

CALIFORNIA DEPARTMENT OF FISH AND GAME INFORMATIONAL REPORT  
ON CALCULATING COWCOD MORTALITY IN THE CALIFORNIA  
RECREATIONAL FISHERY

California Department of Fish and Game (CDFG) will be using a modified method to calculate discard mortality for cowcod released on Commercial Passenger Fishing Vessels (CPFV) beginning in 2012. CDFG sent a letter to the RecFIN Technical Committee on April 3, 2012 (attached) outlining the method, which gives credit for use of descending devices for cowcod only. CDFG will apply reduced mortality rates for cowcod that observers record as being released using these devices.

CDFG finds the application of this method uniquely suitable to the situation with cowcod. Approximately 80 percent of the estimated recreational cowcod bycatch occurs in the CPFV mode. As part of CDFG's California Recreational Fisheries Survey (CRFS) program, sampling activities occur aboard CPFVs, rather than dockside. Because cowcod interactions are rare events, when they do occur samplers can easily observe and denote whether or not a descending device was used to release the fish. Additionally, as cowcod interactions are primarily limited to Southern California, there is no need to consider geographic differences that might exist in sampling procedures or other concerns that might be raised for stocks that are managed across several management areas or jurisdictions. Although at this time CDFG will limit the application of the method to cowcod released from CPFVs, there is potential for examining possible use of this approach with other species and fishing modes in the future.

CDFG believes that direct observations by our onboard employees regarding the disposition of released cowcod are best available data and superior to using a generic proxy. Descending devices have proven to reduce mortality of rockfish discards. Because CDFG can effectively observe their use in this situation and the reduction in mortality can be quantified, application of this method will result in more accurate cowcod mortality estimates.



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*EDMUND G. BROWN, Jr., Governor*  
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April 3, 2012

RecFIN Technical Committee  
Pacific States Marine Fisheries Commission  
205 SE Spokane Street, Suite 100  
Portland, OR 97202

Dear Committee Members:

The purpose of this letter is to inform the committee of the Department of Fish and Game's (Department) intent to use a modified method to calculate cowcod mortality on released fish from the Party Charter (PC) mode. The Department's method will utilize empirical data instead of the Groundfish Management Team's (GMT) recommended proxy for these discards.

In January 2012, the GMT sent a letter recommending that proxy mortality rates be applied to species lacking species-specific depth dependent mortality rates, including cowcod. For cowcod, the GMT recommended that the deep-demersal guild proxy be applied to all released cowcod, whether fish were discarded alive or dead. Previously, in the absence of a species-specific discard mortality rate, RecFIN estimates had assumed 100 percent mortality of fish reported as released dead, and zero mortality of fish reported as released alive. Although there is data supporting higher survivorship rates for fish released using a descending device, to date it has not been used in the production of estimates.

Since 2007, the Department has conducted an extensive outreach campaign to educate the public on the use of descending devices to minimize mortality of discarded rockfish. Although the use of descending devices is not mandatory, many anglers are using them. The California Recreational Fisheries Survey (CRFS) observers document the use of these devices onboard Commercial Passenger Fishing Vessels (CPFV) during the course of fishing activity. Beginning in 2012, the Department will apply reduced mortality rates to the proportion of cowcod discarded alive from CPFVs that are released using these devices. Because the CPFV fleet accounts for more than 80 percent of cowcod bycatch, giving credit for use of descending devices is expected to significantly reduce overall mortality estimates for cowcod in the recreational fishery.

### **Methods**

The GMT evaluated three specific mortality variables to develop the mortality proxy: a) surface mortality, b) short-term bottom mortality, and c) long-term delayed mortality. For cowcod released with descending devices on CPFVs, the Department will use a surface mortality rate of 22 percent, based on a study by Jarvis and Lowe (2008). In the study, 306 shelf rockfish were taken with recreational rod and reel gear, and after being

returned to depth in cages for two days, mortality was estimated at 22 percent. The Department will continue to use the GMT estimates for short term bottom mortality and long-term delayed mortality, which increases with depth. The Department will also continue to apply the GMT mortality proxy to fish released without a descending device on CPFVs, and for cowcod taken in the private/rental boat (PR) mode.

Table 1 shows the differences in depth dependent mortality rates with and without descending devices. Since no data are available from the study to inform savings from the use of a descending device in 20 fm or less, mortality estimates are based on the GMT proxy.

Table 1. Comparison of depth dependent mortality rates used by the GMT for the deep-demersal guild and estimates produced by the Department for cowcod released with a descending device on CPFVs.

| Mortality Estimate                                     | Depth Bin |       |       |        |        |        |
|--|-----------|-------|-------|--------|--------|--------|
|  | 0-10      | 11-20 | 21-30 | 31-40  | 41-50  | 51-60  |
| GMT Method - Deep-Demersal Guild Mortality             | 21.0%     | 35.0% | 52.0% | 100.0% | 100.0% | 100.0% |
| CDFG Method - Cowcod Mortality Using Descending Device | 21.0%     | 35.0% | 39.2% | 42.8%  | 46.4%  | 49.9%  |

### Future Applications

Although the Department is using a modified mortality rate only for cowcod released with descending devices aboard CPFVs, there is the ability to examine additional applications of this approach to other species the future. Additionally, CRFS samplers are now gathering data on the use of descending devices on each trip for the PR mode. In the future, this information may allow for application of reduced mortality rates for fish released with descending devices in this mode as well.

If you have questions or need additional information, please contact me or John Budrick of my staff, at [mvojkovich@dfg.ca.gov](mailto:mvojkovich@dfg.ca.gov) or [jbudrick@dfg.ca.gov](mailto:jbudrick@dfg.ca.gov).

Sincerely,



Marija Vojkovich  
Regional Manager  
Marine Region

ec: John Budrick, Department of Fish and Game, Belmont, CA