

OPTIMUM YIELD DISCUSSIONS – MARCH 2016

I. Magnuson-Stevens Act wording on Optimum Yield

104-297

(33) The term "optimum", with respect to the yield from a fishery, means the amount of fish which—

(A) will provide the greatest overall benefit to the Nation, particularly with respect to food production and recreational opportunities, and taking into account the protection of marine ecosystems;

(B) is prescribed as such on the basis of the maximum sustainable yield from the fishery, as reduced by any relevant economic, social, or ecological factor; and

(C) in the case of an overfished fishery, provides for rebuilding to a level consistent with producing the maximum sustainable yield in such fishery.

II. Previous OY Statements from Fishery Management Plans

A. Snapper Grouper FMP (1983)

9.0 CAPACITY DESCRIPTORS

9.1 Optimum Yield for Species with Minimum Sizes

OY for each species is the yield that results from the recommended minimum size. The numerical estimate of OY is the estimated numerical value of yield-per-recruit (measured in grams) derived from the best estimate of population parameters available. At this time, OY is the yield-per-recruit that occurs with the population parameters specified in the YPR Appendix (Appendix A) for each species regulated by a minimum size:

NUMERICAL ESTIMATE OF OY

	<u>MINIMUM SIZE</u>	<u>OPTIMUM YIELD (YPR WITH MINIMUM SIZE)</u>
Vermilion snapper	12 inches	177.19
Red snapper	12 inches	540.64
Yellowtail snapper	12 inches	450.10
Black sea bass	8 inches	100.30
Red grouper	12 inches	263.83
Nassau grouper	12 inches	263.83

Optimum yield will change when minimum sizes are added on other species or changed. The Regional Director is authorized to make the necessary adjustments to OY through regulatory amendments at the same time he is authorized to add or change minimum sizes (Management Measure #2, Section 10.2.3).

9.2 Optimum Yield for Jewfish

Optimum yield for jewfish is all jewfish harvested by U.S. fishermen utilizing lawful gear. Historically powerheads have been prohibited in Florida where all recorded landings of jewfish occur (jewfish are included in grouper landings in North Carolina and Georgia and no jewfish are reported from South Carolina). Therefore, the numerical estimate of OY is equal to the most recent (1981) recorded catch of 19,000 pounds.

B. Dolphin Wahoo FMP (2003)

4.2.8 ACTION 8. Optimum Yield (OY) for dolphin and wahoo is the amount of harvest that can be taken by fishermen while not exceeding 75% of MSY (between 14.1 and 34.9 million pounds) for dolphin and 100% of MSY (between 1.41 and 1.63 million pounds) for wahoo.

Biological Impacts

The term Optimum Yield is used in the first national standard of the Magnuson Act to achieve the greatest overall benefit to society through the harvest of any species without overfishing. It refers to the maximum number of fish that can be harvested safely as reduced by social, economic, and ecological factors.

Optimum Yield is usually set at a more biologically conservative level than MSY and cannot be set at a level greater than MSY. The difficulty in determining Optimum Yield for dolphin and wahoo comes from the limited information available about the biological, social, economic, and ecological aspects of this fishery. With dolphin and wahoo there is a great deal of uncertainty as to what level of harvest would maximize protection of the resource, ensure economic efficiency, and provide some social security for those involved. Setting Optimum Yield at a low level may be too restrictive for a fishery that operates on a short-lived fish. On the other hand, setting Optimum Yield at a level high enough to allow unlimited harvest could result in less than optimum management.

Economic Impact

Defining the OY does not alter current use of the resource; it merely establishes a benchmark for fishery and resource evaluation from which to base additional management actions, specifically establishing the TAC. Since defining the OY has no direct effect on resource harvest or use, there would be no direct economic effects associated with its specification. Direct economic effects only accrue to the additional management actions that directly alter the use of the resource such as a TAC and other harvest control rules that are implemented to prevent overfishing. This measure is preferred over Option 1 since it would allow for development of the FMP for dolphin and wahoo which would allow for implementation of management measures that could increase economic benefits.

The reference to economic benefits includes consumer surplus to the recreational sector, non-market value to non-consumptive and non-use groups, and net revenue to the for-hire and commercial harvesting sectors of the dolphin/wahoo fisheries.

