

**California Department of Fish and Game Report on
 Unidentified Rockfish in the California Recreational Fishery**

At its March 2009 meeting, the Pacific Fishery Management Council (Council) requested that the Groundfish Management Team (GMT), RecFIN committees, and others identify the conservation risks associated with the unidentified rockfish category and recommend a process to apportion the catch¹ by species. The California Department of Fish and Game (CDFG) offers these comments after reviewing the unidentified rockfish category in California Recreational Fisheries Survey (CRFS), considering issues of data quality, and evaluating possible conservation risks and workload priorities.

Amount and Source of Unidentified Rockfish Catch

Less than 10 percent of the total estimated recreational rockfish catch in California was classified as unidentified rockfish in 2008 (Table 1). The two primary sources of unidentified rockfish are fish reported by anglers and fillets that could not be identified to species. About 69 percent of the unidentified rockfish were angler-reported released fish, and 31 percent were angler-reported landed fish or fillets.

Table 1. 2008 CRFS estimates (mt) of total rockfish catch and unidentified rockfish catch, and percent of unidentified rockfish catch by CRFS District.

CRFS District	Management Area	CRFS Estimated Total Rockfish Catch (mt)	CRFS Estimated Unidentified Rockfish Catch (mt)	Percent Unidentified Rockfish Catch by District
Redwood (6)	Northern	110	0.2	0.2%
Wine (5)	North-Central North of Point Arena	45.7	0.6	1.3%
Bay (4)	North-Central South of Point Arena	158.7	17.6	11.1%
Central (3)	South -Central	245.3	15.2	6.2%
Channel (2)	Southern	119.7	16.5	13.7%
Southern (1)	Southern	109.7	24.7	22.5%
<i>Total</i>	<i>Statewide</i>	<i>789.1</i>	<i>74.7</i>	<i>9.5%</i>

A number of factors make it difficult for anglers to report catch to the species level:

- The sheer number of rockfish species encountered by California’s anglers. In 2008, CRFS samplers observed 37 of the 60 or more rockfish species found off California.
- Many species of rockfish are very similar in appearance and difficult to identify.

¹ In this report, “Catch” is defined as total fishing mortality: landed fish plus mortality due to discards (all angler-reported released fish, alive or dead, with a mortality rate applied).

- Anglers are being asked to recall fish at the end of their trip when they may be rushed for time or fatigued. Either situation may adversely affect their ability to recall their released catch by species.

CDFG believes that some species are less likely to comprise the unidentified rockfish category than others. This is because anglers are better able to identify and more likely to recall easily recognizable species, prohibited species, and/or species with individual bag limits. Since 2000, the CDFG increased outreach and education efforts promoting protection of overfished rockfishes and improving groundfish identification materials. CDFG believes that these ongoing efforts help reduce illegal take, and increase the ability of anglers to identify prohibited or managed species, and contributed to the decline in unidentified rockfish catch in the California recreational fishery.

Management Issues

Beginning to account for unidentified rockfish in species specific catches would be a step toward full catch accounting. Accomplishing this task in a meaningful manner would require a commitment of staff resources that would be diverted from other Council priorities. **The potential error that can be introduced into catch estimates as a result of accounting for unidentified rockfish must be weighed against the potential for conservation risks when deciding when or whether the Council should account for this additional catch.**

If the Council decides to go forward with decomposing the unidentified rockfish catch, this catch needs to be accounted for in all processes in the management cycle before incorporating unidentified rockfish catch into inseason catch tracking. Five processes requiring action or analysis by the Council or GMT are typically undertaken in a management cycle, each of which would be affected by accounting for unidentified rockfish: 1) stock assessments, 2) allocation between sectors, 3) interstate catch sharing agreements, 4) regulatory development, and 5) inseason catch tracking relative to management targets (e.g. harvest guideline, HGs). The potential implications of accounting for unidentified rockfish catch in each process are described in the March 2009 Final Inseason Supplemental GMT report (Agenda Item G.7.b) http://www.pcouncil.org/bb/2009/0309/G7b_SUP_GMT_0309.pdf. To date, with few exceptions, unidentified rockfish have not been accounted for in any of these steps. To forego accounting in any one process in the management cycle while accounting for the catch in another, results in potential inequities. For example, accounting for unidentified rockfish catch inseason before accounting for them in the historical catch previously used for stock assessments and allocation, could unduly constrain the recreational fishery.

