

Incorporation of discard mortality for rockfish released with descending devices into
management of Oregon recreational fisheries

Summary

This report outlines information on descending device use in Oregon and a proposed method for incorporating new discard mortality estimates into management of Oregon's recreational fisheries in 2013.

Descending device use data collection

In anticipation of development of discard mortality estimates for rockfish released with descending devices, the Oregon Department of Fish and Wildlife (ODFW) began collecting usage data in the recreational fishery in May 2012; specifically the proportion of yelloweye and canary rockfish released with devices by depth. Oregon Recreational Boat Survey (ORBS) creel samplers ask: "Of the X yelloweye rockfish (or canary rockfish) released, how many were released with a descending device?". When coupled with an earlier question that asks the depth where fishing occurred, the proportion of either species released with descending devices by depth can be determined. Since the descending device question is part of the standard interview process, the type of release (i.e., with or without a device) is known for the majority of yelloweye or canary rockfish which feeds into catch expansions. Data exists for all ports, boat types (i.e., charter and private), trip types (i.e., groundfish, salmon, halibut, "combo"), months, and depths that are sampled by the ORBS program (Figure 1).

Proposed method for incorporating descending device use into inseason catch accounting

The proposed method for incorporating descending device use into inseason catch accounting for Oregon recreational fisheries has been reviewed by the Economics Sub-Committee of the Council's Scientific and Statistical Committee (as part of Oregon recreational groundfish model review in March 2012); no revisions were suggested. Further review by the Recreational Fisheries Information Network (RecFIN) Technical Committee will occur following their March meeting.

Currently, discard mortality is only affected by the distribution of catch among four different depth bins with different surface mortality rates ("death-by-depth" mortality matrix). Accordingly, impacts are relatively low if a greater proportion of catch occurs in shallow, low mortality depth bins, whereas impacts are relatively high if a greater proportion of catch occurs in deeper, high mortality depth bins.

If discard mortality estimates for rockfish released with descending devices are approved by the Council, then discard mortality will still be affected by the proportional distribution of catch among depth bins, but also by the type of released method use (i.e., at the surface or with a device).

Proposed discard mortality formula for using dual mortality estimates (for fish released at the surface and with descending devices)

Key: *RS = Released at surface; RD= Released at depth; P = Proportion (of fish); DMP = Discard mortality proportion; Depth is in fathoms; used theoretical values for DMP RD*

Surface release mortality estimates only

Discard mortality = discard mortality proportion * total fish * average weight of fish

$$\text{Discard mortality proportion} = \sum_{\text{depths}} (P \text{ RS}_{\text{depth}} * \text{DMP RS}_{\text{depth}})$$

Example:

Depth (fm)	Fish RS	P RS		DMP RS		Product
0-10	6	0.133	x	0.22	=	0.03
11-20	24	0.533	x	0.39	=	0.21
21-30	12	0.267	x	0.56	=	0.15
> 30	4	0.067	x	1	=	0.07
Total	46			Σ	=	0.45

Dual discard mortality estimates (surface release plus release using descending devices)

Discard mortality = discard mortality proportion x total fish x average weight of fish

$$\text{Discard mortality proportion} = \sum_{\text{depths}} ((P \text{ RS}_{\text{depth}} * \text{DMP RS}_{\text{depth}}) + (P \text{ RD}_{\text{depth}} * \text{DMP RD}_{\text{depth}}))$$

Example:

Depth (fm)	Fish h	Fish RD	Fish RS	PRD		DMP RD		P RS		DMP RS		Product
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0-10	6	3	3	0.065	x	0.05	+	0.065	x	0.22	=	0.02
11-20	24	12	12	0.261	x	0.1	+	0.261	x	0.39	=	0.13
21-30	12	6	6	0.13	x	0.15	+	0.13	x	0.56	=	0.09
> 30	4	2	2	0.043	x	0.2	+	0.043	x	1	=	0.05
Total	46	23	23							Σ	=	0.29

Timeframe for implementation of discard mortality estimates for descending devices into management

If discard mortality estimates for descending devices are approved by Council, these new proportions can be applied to recreationally-caught groundfish estimates for periods in which descending device use (i.e., the proportion by depth and species) data has been collected. Collection of data on the use of descending devices began in May 2012; therefore Oregon recreational groundfish estimates could be calculated from that time on to reflect use of the devices.

