specific data can be used to estimate the proportion of descending device use. Sampler observations will be used to determine descending device use in the PC mode and angler-reported data will be used for the PR mode. The proportion of descending device use for each species and mode would be calculated as the ratio of the total number of fish released using a descending device to the total number of fish released. Proportion of use may be pooled over different time/district combinations depending upon available data.

For the PR mode, this method assumes that anglers are correctly identifying rockfish species and that anglers are accurately reporting the total number of fish released and the number of fish released with a descending device.

Proxy Data

In the event that species-specific data cannot be used, trip-level data (i.e., whether a descending device was used on the trip) for other species can be used as a proxy for species-specific data on descending device use. It is based on the assumption that if a prohibited species was caught on a trip and a descending device was reported to have been used on the trip the infrequently encountered species would have been released using the descending device. Such an assumption may be valid for cowcod and yelloweye rockfish since they are large, important to management and infrequently encountered. Estimates of the proportion of use in the PC and PR modes would be calculated independently.

Trip-level information on descending device use in the PC mode would be collected from both onboard and dockside sampling; PR trip-level information would be based on angler reports of species released using a descending device. Proportion of use would

be calculated as the ratio of the total number of trips with fish released using a descending device to the total number of trips.

Estimates of descending device use derived by this method may be biased low because anglers may be more likely to release prohibited species (especially cowcod and yelloweye rockfish) with a descending device than other species.

In addition, it may be possible to estimate the proportion of descending device use for yelloweye rockfish, using canary rockfish as a proxy. Canary rockfish are encountered more frequently than yelloweye rockfish and it may be possible to apply proportions of descending device use for canary rockfish calculated from species-specific observations to yelloweye rockfish. This approach would only be used when direct estimates of descending device use for yelloweye rockfish cannot be calculated.

This approach assumes that canary and yelloweye rockfish are released with a descending device in the same proportion. Since, encounters with yelloweye rockfish are rare, anglers may be more willing to release them with a descending device than they would canary rockfish. This may result in descending device use estimates that are biased low (i.e., more conservative).

Total Mortality Calculations

Incorporating revised mortality rates will only be applied to the proportion of fish released using a descending device. For the remaining fish released without a descending device, the mortality rate associated with surface release (i.e., more conservative) will be applied. The sum of mortality estimates for fish released at the surface and with descending devices and fish released without a descending device will be combined with retained catch to provide an estimate of total mortality for the recreational fishery.

Future Steps

The proposed methods and applications are based on the best available data under current management. Changes in data availability may precipitate changes in the estimation methods for each district, species and fishing mode; therefore the methods proposed in this report are meant as a starting point and modifications and/or refinements would be expected in the future.