Potential Conservation Risks

Conservation risks could ensue if the total magnitude of the additional apportioned catch of any species caused its annual optimum yield (OY) or allowable biological catch (ABC) to be exceeded. Conservation risks were evaluated for black, blue, bocaccio, canary, cowcod, widow and yelloweye rockfish and Minor Nearshore Rockfish South using CRFS catch data from the 2008 season. **The addition of apportioned**

unidentified rockfish catch did not result in exceeding any annual HG, OY or ABC of the species or management groups evaluated.

A simple approach was used to estimate species composition of the unidentified rockfish category for the risk evaluation: the estimated number of unidentified rockfish was partitioned into individual species based on the proportion of each species in the “identified catch”. Estimates were made for each CRFS district and catch type (sampler-observed landed fish, angler-reported landed fish, and angler-reported released fish). Mortality rates were applied to released fish. The total weight of the catch was then estimated by multiplying the number of fish by that species average weight. Data from 2008 were used, because the magnitude of the 2008 unidentified rockfish catch is assumed to be the most representative of the 2009 catch given the recent changes in the economy, current groundfish depth restrictions, ongoing outreach efforts, and salmon restrictions.

For angler-reported released fish, this methodology is expected to overestimate species that anglers are better able to identify or more likely to recall (i.e., easily recognizable species, prohibited species, and species with size or bag limits). Thus, the method most likely overestimated the catch of black, blue, bocaccio, canary, cowcod, widow and yelloweye rockfishes as well as most members of Minor Nearshore Rockfish South. More refined methods would be desirable if the Council decides to decompose the unidentified rockfish category in catch histories and in inseason estimates.

The estimated 2008 unidentified rockfish catch apportioned by species and CRFS district is presented in Table 2, and the estimated total catch in Table 3. **The HGs for Minor Nearshore Rockfish South and black, blue, bocaccio, canary and widow rockfishes would not have been exceeded as a result of accounting for unidentified rockfish in 2008 (Table 3). Cowcod would have exceeded its projected recreational impact by 0.7 mt. However, the overage would not have resulted in exceeding the OY or ABC.**

Table 2. Results of the apportionment of the 2008 unidentified rockfish catch by CRFS District for overfished and managed species groups.

Species/Group	Estimated Unidentified Rockfish Catch by CRFS District (mt)						
	South (1)	Channel (2)	Central (3)	Bay (4)	Wine (5)	Redwood (6)	Statewide*
Black Rockfish	0.00	0.00	0.69	0.80	0.10	0.14	1.7
Blue Rockfish	0.01	0.35	2.44	2.65	0.17	0.01	5.6
Bocaccio	8.00	1.22	0.17	0.00	0.00	0.00	9.4
Canary Rockfish	0.06	0.72	0.19	0.96	0.04	0.02	2.0
Cowcod	0.05	0.66	0.00	0.00	0.00	0.00	0.7
Minor Nearshore Rockfish South**	4.18	3.49	6.59	8.96	0.31	NA	23.5
Widow Rockfish	0.00	0.02	0.21	0.00	0.00	0.00	0.2
Yelloweye Rockfish	0.00	0.00	0.01	0.16	0.04	0.01	0.2

* Rounded to the nearest tenth.

** Includes blue rockfish

Table 3. Comparison of 2008 harvest guidelines with total estimated catch (unidentified rockfish estimated catch apportioned to species plus CRFS estimates by species).

Species/Group	Estimate of Unidentified Rockfish Catch (mt)	2008 CRFS Estimates (mt)	Total Estimated Catch (mt)	2008 Harvest Guideline* (mt)	Total Estimated Catch as a Percent of 2008 Harvest Guideline
Black Rockfish	1.7	154.3	156.0	168.0	92.9%
Blue Rockfish	5.6	85.0	90.6	NA	NA
Bocaccio	9.4	34.8	44.2	66.3	66.7%
Canary Rockfish	2.0	5.6	7.6	9.0	84.3%
Cowcod	0.7	0.3	1.0	0.3*	320.0%
Minor Nearshore Rockfish South**	23.5	303.0	326.5	426.0	76.7%
Widow Rockfish	0.2	4.7	4.9	8.0	61.6%
Yelloweye Rockfish	0.2	1.7	1.9	2.1	91.0%

*Not a harvest guideline for cowcod; this is a projected impact and an overage does not require mandatory action if exceeded.