Incorporating descending device use into modeling (of future impacts)

The primary reason ODFW began acquiring descending device use data prior to development of discard mortality estimates was to improve the accuracy of projection models. Having data for longer periods of time increases the likelihood that trends can be detected and allows fishery managers greater confidence in their ability to project impacts. The inclusion of descending device use into the projection model will be evaluated as part of the 2015-2016 biennial harvest specifications and management measures process, or the Amendment 24 tiered National Environmental Policy Act (NEPA) analysis being discussed by the Council.

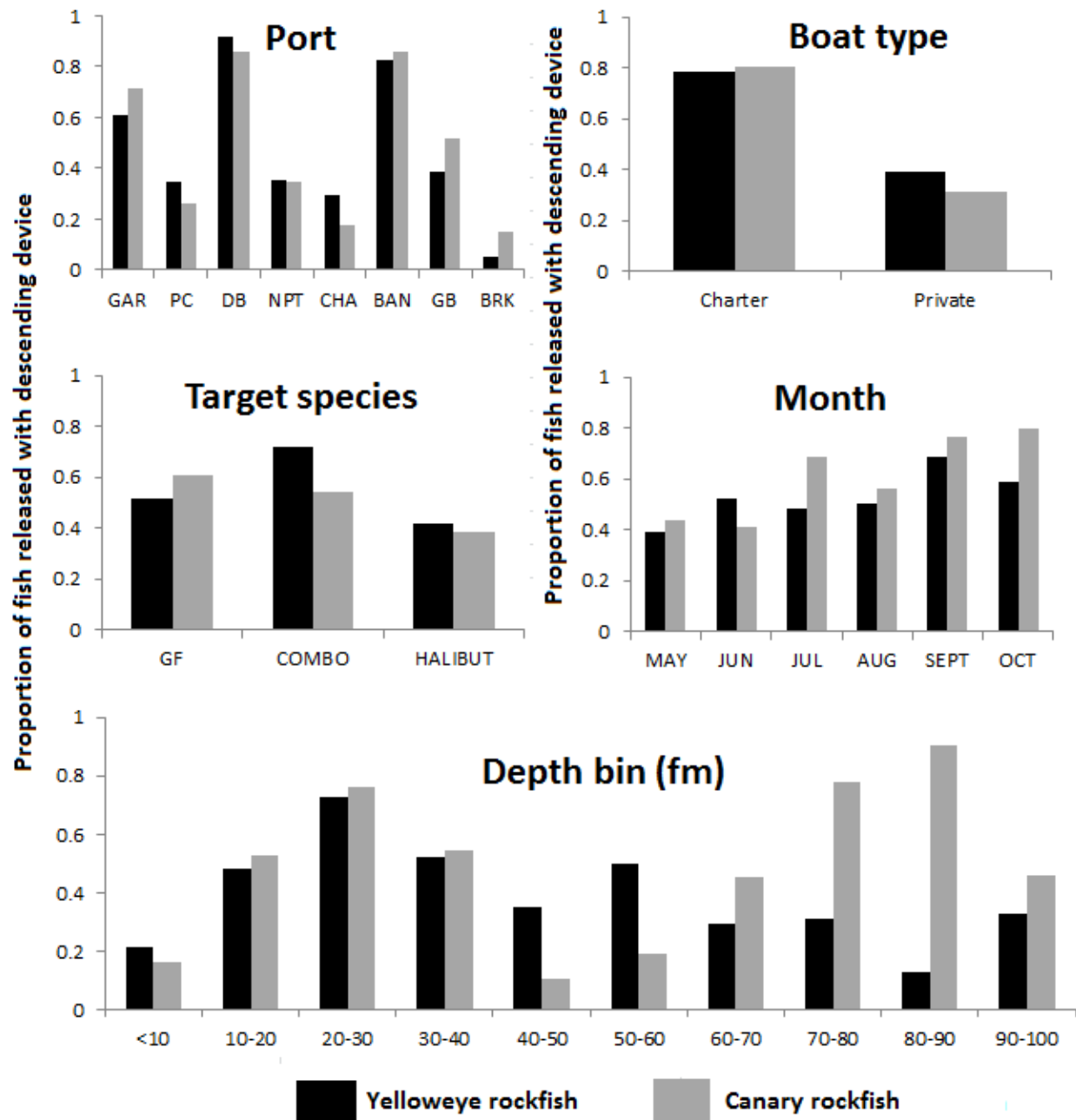


Figure 1. Proportion of yelloweye rockfish (black) and canary rockfish (grey) released with descending devices by port, boat type, target species, month, and depth from May-October 2012.