Social Impacts

This measure by itself will have no impact on the entities in this fishery. Economic and social benefits and costs will depend on the management measures adopted to keep the fishery from exceeding the chosen optimum yield level.

The Councils are required to prevent overfishing and achieve Optimum Yield from each fishery. This requirement directs the Councils to consider overall benefits to society through the harvest of any species without overfishing. Social benefits/impacts refers to cultural continuity, community cohesion, fishing opportunities, social conflict, stress, etc.

Conclusion

The Councils concluded the estimate of MSY for dolphin was appropriate; however, the MSY for wahoo probably underestimates the true MSY. This conclusion was based on the level of wahoo landings relative to the MSY estimate and the fact that the fishery is not fully exploited. In addition, the December 7, 2000 memo from Mike Prager to Nancy Thompson

includes the following: “Percentage points on the median of five-year catch are suspect. The estimation procedure indicates significant bias, and I am unfamiliar with any procedure likely to correct that. Therefore, I suggest that the median proxy estimate based on 5 years of data not be used, or if used, that only the point estimate be used.” This statement was also a factor in the Council’s determination that the estimate of MSY probably underestimates the true MSY. Therefore, the Councils specified OY as 100% of MSY. As additional data are collected and the MSY estimate is refined, the Councils will reexamine the appropriateness of setting OY = 100% MSY.

The Councils determined this action best achieves the goals of the FMP and the management objectives to: (4) optimize the social and economic benefits, (5) reduce bycatch in the dolphin fishery, (6) direct research to evaluate the role of dolphin and wahoo as prey and predators in the pelagic ecosystem, and (7) direct research to enhance collection of biological, habitat, social, and economic data on dolphin and wahoo stocks and fisheries.

C. Comprehensive ACL Amendment (2011)

2.4.1.3 Action 22: Establish Annual Catch Limits (ACL) and Optimum Yield (OY) for Dolphin

Alternative 1 (No Action). There is no ACL specified for dolphin. OY for dolphin is the amount of harvest that can be taken by fishermen while not exceeding 75% of the maximum sustainable yield (MSY) (between 14.1 and 34.9 million lbs).

Alternative 2 (Preferred). ACL = OY = ABC (currently estimated to be 14,596,216 lbs ww).

Alternative 3. ACL = OY = 85% of the ABC (currently estimated to be 12,406,784 lbs ww).

Alternative 4. ACL = OY = 75% of the ABC (currently estimated to be 10,947,162 lbs ww).

Alternative 5. ACL = OY = 65% of the ABC (currently estimated to be 9,487,540 lbs ww).

D. Others?

III. Current OY Statements from Fishery Management Plans

A. Hogfish (Amendment 37):

Preferred Alternative 2. Establish an ACL for the GA-NC stock. Specify commercial and recreational ACLs using re-calculated sector allocations based on proposed modifications to the management unit (69.13% commercial and 30.87% recreational). The ABC for the GA-NC stock = 35,716 pounds whole weight (lbs ww).

Sub-alternative 2a. ACL = OY = ABC

Preferred Sub-alternative 2b. ACL = OY = 95% ABC

Sub-alternative 2c. ACL = OY = 90% ABC

B. Others?

IV. Possible future OY Statements

A. Alternatives with separate OY statements for recreational and commercial:

Alternative 1. No Action. $ACL = OY = X\% ABC$.

Alternative 2. Commercial OY = Commercial ACL

Alternative 3. Recreational OY = Recreational ACT

Discussion

The Recreational ACT does not need to be set as currently done. It could be set to account for the need for a higher biomass of fish for a successful recreational fishing experience.

B. Alternatives with a more general OY statement that includes both recreational and commercial:

Alternative 1. No Action. $ACL = OY = X\% ABC$.

Alternative 2. Optimum Yield (OY) equals the amount of fish that provides the greatest overall benefit to the Nation, particularly with respect to food production and recreational opportunities, while taking into account the protection of marine ecosystems. OY is specified on the basis of the Acceptable Biological Catch (ABC), as reduced by any relevant economic, social, or ecological factor and the need to address management uncertainty. In the case of an overfished fishery, OY provides for rebuilding to a level consistent with producing the ABC in such fishery.

V. ?