** Includes blue rockfish

Potential Apportionment Methods

Decomposing the unidentified rockfish category to its component species will produce results of questionable reliability in the absence of a deliberative and methodical approach. Should the Council decide to use decomposed unidentified rockfish catch estimates in management processes, considerable resources may be needed to undertake a coordinated effort among the three states to develop plausible methods for the west coast recreational fishery. Moreover, the reconstruction of historic catch will likely require different methods than for estimating inseason catch, because less data are available for decomposing historic catch than for current catch.

Adding species estimates from the unidentified rockfish category to the individual species catch estimates will increase uncertainty. Any approach that is chosen should be thoroughly evaluated and potential biases identified. Species composition of the unidentified rockfish category and average weight of individual species are typically influenced by:

- Catch category (i.e., landed or released)
- Fishing mode
- Geographic area
- Fishing depth
- Regulations
- Time period (seasons or years)
- Long-term trends in relative abundance of species

The Council's ongoing California catch reconstruction project (Ralston et al, 2009) has not yet attempted to estimate species composition of released fish. However, many of the factors that lead to uncertainties in that project's estimates of species composition of landed fish would apply to estimates of the species composition of the unidentified rockfish category.

A major limitation is the availability of suitable data sets and the potential biases introduced by their use, including:

- Most of the data sets are relatively recent and may not reflect historic trends in species composition.
- The data available will vary depending on the time period and location.
- It may be necessary to average across time periods due to uncertainty resulting from a lack of data prior to the Marine Recreational Fisheries Statistical Survey sampling or gaps in the sampling program.
- Most sampler-observed data is for retained catch. Species composition of retained catch is not representative of released catch.
- All sampler-observed data on released fish is from Commercial Passenger Fishing Vessels (CPFVs). Species composition in the private/rental boat mode and shore mode tend to differ from the CPFV mode. By weight, 46 percent of the unidentified released rockfish in 2008 was from the private/rental and shore modes. The lack of direct observations of released fish in the private/rental and shore modes will increase the uncertainty in any estimates of species composition.
- Angler-reported catch data are dependent on the angler's ability to identify and recall their catch. Species that are easily identified tend to be more prevalent in the reported catch.

Recommendations

Given that no conservation risks were apparent from unidentified rockfish catch, the biases resulting from estimation methods that rely on limited data, and the resources that would be diverted from other Council duties to fully address the issue, CDFG does not believe accounting for unidentified rockfish catch in the Council process is imperative. **Therefore, CDFG recommends no further action.**

If the Council decides to proceed:

CDFG recommends that species specific accounting should begin with the adoption of a stock assessment that includes SSC and RECFIN approved apportionment methodologies and that the process should begin during the same management cycle for all three states. As much as possible, consistent methodologies should be applied among the states.

CDFG recommends that any apportionment of historic catches proceed as part of the currently ongoing historic catch reconstruction efforts.

The following are considerations that contribute to these recommendations:

- State agency staff indicated that addition of an entire catch stream is a time and

labor-intensive undertaking that would divert many hours of time from existing duties and assignments. With current furloughs and overtime restrictions on many state staff due to budget issues, the time devoted to this item will need to be taken from other Council priorities.

- The CRFS staff indicated that current work priorities, including integrating depth dependent mortality rates, revising catch type categories, and updating average weight estimates, are expected to have a more substantial impact on CRFS catch estimates and believes these improvements need to be completed before any work on apportioning unidentified rockfish begins.
- Given the implications of incorporating estimates of unidentified rockfish into the historical and inseason catch estimates, the GMT noted at the March 2009 Council meeting that the Council may wish to have any new methodology reviewed by the RecFIN Technical Committee. The CDFG agrees with this suggestion, however, the time commitments of the RecFIN Technical Committee are unknown and may present delays.

Reference

Ralston, S., Pearson, D., Field, J., and Key, M. 2009. Draft documentation of the California reconstruction project. 130 p.